Phase Two Environmental Site Assessment

303, 309 and 317 Speedvale Avenue East, Guelph, Ontario

Habitat for Humanity Wellington Dufferin Guelph
Final Report | Version 00
02302109.001

November 15, 2023

Habitat for Humanity Wellington Dufferin Guelph
02302109.001

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Revisions and publications log

REVISION No.	DATE	DESCRIPTION
0A	November 10, 2023	Preliminary version published for comments
00	November 15, 2023	Final version published

Distribution

Document	Client
1 PDF copy	Brett Daw

1 Executive Summary

Englobe Corp. (Englobe) was retained by Habitat for Humanity Wellington Dufferin Guelph (hereinafter referred to as the "Client") to complete a Phase Two Environmental Site Assessment (Phase Two ESA) for the properties including 303, 309 and 317 Speedvale Avenue East in Guelph, Ontario (hereinafter referred to as the "Phase Two Property" or "Site"). The Site Location Map and the Phase One Conceptual Site Model are provided in **Appendix A**, **Drawings 1** and **2**, respectively. Compass directions described in this report are referenced to the cardinal "North" as shown on the site drawings.

The Site is developed with four (4) building structures consisting of one (1) commercial office building, one (1) commercial (formerly residential) massage therapist office, and one (1) private residential dwelling with one (1) detached garage structure. It is Englobe's understanding that the structures are proposed to be demolished and redeveloped with a six (6) storey residential building. The surrounding area is composed of Speedvale Avenue East to the north, followed by residential properties, with commercial properties located beyond; Manhattan Court to the east, followed by residential and commercial properties, with Stevenson Street North located beyond; residential properties to the south; and residential properties to the west, followed by Metcalfe Street, with residential and institutional properties located beyond. Englobe understands that a Record of Site Condition (RSC) for the Site is required to be filed with the Ontario Ministry of the Environment, Conservation and Parks (MECP) as part of the planned redeveloped activities. The work was carried out in accordance with Englobe's proposal dated July 25, 2023 (Ref.: P2302109.001) and authorized by the Client on August 15, 2023. The Phase Two ESA was completed concurrently with a Hydrogeological Investigation at the Site, to be submitted under separate cover.

Englobe completed a Phase One ESA for the Site dated August 17, 2023. The Phase One ESA identified current and/or historical Potentially Contaminating Activities (PCAs) on Site and/or the surrounding areas, which have contributed to Areas of Potential Environmental Concern (APECs). The PCAs identified for the Site and surrounding properties are shown on **Drawing 2** provided in **Appendix A**. Based on the Phase One ESA findings, Englobe recommended that a Phase Two ESA be conducted to confirm the presence or absence of contaminants of potential concern (COPCs) in the soil and/or groundwater associated with the PCAs contributing to the Site APECs. The identified APECs and the contributing PCAs are depicted in **Drawing 3** provided in **Appendix A**.

The objective of a Phase Two ESA is to conduct intrusive investigation with sample collection and analyses to confirm the presence or absences of COPCs in soil and/or groundwater, based on APECs identified within the following above noted Phase One ESA Report:

— *Phase One Environmental Site Assessment, 303, 309 and 317 Speedvale Avenue East, Guelph, Ontario.* Prepared for Habitat for Humanity Wellington Dufferin Guelph. Prepared by Engoble Corp. Dated August 17, 2023. Reference No. 02302109.000.

Englobe performed this Phase Two ESA in accordance with Ontario Regulation (O. Reg.) 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act R.S.O. 1990 CH. E 19 (as amended).

The Englobe Phase One ESA identified PCAs both on-Site and within the Phase One Study Area (i.e. within 250 metres of the Site boundaries), resulting in five (5) APECs as summarized in the table below:

Areas of Potential Environmental Concern within Englobe's Phase One ESA (2023)

APEC (Corresponding PCA)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Site or off-Site)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 1 (PCA 1) Former fuel outlet with reported gasoline spill	North portion of the Site	**No. 28** - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site 324 Speedvale Avenue East (90 m north-northeast of the Site)	PHCs,BTEX, Metals and Hydride-Forming Metals (including As, Sb, Se)	Soil and Groundwater
APEC 2 (PCA 2) Historic dry-cleaning facility that used PERC	North portion of the Site	**No. 37 -** Operation of Dry-Cleaning Equipment (where chemicals areused) **Unspecified PCA** - Waste Generator Records	Off-Site 358 Speedvale Avenue East (250 north-northeast of the Site)	VOCs	Soil and Groundwater
APEC 3 (PCA 3) Current retail fuel outlet	North portion of the Site	**No. 28 -** Gasoline and Associated Products Storage in Fixed Tanks	Off-Site 328 Speedvale Avenue East (145 m north-northeast of the Site)	PHCs,BTEX, Metals and Hydride-Forming Metals (including As, Sb, Se)	Soil and Groundwater
APEC 4 (PCA 4) Waste generator for halogenated solvents	North portion of the Site	**Unspecified PCA -** Waste Generator Records	Off-Site 328-378 Speedvale Avenue East (145 m north-northeast of the Site)	VOCs	Soil and Groundwater
APEC 5 (PCA 5) Suspected fill materials	Northwest portion of the Site - in front of 317 Speedvale Avenue East	**No. 30** - Importation of Fill Material of Unknown Quality	On-Site	Metals and Hydride-Forming Metals (including As, Sb, Se), PHCs, PAHs, BTEX	Soil

Notes:
APEC - Area of Potential Environmental Concern
PCA - Potentially Contaminating Activity
PERC - Tetrachloroethylene
PHCs- Petroleum Hydrocarbons Fractions F1 to F4
BTEX - Benzene, toluene, ethylbenzene and xylenes
VOCs - Volatile Organic Compounds
As - Arsenic
Sb - Antimony
Se - Selenium
PAHs - Polycyclic Aromatic Hydrocarbons

The Site stratigraphy encountered at the borehole locations, in general, consisted of surficial asphalt or topsoil, underlain by either silt, sand and gravel fill or native silt, sand and gravel, underlain by predominantly native silt to sandy silt. Bedrock was not encountered in any of the boreholes. No deleterious materials were encountered at any of the boreholes advanced across the Site.

Analytical results reported for soil and groundwater were compared to the MECP's Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, Residential/Parkland/Institutional RPI Property Use, Fine-Textured Soils (hereinafter referred to as "MECP Table 2 SCS") were identified as the applicable standards for evaluating soil and groundwater quality data. Soil analytical results were compared to MECP Table 2 SCS for RPI Property Use and Fine-Textured Soils. Groundwater analytical results were compared to the MECP Table 2 SCS for All Types of Property Use, Fine-Textured Soils.

Based on a review of the analytical data reported for the soil samples submitted for laboratory analysis, detected concentrations and reportable detection limits (RDLs) of the assessed parameters were all below their respective MECP Table 2 SCS excluding electric conductivity (EC) and sodium adsorption ratio (SAR).

Road salt and/or de-icing substances have been applied to the surface of the driveways / parking areas of the Site and the roadways surrounding the Site for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, thus, it is the Qualified Person's (QP's) opinion that the EC and SAR concentrations in soil are deemed not to exceed the MECP Table 2 SCS in accordance with s 49.1 of O. Reg. 153/04 (as amended).

Detected concentrations and RDLs of the analyzed parameters were all below their respective MECP Table 2 SCS in each of the submitted groundwater samples at MW23-01 and MW23-03.

Based on the results, no additional subsurface investigation is recommended at this time prior to the filing of a RSC.

Englobe recommends that the groundwater monitoring wells installed on the Site by Englobe be maintained until such time that they are no longer needed, at which time it is recommended that the wells be decommissioned, in accordance with requirements defined by Ontario Regulation 903, as amended.

Property and Confidentiality

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If tests have been performed, the results of these tests are valid only for the sample described in this report.

Subcontractors of Englobe who may have performed laboratory work are duly evaluated according to the purchasing procedure of our quality system. For further information or details, please contact your project manager.”

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APPENDICES

2 Introduction

Englobe Corp. (Englobe) was retained by Habitat for Humanity Wellington Dufferin Guelph (hereinafter referred to as the "Client") to complete a Phase Two Environmental Site Assessment (Phase Two ESA) for the properties including 303, 309 and 317 Speedvale Avenue East in Guelph, Ontario (hereinafter referred to as the "Phase Two Property" or "Site"). The Site Location Map and the Phase One Conceptual Site Model plan are provided in **Appendix A**, **Drawings 1** and **2**, respectively. Compass directions described in this report are referenced to the cardinal "North" as shown on the site drawings.

The Site is developed with four (4) building structures consisting of one (1) commercial office building, one (1) commercial (formerly residential) massage therapist office, and one (1) private residential dwelling with one (1) detached garage structure. It is Englobe's understanding that the structures are proposed to be demolished and redeveloped with a six (6) storey residential building. The surrounding area is composed of Speedvale Avenue East to the north, followed by residential properties, with commercial properties located beyond; Manhattan Court to the east, followed by residential and commercial properties, with Stevenson Street North located beyond; residential properties to the south; and residential properties to the west, followed by Metcalfe Street, with residential and institutional properties located beyond. Englobe understands that a Record of Site Condition (RSC) for the Site is required to be filed with the Ontario Ministry of the Environment, Conservation and Parks (MECP) as part of the planned redeveloped activities. The work was carried out in accordance with Englobe's proposal dated July 25, 2023 (Ref.: P2302109.001) and authorized by the Client on August 15, 2023. The Phase Two ESA was completed concurrently with a Hydrogeological Investigation at the Site, to be submitted under separate cover.

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the presence or absence of contaminants of potential concern (COPCs) in the soil and/or groundwater associated with the PCAs contributing to the Site APECs. The identified APECs are depicted in **Drawing 3** provided in **Appendix A**.

The objective of a Phase Two ESA is to conduct intrusive investigation with sample collection and analyses to confirm the presence or absences of COPCs in soil and/or groundwater, based on APECs identified within the following above noted Phase One ESA Report:

— *Phase One Environmental Site Assessment, 303, 309 and 317 Speedvale Avenue East, Guelph, Ontario.* Prepared for Habitat for Humanity Wellington Dufferin Guelph. Prepared by Engoble Corp. Dated August 17, 2023. Reference No. 02302109.000.

Englobe performed this Phase Two ESA in accordance with Ontario Regulation (O. Reg.) 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act R.S.O. 1990 CH. E 19 (as amended).

2.1 Site Description

A summary of the Site details is presented in the following **Table 2-1**.

Table 2-1 Site Description

Site Information	
Site Area	**303 Speedvale Avenue East** - 786 m² (0.08 hectares)
	309 and 317 Speedvale Avenue East – 1,816 m² (0.18 hectares)
Legal Description	**303 Speedvale Avenue East** - PART LOT 15 CONCESSION 2 DIVISION F GUELPH TOWNSHIP AS IN ROS212691, SAVE AND EXCEPT PART 3, PLAN 61R21047 CITY OF GUELPH
	309 and 317 Speedvale Avenue East - PT LT 15 CON 2 DIVISION F GUELPH TOWNSHIP AS IN ROS532100; GUELPH; EXCEPT PARTS 1 AND 2 PLAN 61R-21047; CITY OF GUELPH
PIN	**303 Speedvale Avenue East –** 71312-0098 (LT)
	309 and 317 Speedvale Avenue East - 71312-0100 (LT)
Assessment Roll Number	**303 Speedvale Avenue East** – 0300-082-060-00000
	309 and 317 Speedvale Avenue East – 0300-082-080-00000
Zoning	**303 Speedvale Avenue East** – Specialized Residential
	309 and 317 Speedvale Avenue East – Specialized Commercial
Geodetic Coordinates to Approximate Centroid	**303 Speedvale Avenue East** - UTM Zone 17T 559829 m E, 4823784 m N
	309 Speedvale Avenue East - UTM Zone 17T 559839 m E, 4823806 m N
	317 Speedvale Avenue East - UTM Zone 17T 559851 m E, 4823819 m N
Notes: PIN - Property Identification Number UTM - Universal Transverse Mercator	

Site Information
m^2 - square metres E - Easting N - Northing

The Site is made up of two parcels of land, containing four (4) building structures. The parcel located at 309 and 317 Speedvale Avenue East is rectangular in shape and approximately 1,816 m^2 (0.18 hectares) in area and is developed with two building structures. The formerly residential building located at 309 Speedvale Avenue East is currently used for commercial purposes (i.e. registered massage therapy) and was reportedly developed in the 1940s, with an approximate building footprint area of 85 m^2. The structure located at 317 Speedvale Avenue East is developed with a multi-tenant commercial building and appears to have been constructed in the 1960s with an approximate building footprint area of 234 m^2. The property is accessed via an asphalt paved driveway off Speedvale Avenue East and Manhattan Court. Asphalt paved surface parking / driveway areas are located on the southeast and southwest portions of the property.

The property located at 303 Speedvale Avenue East is rectangular in shape and approximately 786 m^2 (0.08 hectares) in area and is developed with two (2) structures, consisting of a residential dwelling and a detached two-car garage. The property is accessed via a paved driveway off Speedvale Avenue East, located on the west portion of the Phase One Property. Paved surface parking / driveway areas and the garage are located on the southern portion of the property. The residential dwelling was reportedly constructed in the 1940s and consists of a single-storey building with a full basement with an approximate building footprint area of 85 m^2. The garage has an approximate footprint area of 21 m^2.

Surrounding land uses consist of commercial properties to the north on the corner of Speedvale Avenue East and Stevenson Street North and predominantly residential properties to the west and south. To the east of the Site is an area of commercial, institutional and residential use, including institutional properties (i.e. a place of worship and a public school) and condominium complexes. Directly adjacent to the Site are residential properties to the north, west and south and a dentist to the east.

The Site and surrounding properties are located as shown on the attached Phase One Conceptual Site Model, **Drawing 2** provided in **Appendix A**.

2.2 Property Ownership

The Site ownership information is as follows:

Habitat for Humanity Wellington Dufferin Guelph
Suite 100B
104 Dawson Road
Guelph, ON N1H 1A6

The contact information for the representative of the Site owner is as follows:

Mr. Brett Daw
Habitat for Humanity Wellington Dufferin Guelph
Suite 100B
104 Dawson Road
Guelph, ON N1H 1A6

519-767-9752 ext. 39

2.3 Current and Proposed Future Uses

The Site is currently utilized for mixed commercial and residential purposes as a commercial office building (317 Speedvale Avenue East), registered massage therapists office (309 Speedvale Avenue East) and private residence (303 Speedvale Avenue East). Englobe understands the Client has purchased the property for proposed redevelopment, with a six (6) storey residential building with one (1) storey of underground parking. Englobe understands that an RSC for the Site is required to be filed with the MECP as part of the planned redeveloped activities.

2.4 Applicable Site Condition Standard

Soil and groundwater analytical results obtained for the Site were compared to applicable Site Condition Standards as provided in the document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," Ontario Ministry of Environment, Conservation and Parks (MECP) April 15, 2011 [hereinafter referred to as the "MECP Standards" or (MECP, 2011)].

The MECP Standards consist of background and risk-based standards developed from the evaluation of different land use scenarios (i.e. residential, commercial, etc.), groundwater conditions (potable versus not potable), soil conditions (pH, texture classification, overburden thickness) and special considerations (i.e. proximity to a surface water body or an area of natural or scientific interest). Full depth background standards are provided in Table 1 and generic risk-based standards developed for different land use scenarios are provided in Tables 2 to 9 of MECP. The Table 1 Background Standards are to be applied to environmentally sensitive sites as determined from an evaluation of conditions related to soil pH and proximity to a provincially significant wetlands (PSW) area or an area of natural and scientific interest (ANSI).

The rationale for the selection of the MECP Standards applicable to the Site setting is provided as follows:

Land Use

The Site is proposed for redevelopment for residential use (six (6) storey residential building). Therefore, the residential/parkland/institutional property use standards are applicable to the Site.

Groundwater Use

The Site and all properties within 250 m of the Site are serviced with potable water via the City of Guelph municipal system which obtains its water from groundwater wells.

Additionally, based on a search of the available MECP well records, no potable water wells were identified within 250 m of the Site.

The Table 2 Full Depth Generic Site Conditions Standards Potable Ground Water Condition apply.

Surface Water Features

There are no water bodies within the Phase One Study Area. The closest major waterbody to the Site is Speed River located approximately 810 m to the west of the Site. Speed River flows from Guelph Lake, located approximately 3.0 km northeast of the northeastern corner of the Site.

Soil Texture

Borehole Logs provided in **Appendix B**, indicate that most of the underlying native soils consists of silt and/or silty sand. Grain size analysis results are summarized in Table 2-2 below. Grain size analysis results provided in **Appendix E**.

Table 2-2 Summary of Grain Size Distribution Analysis Results for Tested Soil Samples

Sample ID	% Gravel (> 4.75 mm) (by mass)	% Sand (75 µm to 4.75 mm) (by mass)	% Silt (2 µm to 75 µm) (by mass)	% Clay (< 2 µm) (by mass)	Soil Texture (Description)
MW23-01 SS9	9.8	37.4	42.6	10.2	Medium (Sand and Silt, some clay, trace gravel)
MW23-02 SS7	16.5	39.7	36.4	7.4	Coarse (Sand and Silt, some gravel, trace clay)
MW23-03 SS8	4.0	25.5	62.8	7.7	Medium (Sandy silt, trace gravel, trace clay)
MW23-04 SS7	1.5	35.5	57.1	5,9	Medium (Sand and Silt, trace gravel, trace clay)
MW23-05 SS8	0.1	65.7	31.3	2.9	Medium (Silty sand, trace clay)

A review of the borehole logs and above-noted grain size analysis result indicate that the soil at the Site is medium textured, therefore for the purposes of this report, analytical results for soil samples will be evaluated against medium/fine-textured standards.

Environmentally Sensitive Areas

According to O. Reg. 153/04, if a site is within an area of natural significance or is adjacent to or within 30 m of an area of natural significance, it is considered environmentally sensitive. The following **Table 2-3** presents the criteria for areas of natural significance as they are defined in O. Reg. 153/04 and the actual site conditions as they relate to the criteria.

Table 2-3 Areas of Natural Significance Definitions and Site Conditions

Definition Under O. Reg. 153/04 "area of natural significance" means any of the following:	Site Conditions and Characteristics
1. An area reserved or set apart as a provincial park or conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006.	The Site is not located within or adjacent to a provincial park according to the Ontario Ministry of Natural Resources and Forestry (MNRF) nor is it located within or adjacent to a conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006 (Provincial Parks and Conservation Reserves Act, 2006; MNRF, 2014).
2. An area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources as having provincial significance.	The Site is not located within or adjacent to an area of natural and scientific interest (life or earth sciences) (MNRF, 2014).
3. A wetland identified by the Ministry of Natural Resources and Forestry as having provincial significance.	The Site is not part of an area or within 30 m of an area identified by the MNRF as being a provincially significant wetland (MNRF, 2014).

Definition Under O. Reg. 153/04 "area of natural significance" means any of the following:	Site Conditions and Characteristics
4. An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant.	The Site and surrounding properties are not considered to be environmentally sensitive, of environmental concern or ecologically significant according to the City of Guelph's Official Plan.
5. An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act.	The Site and surrounding properties are not part of the Niagara Escarpment natural/protection areas as defined by the Niagara Escarpment Planning and Development Act (Niagara Escarpment Commission, 2008).
6. An area identified by the Ministry of Natural Resources as significant habitat of a threatened or endangered species.	The Site and surrounding properties are not in an area that is classified as a significant habitat for a threatened or endangered species.
7. An area which is habitat of a species that is classified under section 7 of the Endangered Species Act, 2007 as a threatened or endangered species.	The Site and surrounding properties are not in an area that is classified as habitat for a threatened or endangered species.
8. Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies.	The Site and surrounding properties are not part of the Oak Ridges Moraine core/linkage areas as defined by the Oak Ridges Moraine Act (MNRF, 2014).
9. An area set apart as a wilderness area under the Wilderness Areas Act;	The area is not set apart as a wilderness area under the Wilderness Area Act (MNRF, 2010).

Therefore, based on the information provided in the above table, the Site and surrounding properties are not considered to be an area of natural significance according to O. Reg. 153/04.

Soil pH

Laboratory pH measurements reported for soil samples collected from surface and subsurface depths were within the respective acceptable ranges of 5 to 9 and 5 to 11. As such, the Site is not considered to be environmentally sensitive due to pH.

Depth to Bedrock

Based on the borehole logs, bedrock was not encountered during the advancement of any of the boreholes, advanced to 6.1 to 6.7 mbgs.

Depth to Groundwater

The measured depth to groundwater was encountered between 4.62 to 6.66 mbgs (326.83 to 327.47 metres above sea level (masl)).

Site Condition Standard Determination

Based on evaluation of the Site conditions, the Table 2: Full Depth Generic Site Condition Standards (SCS) in a Potable Ground Water Condition, Residential/Parkland/Institutional (RPI) Property Use, Fine-Textured Soils (hereinafter referred to as "MECP Table 2 SCS") were identified as the applicable standards for evaluating soil and groundwater quality data. Soil analytical results were compared to MECP Table 2 SCS for RPI Property Use and Fine-Textured Soils. Groundwater analytical results were compared to the MECP Table 2 SCS for All Types of Property Use, Fine-Textured Soils.

3 Background Information

3.1 Physical Setting

The Site is made up of two parcels of land, containing four (4) building structures. The parcel located at 309 and 317 Speedvale Avenue East is rectangular in shape and approximately 1,816 m^2 (0.18 hectares) in area and is developed with two building structures. The formerly residential building located at 309 Speedvale Avenue East is currently used for commercial purposes (i.e. registered massage therapy) and was reportedly developed in the 1940s, with an approximate building footprint area of 85 m^2. The structure located at 317 Speedvale Avenue East is developed with a multi-tenant commercial building and appears to have been constructed in the 1960s with an approximate building footprint area of 234 m^2. The property is accessed via an asphalt paved driveway off Speedvale Avenue East and Manhattan Court. Asphalt paved surface parking / driveway areas are located on the southeast and southwest portions of the property.

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Surrounding land uses consist of commercial properties to the north on the corner of Speedvale Avenue East and Stevenson Street North and predominantly residential properties to the west and south. To the east of the Site is an area of commercial, institutional and residential use, including institutional properties (i.e. a place of worship and a public school) and condominium complexes. Directly adjacent to the Phase One Property are residential properties to the north, west and south and a dentist to the east.

The Site Location Map and the Site and Surrounding Land Use plan are provided in **Appendix A**, **Drawings 1** and **2**, respectively.

An Ontario Base Map (OBM) shows the ground surface elevation for the Site at approximately 330-335 metres above mean sea level (masl). The regional topography appears to slope gently to the southeast (towards the Speed River). Based on visual observations during the Site reconnaissance, the Site and surrounding areas appeared to be generally flat with a gentle slope towards the southeast.

The Site is located within the physiographic region of Southern Ontario known as the Guelph Drumlin Field (Chapman and Putnam, 2007). The primary physiographic landform in the area of the Site is the Drumlins. The subsurface stratigraphy at the Site is comprised of stone-poor, sandy silt to silty sand-textured till (Ontario Geological Survey, 1991). The Ontario Geological Survey Bedrock Geology of Ontario map accessed via Google Earth, shows the Site being underlain sandstone, shale, dolostone and/or siltstone of the Guelph Formation.

According to the available surficial geology maps from the Ministry of Northern Development and Mines, accessed via Google Earth, the surficial geology at the Site and surrounding properties was listed as stone-poor, sandy silt to silty sand-textured till. According to CMT's Geotechnical Report (2023) summarized in **Section 2.2**, the soil stratigraphy encountered at the Site during soil excavation was fill materials consisting of brown sand and gravel with trace silt, brown silty sand, or silt at depths ranging between 0.8 to approximately 1.4 m mbgs. The fill materials were underlain by brown to grey sand with trace to some silt and gravel to sand and silt with some clay and trace gravel to the final extent of the excavations at approximately 6.1 mbgs.

There are no surface water bodies in the Phase One Study Area. The nearest water body to the Site is Speed River located approximately 810 m to the west of the Site. Speed River flows from Guelph Lake, located approximately 3.0 km northeast of the northeastern corner of the Site. Based on the regional topography and location of the nearest surface water body, the inferred direction of the regional groundwater flow is to the southwest. Inferred groundwater flow directions at the Site based on measured groundwater elevations are summarized in **Section 5.2**. Depending on climate conditions and the amount of surface water available, ditching, underground services, and ground surface may affect the shallow groundwater flow on a local level.

3.2 Past Investigations

The following reports were available for Englobe's review:

Geotechnical Investigation, Proposed Building - 303, 309, 317 Speedvale Avenue East, Guelph, Ontario. CMT Project 23-399.R01. Prepared for Habitat for Humanity Guelph-Wellington, prepared by CMT Engineering Inc., dated August 3, 2023 (CMT, 2023).

According to the CMT Geotechnical Report, CMT was retained to conduct a geotechnical investigation for the proposed building to be construed at 303, 309 and 317 Speedvale Avenue East, in Guelph, Ontario. The purpose of the geotechnical investigation was to assess the existing soil and groundwater conditions encountered at the Site to support the design and construction of a proposed residential development (building) with either half or one (1) storey of underground parking, as well as surface level parking.

Included in the assessment were the soil classification and groundwater observations, as well as comments and recommendations regarding geotechnical resistance (bearing capacity); serviceability

limit states (anticipated settlement); recommended founding elevations; site classification for seismic site response; dewatering considerations; recommendations for site grading, site servicing, excavations and backfilling; recommendations for slab-on-grade construction; pavement design/drainage; soil design properties; and a summary of the laboratory test results.

The following is a summary of the activities that took place as part of this investigation:

- On July 10 2023, five (5) boreholes (designated BH1 through BH5) were advanced at the Site utilizing a Geoprobe 7822DT drill rig operated by CMT Drilling Inc. The boreholes were advanced in the area of the proposed building to depths of approximately 6.10 mbgs.
- CMT Inc. personnel surveyed the ground surface elevations at the borehole locations (using laser survey equipment) on July 31, 2023. The nail in the existing hydro pole located to the north of the proposed construction was utilized as a benchmark with a reported elevation of 333.00 m. As such, the ground surface elevations at the borehole locations ranged from approximately 330.06 m to 334.21 m.
- The soil stratigraphy encountered at the Site during soil excavation was fill materials consisting of brown sand and gravel with trace silt, brown silty sand, or silt at depths ranging between 0.8 to approximately 1.4 m mbgs. The fill materials were underlain by brown to grey sand with trace to some silt and gravel to sand and silt with some clay and trace gravel to the final extent of the excavations at approximately 6.1 mbgs.
- Saturated soils, typically sand, were observed within Boreholes 1, 2 and 5 ranging from approximately 3.66 m to 6.10 m below the ground surface.

Phase One Environmental Site Assessment, 303, 309 and 317 Speedvale Avenue East, Guelph, Ontario. Prepared for Habitat for Humanity Wellington Dufferin Guelph, prepared by Englobe Corp. Dated August 17, 2023. Reference No. 02302109.000 (Englobe, 2023).

The Englobe Phase One ESA identified PCAs both on-Site and within the Phase One Study Area (i.e. within 250 metres of the Site boundaries), resulting in five (5) APECs as summarized in **Table 3-1** below:

Table 3-1 Areas of Potential Environmental Concern within Englobe's Phase One ESA (2023) at 303, 309 and 317 Speedvale Avenue East, Guelph

APEC (Corresponding PCA)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Site or off-Site)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 1 (PCA 1) Former fuel outlet with reported gasoline spill	North portion of the Site	**No. 28** - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site 324 Speedvale Avenue East (90 m north-northeast of the Site)	PHCs,BTEX, Metals and Hydride-Forming Metals (including As, Sb, Se)	Soil and Groundwater
APEC 2 (PCA 2) Historic dry-cleaning facility that used PERC	North portion of the Site	**No. 37 -** Operation of Dry-Cleaning Equipment (where chemicals areused) **Unspecified PCA** - Waste Generator Records	Off-Site 358 Speedvale Avenue East (250 north-northeast of the Site)	VOCs	Soil and Groundwater

APEC (Corresponding PCA)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (on-Site or off-Site)	Contaminants of Potential Environmental Concern	Media Potentially Impacted
APEC 3 (PCA 3) Current retail fuel outlet	North portion of the Site	**No. 28 –** Gasoline and Associated Products Storage in Fixed Tanks	Off-Site 328 Speedvale Avenue East (145 m north-northeast of the Site)	PHCs,BTEX, Metals and Hydride-Forming Metals (including As, Sb, Se)	Soil and Groundwater
APEC 4 (PCA 4) Waste generator for halogenated solvents	North portion of the Site	**Unspecified PCA –** Waste Generator Records	Off-Site 328-378 Speedvale Avenue East (145 m north-northeast of the Site)	VOCs	Soil and Groundwater
APEC 5 (PCA 5) Suspected fill materials	Northwest portion of the Site – in front of 317 Speedvale Avenue East	**No. 30** - Importation of Fill Material of Unknown Quality	On-Site	Metals and Hydride-Forming Metals (including As, Sb, Se), PHCs, PAHs, BTEX	Soil

Notes:
APEC - Area of Potential Environmental Concern
PCA - Potentially Contaminating Activity
PERC - Tetrachloroethylene
PHCs- Petroleum Hydrocarbons Fractions F1 to F4
BTEX - Benzene, toluene, ethylbenzene and xylenes
VOCs - Volatile Organic Compounds
As - Arsenic
Sb - Antimony
Se - Selenium
PAHs - Polycyclic Aromatic Hydrocarbons

The locations of the aforementioned PCAs and APECs are illustrated on **Drawing 3** provided in **Appendix A**.

3.3 Phase One Conceptual Site Model

Based on the results of the Phase One ESA, APECs were identified at the Site which were associated with historical and/or current PCAs on the Site and/or surrounding properties. In accordance with the requirements of O. Reg. 153/04, a Phase One Conceptual Site Model (CSM) was developed by integrating information on the Site setting and land use conditions, PCAs and APECs in a narrative, tabular and graphical format.

The Phase One CSM for the Site was prepared in accordance with “Table 1 Mandatory Requirements for Phase One Environmental Site Assessment Reports”, Schedule D, Part XV.I, O.Reg. 153/04 and is summarized in **Table 3-2** below.

Table 3-2 Phase One Conceptual Site Model

O.Reg. 153/04 Schedule D (Part VI) Table 1 Requirement	Phase One ESA Findings / Details
Show any existing buildings and structures	The Site is made up of two (2) parcels of land, containing four (4) building structures. The parcel located at 309 and 317 Speedvale Avenue East is rectangular in shape and approximately 1,816 m^2 (0.18 hectares) in area and is developed with two building structures. The formerly residential building located at 309 Speedvale Avenue East is currently used for commercial purposes (i.e. registered massage therapy) and was reportedly developed in the 1940s, with an approximate building footprint area of 85 m^2. The structure located at 317 Speedvale Avenue East is developed with a multi-tenant commercial building and appears to have been constructed in the 1960s with an approximate building footprint area of 234 m^2. The property is accessed via an asphalt paved driveway off Speedvale Avenue East and Manhattan Court. Asphalt paved surface parking / driveway areas are located on the southwest portion of the property. The property located at 303 Speedvale Avenue East is rectangular in shape and approximately 786 m^2 (0.08 hectares) in area and is developed with two (2) building structure, consisting of a residential dwelling and a detached two-car garage. The property is accessed via a paved driveway off Speedvale Avenue East, located on the west portion of the Phase One Property. Paved surface parking / driveway areas and the garage are located on the southern portion of the property. The residential dwelling was reportedly constructed in the 1940s and consists of a single-storey building with a full basement with an approximate building footprint area of 85 m^2. The garage has an approximate footprint area of 21 m^2. Surrounding land uses consist of commercial properties to the north on the corner of Speedvale Avenue East and Stevenson Street North and predominantly residential properties to the west and south. To the east of the Site is an area of commercial, institutional and residential use, including institutional properties (i.e. a place of worship and a public school) and condominium complexes. Directly adjacent to the Phase One Property are residential properties to the north, west and south and a dentist to the east. The Site features are shown on the attached **Drawing 1**, **Appendix A.** The Site and surrounding properties are located as shown on the attached Phase One Conceptual Site Model, **Drawing 2** provided in **Appendix A**.
Identify and locate water bodies located in whole or in part on the Phase One Study Area	No water bodies, streams, ponds or wetland areas were observed at the Site. Speed River is located approximately 810 metres west of the southwest corner of the Site. Guelph Lake is located approximately 3.0 kilometers northeast of the northeastern corner of the Site.
Identify and locate any areas of natural significance located in whole or in part on the Phase One Study Area	Based on the MNRF mapping website accessed in June 2023, the reported information indicated that there are no PSWs or ANSIs that are contained within the Site or Phase One Study Area.
Locate any drinking water wells at the Phase One Property	No known water supply wells were identified or observed at the Site. No known water supplywells were identified within the Phase One Study Area.
Show roads, including names, within the Phase One Study Area	The Phase One Property is located southeast of Speedvale Avenue East, southwest of Stevenson Street North and Manhattan Court, northeast of Metcalfe Street, and northwest of Balsam Drive, in Guelph, Ontario. Roads located in the Phase One Study Area are identified on the **Figure 2, Appendix A.**

O.Reg. 153/04 Schedule D (Part VI) Table 1 Requirement	Phase One ESA Findings / Details
Show uses of properties adjacent to the Phase One Property	The Site is in a residential/commercial area in Guelph. General land uses in the area are mainly residential with some commercial to the north, on the corner of Stevenson Street North and Speedvale Avenue East. Surrounding land uses consist of Speedvale Avenue East to the northwest followed by residential properties. Manhattan Court is to the northeast of the Site, followed by condominiums and institutional properties (i.e. a church and public school); and residential properties followed by Metcalfe Street to the south. The Site and surrounding properties are located as shown on the attached **Figure 2** provided in **Appendix A.**
Identify and locate areas where any PCA has occurred and show tanks in such areas.	PCAs were identified on Site and off-Site properties. These included: **No. 28** – Gasoline and Associated Products Storage in Fixed Tanks **No. 30** – Importation of Fill Material of Unknown Quality **No. 37** –Operation of Dry-Cleaning Equipment (where chemicals are used) **Unspecified PCA** – Waste generator records **Unspecified PCA** – Waste generator records PCAs noted in the study area are shown on **Drawing 2** in **Appendix A**.
Identify and locate any APECs	Five (5) APECs identified at the Site, as shown on **Figure 3** in **Appendix A.** **APEC 1 –** North portion of Site – former retail fuel outlet at 324 Speedvale Avenue East **APEC 2** - North portion of Site - Historic dry cleaning facility at 358 Speedvale Avenue East **APEC 3** - North portion of the Site - current retail fuel outlet at 328 Speedvale Avenue East **APEC 4 –** North Portion of the Site - Use of halogenated solvents at 328-378 Speedvale Avenue East **APEC 5 -** Northwest corner of the Site in front of 317 Speedvale Avenue East - Importation of Fill Material of Unknown Quality
Describe and assess any areas where potentially contaminating activity on or potentially affecting the Phase One Property has occurred.	**On-Site** Importation of fill material of unknown quality over the northwestern portion of the Site containing 317 Speedvale Avenue East. **Off-Site** Historical records reviewed by Englobe indicate a gas station with three (3) underground storage tanks (USTs) was located north-northeast of the Phase One Property at 324 Speedvale Avenue East which may have possible impacts to soil and/or groundwater. During the Site visit, an active gas station with underground storage tanks was also observed north-northeast of the Site at 328 Speedvale Avenue East. Historical records reviewed by Englobe indicate a dry-cleaning facility located at 358 Speedvale Avenue East that was a waste generator of halogenated solvents, which may have possible impacts to soil and/or groundwater. Additionally, the plaza at 328-378 Speedvale Avenue East was listed as a waste generator of halogenated solvents, which may have possible impacts to soil and/or groundwater.

O.Reg. 153/04 Schedule D (Part VI) Table 1 Requirement	Phase One ESA Findings / Details
Describe and assess and contaminants of potential environmental concern	**Soil:** Metals and Hydride-Forming Metals, PHCs, BTEX, VOCs, PAHs **Groundwater:** Metals and Inorganic, PHCs, BTEX, VOCs
Describe and assess the potential for underground utilities, if any, to affect contaminant distribution and transport	Two catch basins were observed in the parking lot located behind 309 and 317 Speedvale Avenue East during the Site visit on June 7, 2023. A storm sewer is present connecting the two catch basins and continuing towards Manhattan Court. A telephone cable is present in the eastern portion of the parking lot located behind 309 and 317 Speedvale Avenue East. A water service is present in the driveway adjacent to 309 Speedvale Avenue East, running perpendicular to Speedvale Avenue East. A hydro line, natural gas line and cable conduit run parallel to Speedvale Avenue East through the northwestern portion of the Site. A natural gas service is present for 303, 309 and 317 Speedvale Avenue East. A hydro service is present for 317 Speedvale Avenue East..
Describe and assess available regional or site specific geological and hydrogeological information	Englobe reviewed a copy of the 2019 Ontario Base Map (OBM) provided by Ministry of Natural Resources and Forestry (MNRF) on-line mapping. Based on the site reconnaissance and a review of the contour linesfrom the OBM, the topography of the Site is generally flat, sloping gently to the southeast. The Site appearsto be at an elevation of between approximately 330 to 335 metres above sea level (masl). The surficial geology in the area is described as stone-poor, sandy silt to silty sand-textured till (Ontario Geological Survey, 2010). The Site is located within the physiographic region of the Guelph Drumlin Field and consists of drumlins (Ontario Geological Survey, 2007). The bedrock geology consists of sandstone, shale, dolostone and/or siltstone of the Guelph Formation (Ontario Geological Survey, 2011). The nearest water body to the Site is Speed River located approximately 810 m to the west of the Site. Speed River flows from Guelph Lake, located approximately 3.0 km northeast of the northeast corner of the Site. Based on the observed topography it is anticipated that regionally, groundwater will flow towards the southwest. It is noted that local groundwater flow can be influenced by surface topography and subsurface utilities and structures.
Describe and assess how any uncertainty or absence of information obtained in each of the components of the Phase One ESA could affect the validity of the model.	Multiple information sources were relied upon in the identification and evaluation of PCAs, which may have contributed to an APEC including historical records, previous reports, site observations, interviews, and environmental databases. Each of these sources has potential uncertainties related to accuracy (i.e., written records), interpretation (i.e., resolution of aerial photographs) and time gaps (directory sources and aerial photographs). As multiple sources of information were evaluated in this Phase One ESA with corroborated findings, uncertaintiesrelated to the validity of the CSM, and conclusions based on the model were minimized. It is Englobe's opinion that the uncertainty or absence of information in the Phase One ESA records review, interviews, and Site reconnaissance components of the Phase One ESA are not anticipated to affect the validity of the Phase One ESA conclusions.

4 Scope of the Investigation

4.1 Overview of Site Investigation / Phase Two Work Plan

The objective of the Phase Two ESA was to conduct intrusive investigation with sample collection and analyses to confirm the presence or absences of COPCs in specific media, as identified during the Englobe Phase One ESA. The soil and groundwater investigations were conducted in accordance with the requirements of O. Reg. 153/04, as amended.

The Phase Two ESA scope of work program consisted of the following activities:

- Coordinate the mobilization and demobilization of all personnel and equipment required to complete the work;
- Development of a Site-Specific Health and Safety Plan;
- Development of a Phase Two Work Plan;
- Clearance of underground utilities (public and private);
- Advancement of three (3) boreholes in strategic areas of the Site to a maximum depth of approximately 6 mbgs and instrument the boreholes as a groundwater monitoring well. The drilling program is to be completed by a MECP-licensed drilling contractor in accordance with O. Reg. 903;
- Complete three (3) shallow hand-auger holes within the area of APEC 5 at the Site to a maximum depth of approximately 1 mbgs;
- Collect soil samples from the boreholes and hand-auger holes for field screening to identify visual/olfactory evidence of impacts and measure total organic vapours (TOVs) using a hand-held gas meter;

— Submit one ‘worst-case’ soil sample from each of the three (3) boreholes for laboratory analyses of PHCs fractions F1-F4, VOCs, and O.Reg. 153/04 metals and inorganics;

— Submit one ‘worst-case’ soil sample from each of the three (3) hand-auger holes for laboratory analyses of PHCs fractions F1-F4, BTEX, PAHs and O.Reg. 153/04 metals and inorganics;

— Complete borehole layout mapping and elevation surveying;

— Collect groundwater level measurements and develop the three (3) newly installed monitoring wells;

— Collect and submit groundwater sample from all three (3) newly installed monitoring wells for laboratory analyses of PHC fractions F1-F4, VOCs and O.Reg. 153/04 metals and inorganics;

— Collect and submit field duplicate soil and groundwater samples for quality assurance/quality control (QA/QC) purposes. In total, one soil duplicate sample, one groundwater duplicate sample and one trip blank sample will be submitted for select laboratory analyses;

— Collection of one (1) soil sample and submission for grain size analysis testing;

— Soil cutting and purged groundwater will be containerized in labelled drums on-Site in an agreed upon location pending receipt of analytical test results. Englobe will retain the services of a licensed waste hauler to remove the investigation derived waste from the Site and disposed at the a licensed waste disposal facility; and,

— Preparation of a Phase Two ESA report in accordance with the requirements of O. Reg. 153/04.

The Phase Two ESA was completed concurrently with a Hydrogeological Investigation at the Site, to be submitted under separate cover. The Hydrogeological Investigation scope of work completed concurrently with the Phase Two ESA included the following activities:

— Advancement of an additional two (2) boreholes to an approximate depth of 6.0 mbgs and instrument these boreholes as groundwater monitoring wells. The drilling program is to be completed by a MECP-licensed drilling contractor in accordance with Ontario Regulation (O.Reg.) 903;

— Collect and submit up to five (5) soil samples for grain size analysis;

— Collect groundwater level measurements and develop the two (2) newly installed monitoring wells;

— Collection of two (2) groundwater sample(s) from selected newly installed monitoring wells for submission to an analytical laboratory to test for the following parameters:

  — The parameters listed in the City of Guelph Sewer Use bylaw (By-Law 15202 (1996));

4.2 Deviations from Phase Two Work Plan

There were a number of deviations from the Phase Two Work Plan. Due to site specific conditions encountered during drilling, boreholes were advanced to approximate depths ranging from 6.0 to 7.6 mbgs. Additional deviations from the Phase Two Work Plan are provided in **Table 4-1**:

Table 4-1 Deviations from the Phase Two Work Plan

Borehole / Monitoring Well ID	Proposed Sampling	Actual Sampling	Reasoning for Deviation from the Proposed Sampling
Soil			
MW-23-04	No sampling proposed.	[1] PHCs fractions F1-F4, BTEX, VOCs, Metals and hydride-forming metals, EC, SAR, pH	Due to the presence of fill materials identified in this location, an additional soil sample was submitted.
Groundwater			
MW-23-02	[1] PHCs fractions F1-F4, VOCs, Metals and hydride-forming metals, EC, SAR, pH	No sample taken.	Due to dry conditions, the groundwater sample could not be collected at this location.

Notes:
PHCs fractions F1-F4 - Petroleum Hydrocarbons Fractions F1 to F4
BTEX - Benzene, toluene, ethylbenzene and xylenes
VOCs - Volatile Organic Compounds
PAHs - Polycyclic Aromatic Hydrocarbons
EC - Electrical Conductivity
SAR - Sodium Absorption Ratio

There were no other significant deviations from the Phase Two Work Plan.

4.3 Impediments

No significant physical impediments were encountered during the execution of the Phase Two ESA fieldwork.

5 Investigation Method

5.1 Drilling Program

Following the clearance of public and private utility locates, three (3) boreholes (MW23-01 through MW23-03) were advanced as part of the Phase Two ESA, and two (2) boreholes (MW23-04 and MW23-05) were advanced as part of the Hydrogeological Investigation at the Site on September 19 and 20, 2023 to maximum depths ranging from 6.1 to 7.6 mbgs. All five (5) boreholes (MW23-01 through MW-23-05) were subsequently instrumented as groundwater monitoring wells. The locations of the boreholes are illustrated on the Sampling Location Plan, **Drawing 4** provided in **Appendix A**.

All five (5) boreholes were advanced by means of a track-mounted Geoprobe® direct push soil coring drilling rig equipped with dual tube sampling equipment. A hollow stem auger (HSA) was used in conjunction with this system for installation of monitoring wells. The drilling equipment was supplied and operated by Direct Environmental Drilling Inc. (DED) of London, Ontario, an MECP licensed well drilling contractor. Disposable plastic liners were used with the direct push method to minimize the potential for sample cross-contamination. All non-dedicated in-hole drilling equipment was decontaminated by washing with a water and non-phosphate detergent mixture (Alconox), followed by a rinse with distilled water. Wash waters and drilling spoils were collected in sealed labelled drums on Site for posterior assessment and disposal. All decontaminated drilling equipment was placed on plastic sheet lined surfaces to minimize the potential for cross-contamination. No drilling fluids or additives were used during the drilling process.

The subsurface samples were collected beneath the ground surface to maximum depths ranging from 6.10 to 7.62 mbgs. A total of forty-three (43) soil samples were collected, ranging between eight (8) and ten (10) from each of the five (5) boreholes (MW23-01 through MW23-05).

All of the fieldwork was observed by an Englobe field technician who documented drilling and sampling procedures, logged stratigraphic details from recovered soil cores, monitored groundwater conditions,

conducted headspace screening, and collected soil and groundwater samples for laboratory chemical analysis. Borehole logs are provided in **Appendix B**.

5.2 Hand-Auger Holes

Following public and private utility locates, three (3) hand-auger holes were advances at the Site on September 21, 2023. The holes were advanced using a hand-auger to a maximum depth of approximately 0.85 mbgs. The subsurface samples were collected beneath the ground surface to maximum depths ranging from 0.46 to 0.85 mbgs. A total of three (3) soil samples were collected, one (1) from each of the three (3) hand-auger hole (TP23-01 through TP23-03).

5.3 Soil Sampling

During the drilling activities, soil cores were recovered from the boreholes at continuous intervals using direct-push sampling rods equipped with disposable 1.5 metre (m) plastic liners. New plastic liners were inserted within the direct push sampling rods to prevent cross-contamination between samples.

Recovered soil cores were logged for stratigraphic and textural details and examined for visual and olfactory evidence of chemical impacts. Samples were collected from the soil cores for headspace screening of combustible vapour concentrations (CVC) and total organic vapours (TOV). Selected cores were chosen for chemical analysis of target parameter groups. Headspace soil samples were collected into sealable plastic bags and screening was performed using a hand-held catalytic combustible gas detection (CCGD) and photoionization detector (PID) equipped with a 10.6 electron-volt lamp and calibrated with hexane and isobutylene reference gases. Samples selected for laboratory chemical analysis were collected into pre-cleaned laboratory supplied containers and placed in an ice chilled cooler to minimize the potential for chemical degradation and volatilization. Sample containers were labelled with a unique sample number, project reference, date and time of sampling. New disposable nitrile gloves were worn for handling and sampling of soil materials from each recovered soil core to minimize the potential for cross-contamination. The samples were delivered to the analytical laboratory within test group specific holding times following Chain of Custody protocols.

The borehole logs, presented in **Appendix B**, include the soil descriptions, stratigraphy, and headspace readings. Soil sample locations and analysis are presented in **Figure 4, 8** to **11 and 14** provided in **Appendix A** and within the below **Table 5-1**.

Table 5-1 Summary of Soil Samples Submitted for Laboratory Analysis

Borehole / Monitoring Well ID	Associated APEC	Sample Depth (mbgs)	Laboratory Analysis
MW23-01	APEC 5	1.52 - 1.83	PHCs fractions F1-F4, VOCs, metals and hydride-forming metals, EC, SAR, pH
MW23-02	APEC 1, APEC 2, APEC 3, APEC 4	3.96 - 4.57	PHCs fractions F1-F4, VOCs, metals and hydride-forming metals, EC, SAR, pH
MW23-03	APEC 4, APEC 6, APEC 8, APEC 10	4.57 - 5.18	PHCs fractions F1-F4, VOCs, metals and hydride-forming metals, EC, SAR, pH
MW23-04	NA	1.52 - 1.83	PHCs fractions F1-F4, VOCs, metals and hydride-forming metals, EC, SAR, pH

Borehole / Monitoring Well ID	Associated APEC	Sample Depth (mbgs)	Laboratory Analysis
TP23-01	APEC 5	0.46 - 0.76	PHCs fractions F1-F4, BTEX, PAHs, metals and hydride-forming metals, EC, SAR, pH
TP23-02	APEC 5	0.15 - 0.46	PHCs fractions F1-F4, BTEX, PAHs, metals and hydride-forming metals, EC, SAR, pH
TP23-03	APEC 5	0.55 - 0.85	PHCs fractions F1-F4, BTEX, PAHs, metals and hydride-forming metals, EC, SAR, pH

Notes:
APEC - Area of Potential Environmental Concern
mbgs - metres below ground surface
PHCs fractions F1-F4 - Petroleum Hydrocarbons Fractions F1 to F4
BTEX - Benzene, toluene, ethylbenzene and xylenes
VOCs - Volatile Organic Compounds
PAHs - Polycyclic Aromatic Hydrocarbons
EC - Electrical Conductivity
SAR - Sodium Absorption Ratio
NA - Not Applicable

5.4 Field Screening Measurements

A portion of each collected soil sample was placed in a polyethylene bag and allowed to equilibrate in a warm environment for approximately 15 minutes prior to being tested for undifferentiated CVCs and VOC concentrations. CVC and VOC headspace concentrations of soil samples were measured using an RKI Eagle 2™ portable vapour meter. The RKI Eagle 2™ was equipped with a catalytic combustible gas detector (CCGD) and a PID.

The CCGD was operated in methane elimination mode, and the vapour meters were all calibrated by Pine Environmental prior to shipment for use in the field by Englobe. The CVC measurements expressed as ppm are summarized on the individual borehole logs presented in **Appendix B**.

5.5 Groundwater: Monitoring Well Installation

Monitoring wells were installed at all five (5) borehole locations (MW23-01 through MW23-05) using continuous flight hollow stem augers. The monitoring wells were installed to measure the groundwater level and for the collection of representative groundwater samples.

The monitoring wells were constructed using flush-threaded, 51 mm diameter Trilock polyvinyl chloride (PVC) riser pipe and a #10 slotted PVC well screen, approximately 3.0 m in length, equipped with rubber O-ring seals to prevent leakage. The monitoring well piping was delivered to the Site pre-cleaned and enclosed in a sealed plastic bag. The monitoring well screens were placed in an attempt to intersect the water table to allow for groundwater level monitoring and appropriate groundwater quality assessment. Sand filter pack material was added within the annulus space surrounding the screened section of the well from approximately 0.3 m below and above the top of the screen. A bentonite seal was placed above the sand pack to 0.3 mbgs to prevent the infiltration of surface water. A locking J-Plug cap was placed at the top of each well pipe, followed by a monument style protective casing (MW23-01 through MW23-03) or flushmount protective casing (MW23-04 and MW23-05), which was cemented into place. The monitoring wells were installed and registered in accordance with O. Reg. 903 – Wells, made under the Ontario Water Resources Act.

Following monitoring well installation activities, groundwater levels were measured on September 21, 2023, and the wells were equipped with dedicated Waterra™ tubing and inertial lift foot valves for well development purpose. Four (4) monitoring wells (MW23-01 and MW23-03 through MW23-05) contained groundwater and were purged a minimum of five casing volumes or to a dry condition to remove any groundwater impacted by drilling activities and to reduce the amount of sediment within the wells. Due to dry conditions at MW23-02, the well was not developed.

The groundwater monitoring well installation details were documented by field staff and are summarized in the borehole logs provided in **Appendix B** and **Table 201** provided in **Appendix C**.

5.6 Field Measurement of Groundwater Quality Parameters

Field measurements of water quality parameters were recorded during groundwater sampling, which was conducted using a low flow method. Low flow sampling was undertaken by means of a peristaltic pump and flow cell – multi-sensor water quality meter setup. Field parameter measurements were recorded by means of the flow cell and a Horiba U-50 multi-sensor water quality meter. Field parameter measurements were recorded at 3 minute intervals during monitoring, until stabilization of the measured field parameters within purged groundwater was achieved. The purged water is considered stabilized and representative of formation water as evidenced by three consecutive readings agreeing to within set limits for individual parameters. The applied stabilization criteria are summarized in **Table 5-2** as follows:

Table 5-2 Groundwater Quality Parameter Monitoring

Parameter	Stabilization Criteria*
Dissolved Oxygen (mg/L)	+/- 10% or 0.2 mg/L (whichever is greater)
Electrical Conductivity (mS/cm)	+/- 3%
pH	+/- 0.1 units

Notes:
* Average of three consecutive readings
mg/L – milligrams per litre
mS/cm – milliSiemens per centimetre

5.7 Groundwater Sampling

Groundwater levels and potential non-aqueous phase liquid (NAPL) thicknesses, if any, were measured at all monitoring well locations using a Solinst™ electronic interface probe and meter. Between monitoring well locations, the interface probe was washed with a non-phosphate detergent/municipal water mixture and then rinsed with distilled water to prevent cross-contamination. No measurable NAPL layer thicknesses were detected in the monitoring wells. Groundwater elevations for September 21, 2023 are summarized in **Table 201** of **Appendix C** and shown on the Interpreted Contours of Groundwater Elevation Plan, **Drawing 5** in **Appendix A**.

Following well development, two (2) monitoring wells (MW23-01 and MW23-03) were sampled on September 29, 2023. MW23-02 was not sampled due to dry conditions. Groundwater at the two (2) monitoring wells was sampled by means of the low flow method using a peristatic pump connected by dedicated low density polyethylene (LDPE) tubing to a flow cell, and a Horiba U-50 multi-sensor water

quality meter to monitor water quality parameter stabilization. Drawdown was monitored by a Solinst™ interface meter. Prior to sampling, the flowrate of the peristaltic pump was set to approximately 200 millilitres per minute (mL/min) and the pumping rate of the peristaltic pump was adjusted accordingly and checked to maintain a drawdown of less than 10 centimetres (cm). The maximum allowable pumping rate was not to exceed 500 mL/min.

Upon achieving water quality parameter stabilization, as outlined in **Section 4.5**, the pump discharge line was disconnected from the flow cell to permit the collection of groundwater samples. Samples were collected into labelled, pre-cleaned laboratory containers provided with any necessary preservatives. Samples for analysis of volatile chemical constituents (PHC fraction F1 and VOCs) were collected in duplicate into Teflon lined screw capped vials. The vials were filled to prevent head space formation and the potential degassing of volatile chemical constituents. Each vial was inverted and inspected for the presence of gas bubbles and sampling repeating as necessary to ensure headspace free samples. Upon sample collection, the chemical containers were placed in an ice chilled, insulated cooler to minimize chemical degradation and volatilization and submitted to the analytical laboratory following Chain of Custody protocols. Samples were collected and handled at each location using new disposable chemical resistant nitrile gloves.

Groundwater sample locations and analysis are presented in **Figure 4** and **17** to **19** provided in **Appendix A** and within the below Error! Reference source not found.

Table 5-3 Summary of Groundwater Samples Submitted for Laboratory Analysis

Monitoring Well ID	Associated APEC	Screened Interval (mbgs)	Laboratory Analysis
MW-23-01	APEC 5	4.57 - 7.62	PHCs fractions F1-F4, VOCs, metals
MW-23-03	APEC 1, APEC 2, APEC 3, APEC 4	3.81 - 6.86	PHCs fractions F1-F4, VOCs, metals

Notes:
APEC - Area of Potential Environmental Concern
mbgs - metres below ground surface
PHCs fractions F1-F4 - Petroleum Hydrocarbons Fractions F1 to F4
BTEX - Benzene, toluene, ethylbenzene and xylenes
VOCs - Volatile Organic Compounds
PAHs - Polycyclic Aromatic Hydrocarbons
EC - Electrical Conductivity
SAR - Sodium Absorption Ratio

5.8 Analytical Testing

All soil and groundwater samples collected from the Site for chemical analysis were submitted to ALS Environmental (ALS) of Waterloo, Ontario. ALS is a Canadian Association for Laboratory Accreditation Inc. (CALA) certified and SCC (Standards Council of Canada) accredited laboratory. As noted, the jarred samples were preserved in ice chilled coolers to minimize the potential chemical degradation and volatilization and submitted within test group specific holding times following chain of custody protocols. Soil and groundwater samples submitted for chemical analysis were selected to assess COPCs as identified in the Englobe Phase One ESA, as well as on the basis of field screening headspace

measurements, visual or olfactory evidence of potential contamination, and at locations where contaminants are expected to be present (e.g., fill materials, near the water table, etc.).

5.9 Elevation Surveying

Horizontal and vertical control of the investigative locations were established by Englobe using a Geneq™ Model SXBlue Global Navigation Satellite System (GNSS) rover. The ground surface elevations at each investigative location are shown on the borehole logs included in **Appendix B**, the monitoring well locations are summarized in **Table 201** provided in **Appendix C** and **Figure 5** provided in **Appendix A**.

5.10 Residue Management

Excess soil cuttings, wash water, and purged groundwater generated as part of this Phase Two ESA were contained in labeled 205 litre (L) steel drums equipped with locking secure lids.

5.11 Quality Assurance and Quality Control Measures

Quality assurance/quality control (QA/QC) measures were incorporated into the field sampling and laboratory analytical programs to provide for the provision of data of accepted accuracy, precision, and representativeness. Related measures consisted of equipment decontamination protocols, equipment calibration, sample collection and handling protocols, field documentation, residuals management, and contractor provision.

Borehole drilling and monitoring well installations were undertaken by an MECP licensed well drilling contractor and overseen by experienced Englobe field personnel. The drilling and monitoring installation were undertaken using accepted equipment, methodologies and materials as documented by field personnel.

Decontamination procedures were followed during the course of soil and groundwater sampling as follows:

- All drilling and monitoring equipment having potential to come into contact with potentially contaminated soil and groundwater was decontaminated prior to and following each use. Decontamination consisted of washing equipment with a non-phosphate soap/water mixture followed by rinsing with distilled water;
- Prior to installation, well screens and riser pipes were not allowed to come into contact with the ground or any drilling equipment;
- All individual soil and groundwater samples and containers were handled with disposable chemical resistant nitrile gloves to minimize the potential for cross-contamination;
- Soil and groundwater samples were collected into pre-cleaned laboratory supplied containers;
- Specific procedures were followed for the documentation, handling, and transport of the soil and groundwater samples including:
  - Soil and groundwater samples, upon collection, were placed in ice-chilled coolers to minimize the potential for chemical degradation and volatilization; and,

— Soil and groundwater samples were assigned unique identification numbers and submitted to the analytical laboratory following chain of custody protocols adhering to test group specific holding times.

Field duplicate soil and groundwater samples were collected to evaluate the precision/reproducibility of the sampling programs. A groundwater trip blank was collected to ensures primary samples were not contaminated during sampling and transport.

The analytical laboratory, ALS, performed chemical analysis following written procedures and referenced methods incorporating QA/QC protocols. Chemical analyses for specific analytical test groups were performed in accordance with the "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act"* MECP 2011.

Analytical test group specific quality control samples were prepared and analyzed by the analytical laboratory including:

— Laboratory duplicate samples to evaluate method reproducibility and sample homogeneity;

— Method blanks to evaluate potential bias;

— Spike blanks to evaluate method accuracy and bias;

— Surrogate compounds to evaluate extraction efficiency and method reproducibility;

— Laboratory control samples to evaluate analyte recovery and method reproducibility;

— Matrix spikes to evaluate extraction efficiency and matrix interferences; and

— Quality control results reported by the analytical laboratory were compared to applicable alert and control criteria and were presented in the quality control reports accompanying the certificates of analysis (COAs).

Copies of the laboratory chain of custody forms are included with the COAs provided in Appendix D.

6 Review and Evaulation

6.1 Stratigraphy

The Site stratigraphy encountered at the borehole locations, in general, consisted of surficial asphalt or topsoil, underlain by either silt, sand and gravel fill or native silt, sand and gravel, underlain by predominantly native silt to sandy silt. Bedrock was not encountered in any of the boreholes. No deleterious materials were encountered at any of the boreholes advanced across the Site.

A summary of the soil stratigraphy encountered during the subsurface assessments and the corresponding depths and elevations are summarized in the borehole stratigraphic logs provided in **Appendix B**.

6.2 Groundwater Elevations

Groundwater levels and potential NAPL levels were measured at each monitoring well location by utilizing a Solinst™ interface meter. No evidence of NAPL was detected on the surface of the water table, or at the bottom of the monitoring wells during the groundwater level measurement dates.

Groundwater measurements at the monitoring well locations on Site were recorded on September 22, 2023, as summarized in **Table 201** of **Appendix C,** shown on borehole logs provided in **Appendix B** and shown on **Figure 5**, provided in **Appendix A**. The groundwater table was encountered within the native silt layers. Based on the groundwater measurements at the monitoring well locations, the groundwater table is located between approximately 4.62 mbgs to 6.66 mbgs (326.83 masl to 327.466 masl).

6.3 Groundwater Hydraulic Gradients

Englobe field personnel collected groundwater level measurements from the installed monitoring wells prior to groundwater sampling activities on September 22, 2023. Groundwater elevation data is provided in **Table 201** of **Appendix C**.

The data indicates that groundwater flows in a southwest direction towards the Speed River.

Hydraulic gradient is the slope of the water table (change in water level per unit of distance) which describes the driving force that causes groundwater to move in the direction of flow. The hydraulic gradient was calculated between monitoring wells MW23-03 and MW23-05, which are located in line with the inferred direction of groundwater flow, using the following equation.

$$i = \frac{h_1 - h_2}{l}$$

Where,

i = Hydraulic Gradient

h_1 = Groundwater elevation at MW23-03

h_2 = Groundwater elevation at MW23-05

l = Distance between MW23-03 and MW23-05

The horizontal hydraulic gradient between MW23-03 and MW23-05 was calculated to be approximately 0.0104 m/m (horizontal to vertical).

6.4 Soil Field Screening Results

All soil samples were field screened for CVCs and TOVs using a RKI Instruments Eagle 2 multi-sensor gas meter equipped with a combustible gas detector and a PID with a 10.6 electron volt (eV) ultraviolet lamp. In general, the headspace readings of all soil samples were measured between 0 to 150 ppm, which is indicative of non-detectable or low concentrations of volatiles in the recovered soil samples. Field observations revealed no evidence of staining or odour.

Vapour readings are shown on the borehole logs presented in **Appendix B**.

6.5 Soil Quality

Analytical data for the soil samples collected from the Site for laboratory chemical analysis including PHCs fraction F1-F4, metals and hydride-forming metals, VOCs, and PAHs are presented in **Table 101** to **104,** respectively, which are provided in **Appendix C.** Copies of the laboratory Certificate of Analyses are provided in **Appendix D**.

Based on a review of the analytical data reported for the soil samples submitted for laboratory analysis, detected concentrations and reportable detection limits (RDLs) of the assessed parameters were all below their respective MECP Table 2 SCS excluding EC and SAR.

Road salt and/or de-icing substances have been applied to the surface of the driveways / parking areas of the Site and the roadways surrounding the Site for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, thus, it is the Qualified Person's (QP's) opinion that the EC and SAR

concentrations in soil are deemed not to exceed the MECP Table 2 SCS in accordance with s 49.1 of O. Reg. 153/04 (as amended).

Soil sample locations meeting and exceeding the MECP Table 2 SCS with corresponding analytical data are presented in **Figure 8** to **11 and 14**, which are provided in **Appendix A**.

6.6 Groundwater Quality

Analytical data for the groundwater samples collected from the Site for laboratory chemical analysis PHCs fraction F1-F4 and BTEX, metals and inorganics, and VOCs are presented in **Tables 202** to **204**, respectively, provided in **Appendix C.** Copies of the laboratory Certificate of Analyses are provided in **Appendix D**.

Based on a review of the analytical data reported for the groundwater samples collected and submitted for laboratory analysis at MW23-01 and MW23-03, detected concentrations and RDLs of the assessed parameters were all below their respective MECP Table 2 SCS. Groundwater sample locations meeting the MECP Table 2 SCS are present in **Figure 17** to **19**, which are provided in **Appendix A**.

6.7 Quality Assurance and Quality Control Results

Soil and groundwater sampling undertaken during field activities followed written procedures to ensure sample integrity and the collection of reliable data to support the objectives of the Phase Two ESA. Soil and groundwater samples were collected into pre-cleaned test group specific containers prepared with any necessary preservatives by the analytical laboratory. Sample integrity was maintained by placing containerized samples immediately upon collection into ice-chilled insulated coolers to minimize chemical activity and delivery to the laboratory within test group specific holding times. Decontamination protocols were followed and new disposable sampling equipment (i.e. gloves, sample tubing, etc.) used to minimize the potential for sample cross contamination and bias.

Laboratory certificate of analysis reports have been received for all soil and groundwater samples analyzed as part of this assessment. Copies of the complete laboratory certificates of analysis are presented in **Appendix D**. According to the laboratory, the certificate of analysis reports comply with subsection 47 (3) of O.Reg. 153/04.

As noted, QA/QC samples were collected during the field sampling programs for laboratory analysis to evaluate the reliability of the analytical data and the interpretations made from the data. Field duplicate samples were submitted to the accredited laboratory for chemical analysis as part of the QA/QC program. A summary of the field duplicates is provided in **Table 6-1** below.

Table 6-1 Summary of QA/QC Program

Sample Location	Parent Sample ID	Duplicate Sample ID	Media	Analysis Performed
MW23-01	MW23-01 SA3	DUP23-01	Soil	PHCs fraction F1-F4, BTEX, VOCs, metals and hydride-forming metals, pH, EC, SAR
TP23-01	TP23-01 SA1	DUP23-02	Soil	PAHs

Sample Location	Parent Sample ID	Duplicate Sample ID	Media	Analysis Performed
MW23-03	MW23-03	DUP23-01	Groundwater	PHC fraction F1-F4, BTEX, VOCs, metals and inorganics

Notes:
PHCs fraction F1-F4 – Petroleum Hydrocarbons Fractions F1 to F4
BTEX – Benzene, toluene, ethylbenzene and xylenes
VOCs – Volatile Organic Compounds
PAHs – Polycyclic Aromatic Hydrocarbons
EC – Electrical Conductivity
SAR – Sodium Absorption Ratio

A quantitative evaluation of the duplicate sample results was completed by calculating the relative percent difference (RPD) and comparing the results to applicable alert criteria. The calculation of RPDs is only valid if an analyte is detected in both samples and in one of the samples at a concentration at least five times the RDL. Alert criteria is matrix and test group specific. For parameters analyzed in the soil duplicate samples, owing to matrix heterogeneity, an alert criterion of 60% was applied. For the groundwater samples an alert criterion of 40% was applied.

Soil

— For PHCs fraction F1-F4, BTEX, VOCs and PAHs in soil, the RPD values between the primary and field duplicate soil samples could not be calculated as the results were below their respective RDLs;

— For metals and hydride forming metals in soil, the RPD values between the primary and field duplicate soil samples, where calculable, were between 1.0% and 38%. All RPD values were below the applicable alert criterion limit of 60%, could not be calculated as one of the results were below their respective RDLs or both results were less than five times the RDL.

Groundwater

— For PHCs fraction F1-F4, BTEX, and VOCs in groundwater, the RPD values between the primary and field duplicate groundwater samples could not be calculated as the results were below their respective RDLs;

— For metals in groundwater, the RPD values between the primary and field duplicate groundwater samples, where calculable, were between 0.0% and 16%, all within the applied alert criteria of 40%. Non-calculable RPD values has at least one result below their respective RDL.

The analytical certificates prepared by the analytical laboratory, included reports presenting and comparing QC analytical results to applicable alert and control criteria. Overall, the quality of the analytical data was deemed acceptable to meet the objectives of the Phase Two ESA and did not affect decision making related to the findings of the investigation.

7 Conclusions & Recommendations

7.1 Conclusions

The Site stratigraphy encountered at the borehole locations, in general, consisted of surficial asphalt or topsoil, underlain by either silt, sand and gravel fill or native silt, sand and gravel, underlain by predominantly native silt to sandy silt. Bedrock was not encountered in any of the boreholes. No deleterious materials were encountered at any of the boreholes advanced across the Site.

Analytical results reported for soil and groundwater were compared to the MECP's Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, Residential/Parkland/Institutional RPI Property Use, Fine-Textured Soils (hereinafter referred to as "MECP Table 2 SCS") were identified as the applicable standards for evaluating soil and groundwater quality data. Soil analytical results were compared to MECP Table 2 SCS for RPI Property Use and Fine-Textured Soils. Groundwater analytical results were compared to the MECP Table 2 SCS for All Types of Property Use, Fine-Textured Soils.

Based on a review of the analytical data reported for the soil samples submitted for laboratory analysis, detected concentrations and reportable detection limits (RDLs) of the assessed parameters were all below their respective MECP Table 2 SCS excluding electric conductivity and sodium adsorption ratio.

Road salt and/or de-icing substances have been applied to the surface of the driveways / parking areas of the Site and the roadways surrounding the Site for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, thus, it is the Qualified Person's (QP's) opinion that the EC and SAR concentrations in soil are deemed not to exceed the MECP Table 2 SCS in accordance with s 49.1 of O. Reg. 153/04 (as amended).

Detected concentrations and RDLs of the analyzed parameters were all below their respective MECP Table 2 SCS in each of the submitted groundwater samples at MW23-01 and MW23-03.

7.2 Recommendations

Based on the results, no additional subsurface investigation is recommended at this time prior to the filing of a Record of Site Condition.

Englobe recommends that the groundwater monitoring wells installed on the Site by Englobe be maintained until such time that they are no longer needed, at which time it is recommended that the wells be decommissioned, in accordance with requirements defined by Ontario Regulation 903, as amended.

8 References

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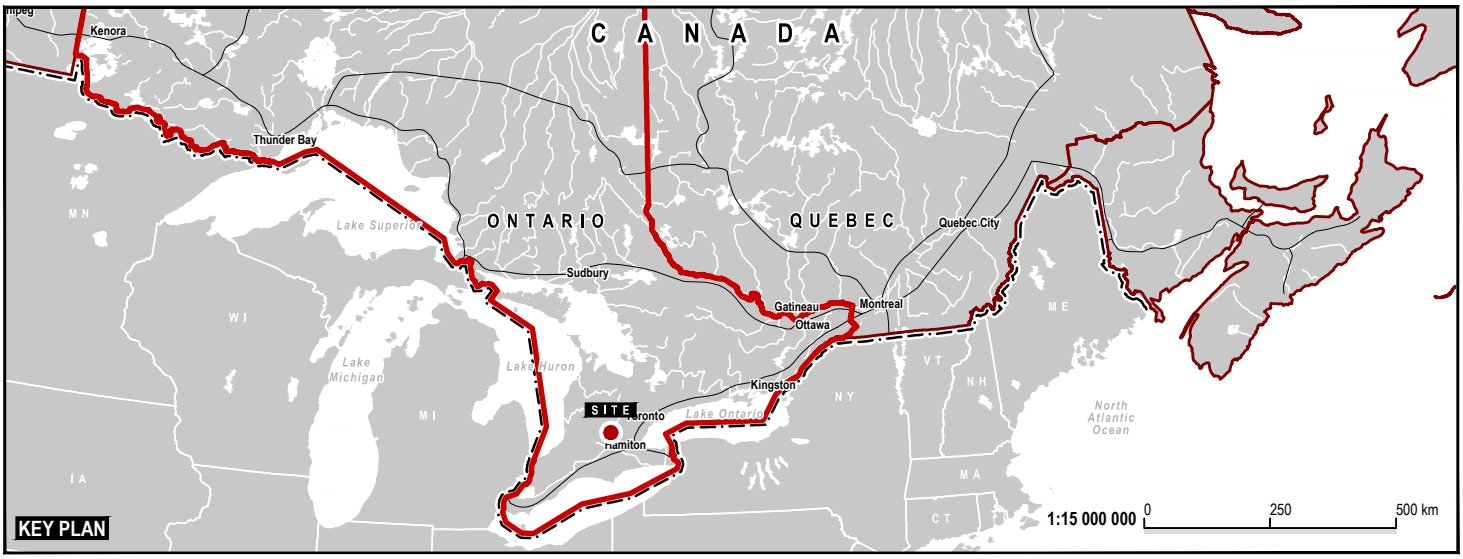
Ontario Regulation 154/04, Records of Site Condition – Part XV.1 of the Act (as amended).

Ontario Regulation 558/00: General – Waste Management (as amended)

Provincial Parks and Conservation Reserves Act, 2006, SO 2006, c 12. (Provincial Parks and Conservation Reserves Act, 2006)

Appendix A
Drawings

ENGLOBE



Note

1. This drawing shall be read in conjunction with the associated technical report.

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

ENGLOBE

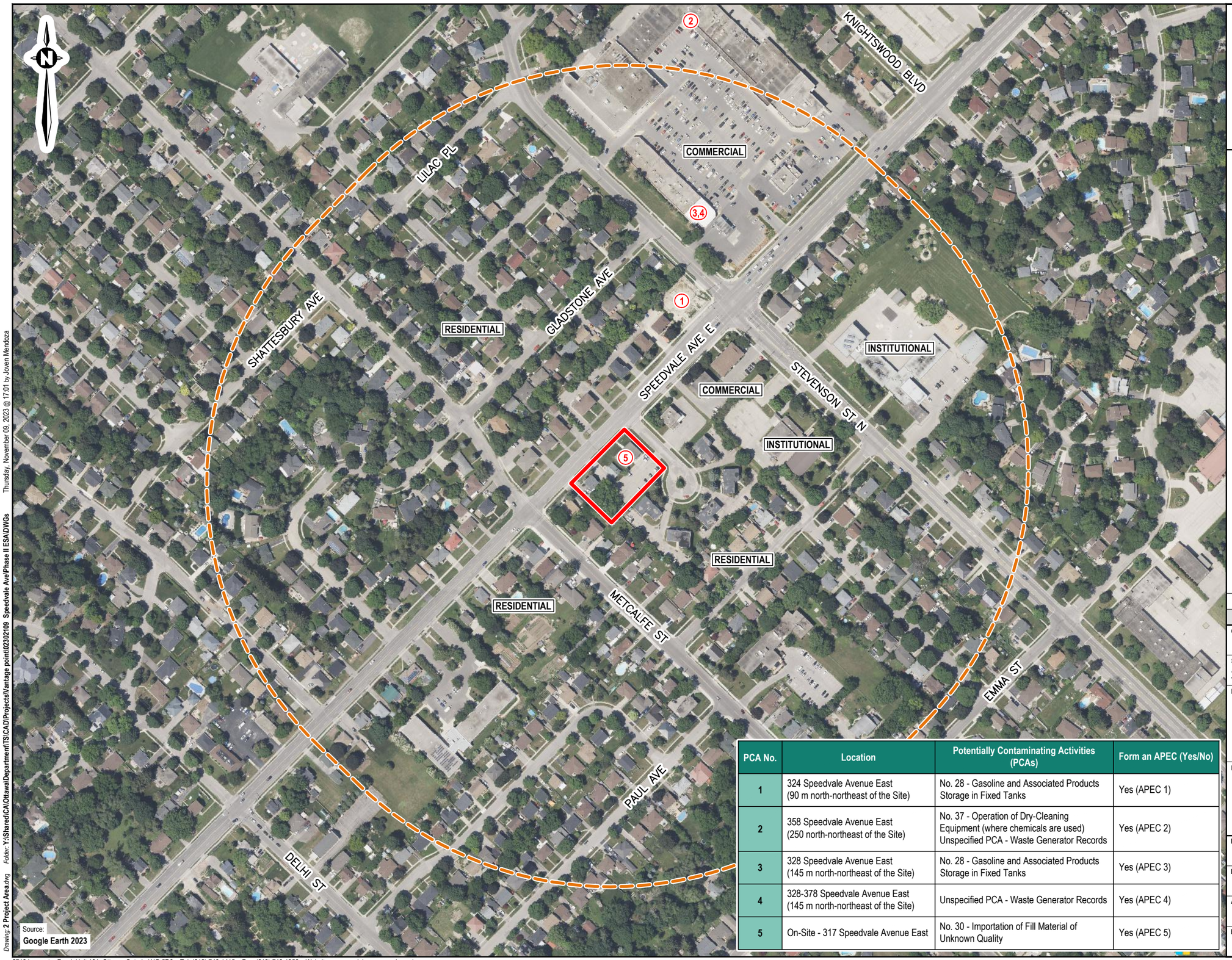
Report Title: Phase Two Environmental Site Assessment

Drawing Title: Site Location Map

Designed By: JG	Date: November 2023
Drawn By: JM	Project No.: 02302109.001
Approved By: KB	Figure No.: 1
Scale: As Shown	

Drawing: 1 Site Location.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada



PCA No.	Location	Potentially Contaminating Activities (PCAs)	Form an APEC (Yes/No)
1	324 Speedvale Avenue East (90 m north-northeast of the Site)	No. 28 - Gasoline and Associated Products Storage in Fixed Tanks	Yes (APEC 1)
2	358 Speedvale Avenue East (250 north-northeast of the Site)	No. 37 - Operation of Dry-Cleaning Equipment (where chemicals are used) Unspecified PCA - Waste Generator Records	Yes (APEC 2)
3	328 Speedvale Avenue East (145 m north-northeast of the Site)	No. 28 - Gasoline and Associated Products Storage in Fixed Tanks	Yes (APEC 3)
4	328-378 Speedvale Avenue East (145 m north-northeast of the Site)	Unspecified PCA - Waste Generator Records	Yes (APEC 4)
5	On-Site - 317 Speedvale Avenue East	No. 30 - Importation of Fill Material of Unknown Quality	Yes (APEC 5)

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- 300 m Study Area
- (1) Potentially Contaminating Activities (PCAs)

1:3 000

0 50 100 150 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Phase One Conceptual Site Model

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No.
2

Drawing: 2 Project Area.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

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APEC No.	Potentially Contaminating Activities (PCAs)	Contaminants of Potential Concern	Media Potentially Impacted
1	No. 28 - Gasoline and Associated Products Storage in Fixed Tanks	PHCs, BTEX, Metals and Inorganics	Soil and Groundwater
2	No. 37 - Operation of Dry-Cleaning Equipment (where chemicals are used) Unspecified PCA - Waste Generator Records	VOCs	Soil and Groundwater
3	No. 28 - Gasoline and Associated Products Storage in Fixed Tanks	PHCs, BTEX, Metals and Inorganics	Soil and Groundwater
4	Unspecified PCA - Waste Generator Records	VOCs	Soil and Groundwater
5	No. 30 - Importation of Fill Material of Unknown Quality	Metals and Hydride-Forming Metals, PHCs, BTEX	Soil

SPEEDVALE AVE E

METCALFE ST

Source:
Google Earth 2023

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- APECs 1 to 4
- APEC 5
- W — Water Line
- G — Gas Line
- H — Hydro Line
- S — Storm Sewer
- T — Bell Telephone Cable
- BL — Bell Conduit

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Areas of Potential Environmental Concern (APECs)

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No.
3

Drawing: 3 APEC.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

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Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC
	Groundwater	4.57 -7.62	PHCs, VOCs, Metals, As, Sb, Se

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC
	Groundwater	3.81 - 6.86	PHCs, VOCs, Metals, As, Sb, Se

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

GS: 334.23
TP23-01
GS: 334.21
TP23-02
GS: 334.11
TP23-03
GS: 333.38
MW23-02
GS: 334.11
MW23-01
GS: 332.84
MW23-03
GS: 332.49
MW23-04
GS: 331.44
MW23-05
SPEEDVALE AVE E
METCALFE ST
Source:
Google Earth 2023
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Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- APECs 1 to 4
- APEC 5
- Monitoring Well Location
- Test Pit Location
- GS: 334.11 Ground Surface Elevation (masl)
- Cross Section Reference / Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Sampling and Analysis Plan

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No.
4

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ENGLOBE

Note

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Legend

- Approximate Project Limits
- 327.45 Groundwater Elevation (masl) (September 22, 2023)
- 327.45 Groundwater Contour and Elevation (masl)
- Interpreted Groundwater Flow Direction

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Interpreted Contours of Groundwater Elevations

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No.
5

Drawing 5 GW Contour.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:02 by Joven Mendoza

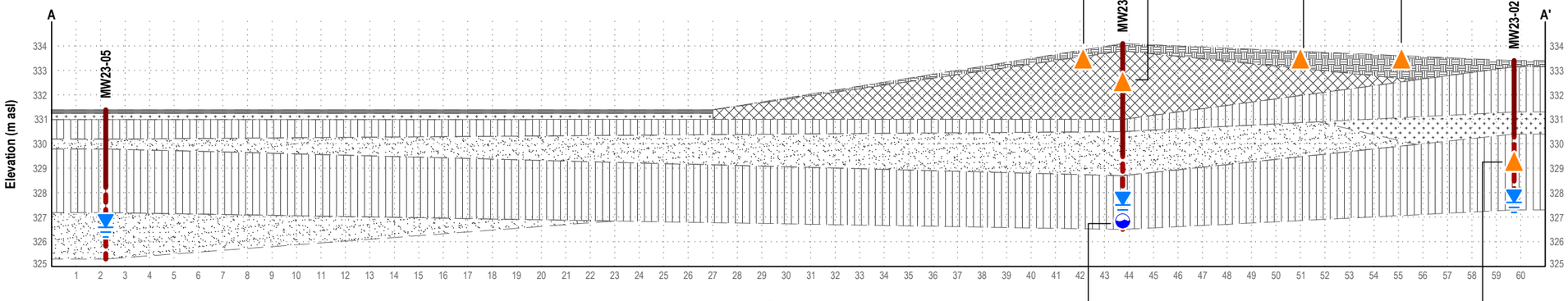
2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC



SECTION A-A'

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	PHCs, VOCs, Metals, As, Sb, Se

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample
- Groundwater Sample
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:200

0 2 4 6 8 10 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

Drawing Title: Cross Section A-A'

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No. 6

Drawing 6-7 Sections A & B.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:02 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

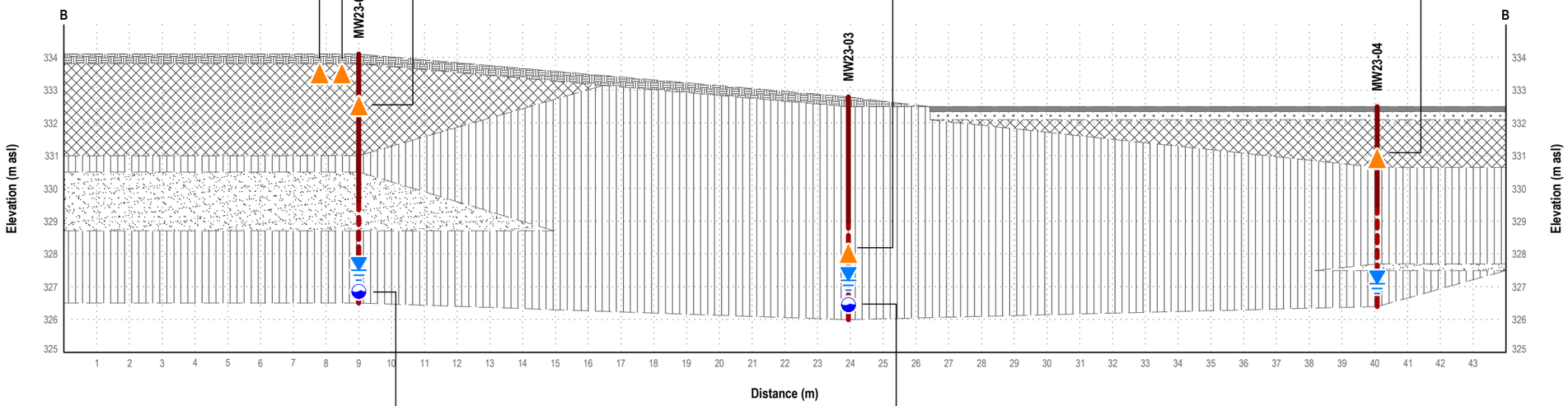
Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	PHCs, BTEX, PAHs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC



SECTION B-B'

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	PHCs, VOCs, Metals, As, Sb, Se

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Groundwater	3.81 - 6.86	PHCs, VOCs, Metals, As, Sb, Se

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample
- Groundwater Sample
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:150

0 2.5 5 7.5 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

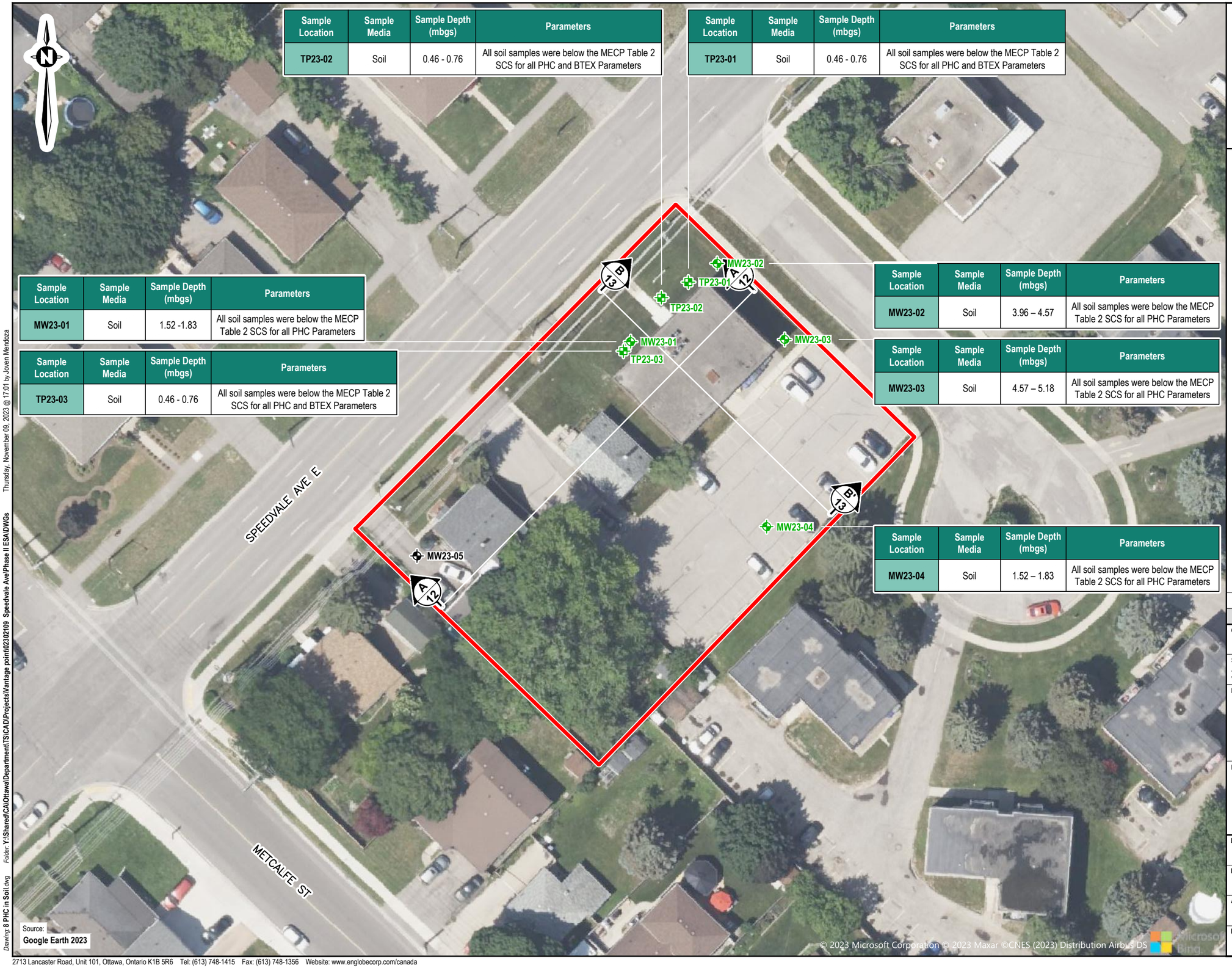
Drawing Title: Cross Section B-B'

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No. 7

Drawing: 6-7 Sections A & B.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:02 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada



Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC and BTEX Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC and BTEX Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	All soil samples were below the MECP Table 2 SCS for all PHC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC and BTEX Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	All soil samples were below the MECP Table 2 SCS for all PHC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	All soil samples were below the MECP Table 2 SCS for all PHC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	All soil samples were below the MECP Table 2 SCS for all PHC Parameters

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Soil Sample Meets Table 2 SCS
- Cross Section Reference (A / 12)
- Cross Section Figure #

1:500

0 5 10 15 20 25 m

1:1 0 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

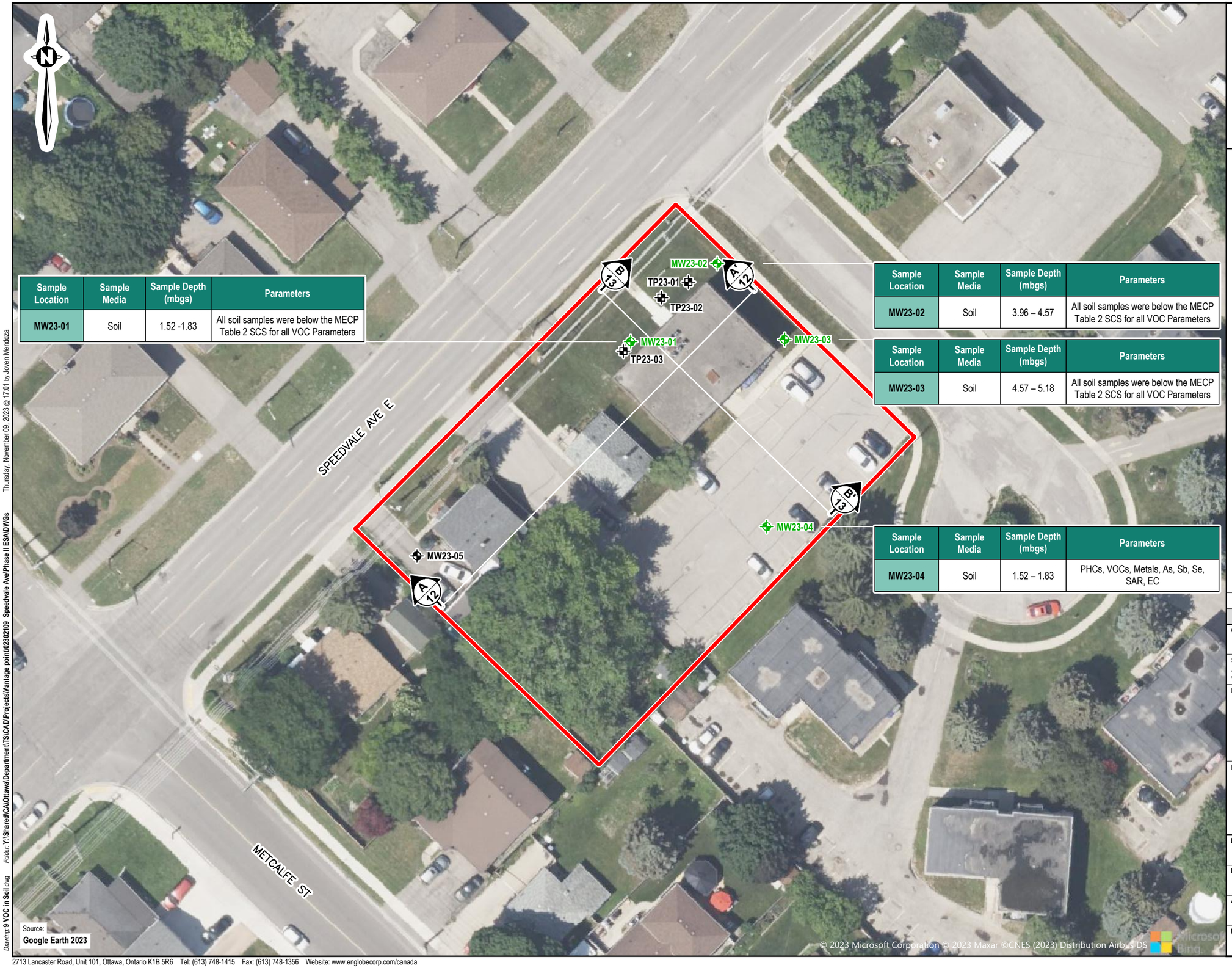
Drawing Title: Petroleum Hydrocarbons (PHCs) and BTEX in Soil Plan View

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No. 8

Drawing: 8 PHC in Soil.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada



Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	All soil samples were below the MECP Table 2 SCS for all VOC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	All soil samples were below the MECP Table 2 SCS for all VOC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	All soil samples were below the MECP Table 2 SCS for all VOC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	PHCs, VOCs, Metals, As, Sb, Se, SAR, EC

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Test Pit Location
- Soil Sample Meets Table 2 SCS
- Cross Section Reference (A / 12)
- Cross Section Figure #

1:500

0 5 10 15 20 25 m

1:1 0 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

Drawing Title: Volatile Organic Compounds (VOCs) in Soil Plan View"

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No. 9

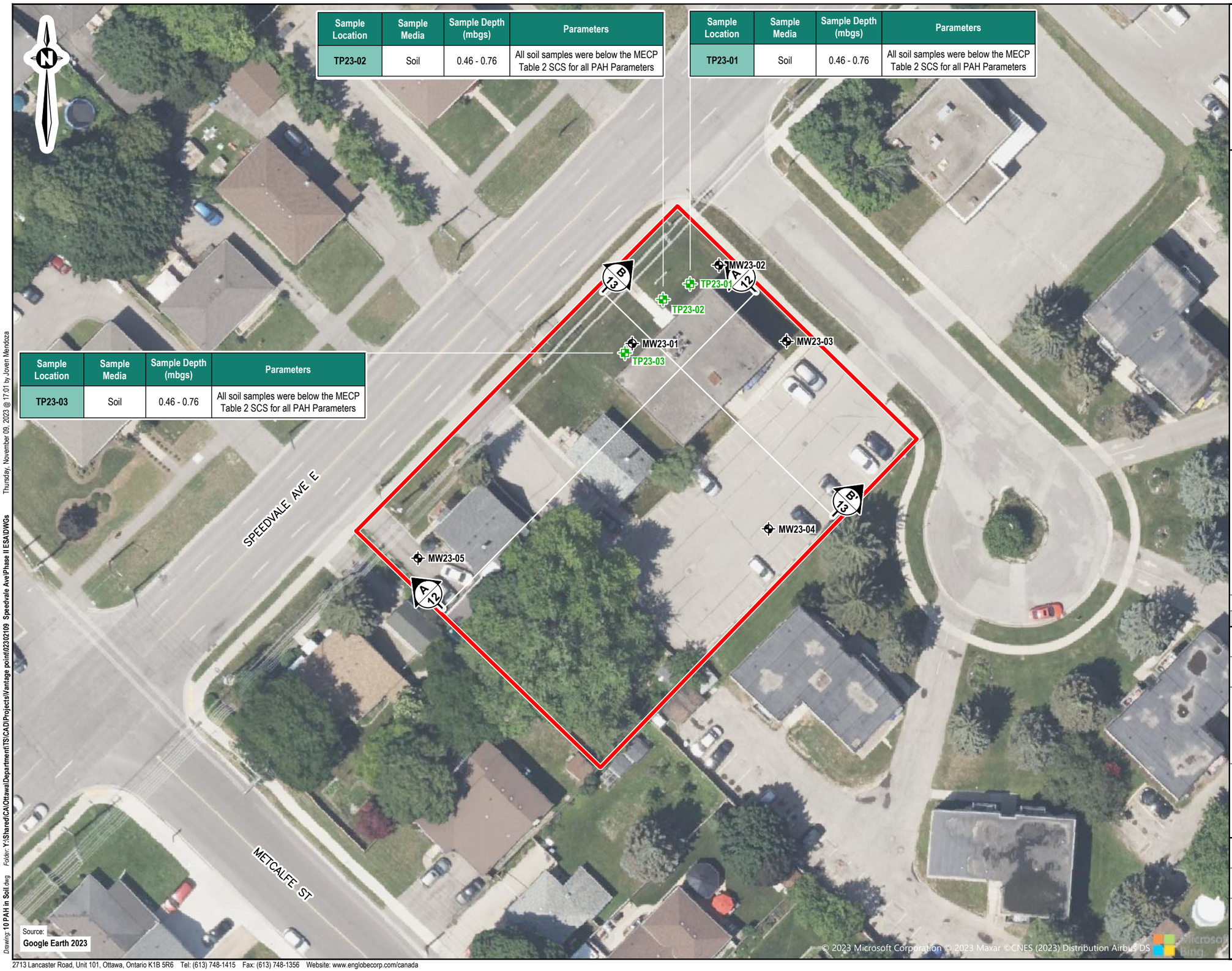
Drawing: 9 VOC in Soil.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PAH Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PAH Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PAH Parameters



Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Soil Sample Meets Table 2 SCS
- Cross Section Reference (A)
- Cross Section Figure # (12)

1:500

0 5 10 15 20 25 m

1:1 0 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

Drawing Title: Polycyclic Aromatic Hydrocarbons (PAHs) in Soil Plan View

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No. 10

Drawing: 10 PAH in Soil.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	All soil samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se, Parameters

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Soil Sample Meets Table 2 SCS
- Cross Section Reference (A / 12)
- Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Metals, As, Sb, Se in Soil
Plan View

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No.
11

Drawing: 11 Metals in Soil.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:08 by Joven Mendoza

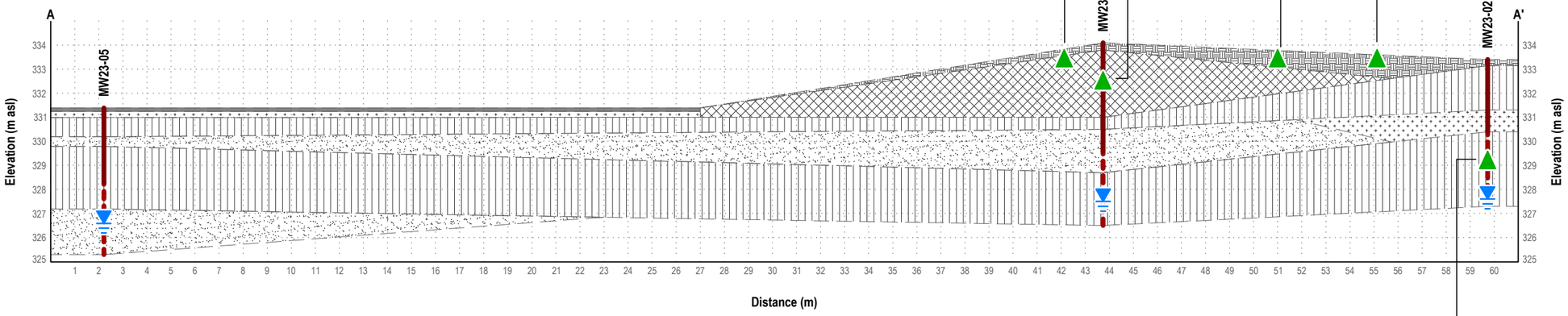
2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-03	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters



SECTION A-A'

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-02	Soil	3.96 – 4.57	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample Meets Table 2 SCS
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:200

0 2 4 6 8 10 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Soil Sample Summary - Cross Section A-A'

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No.
12

Drawing: 12-13 Soil Sections A & B.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

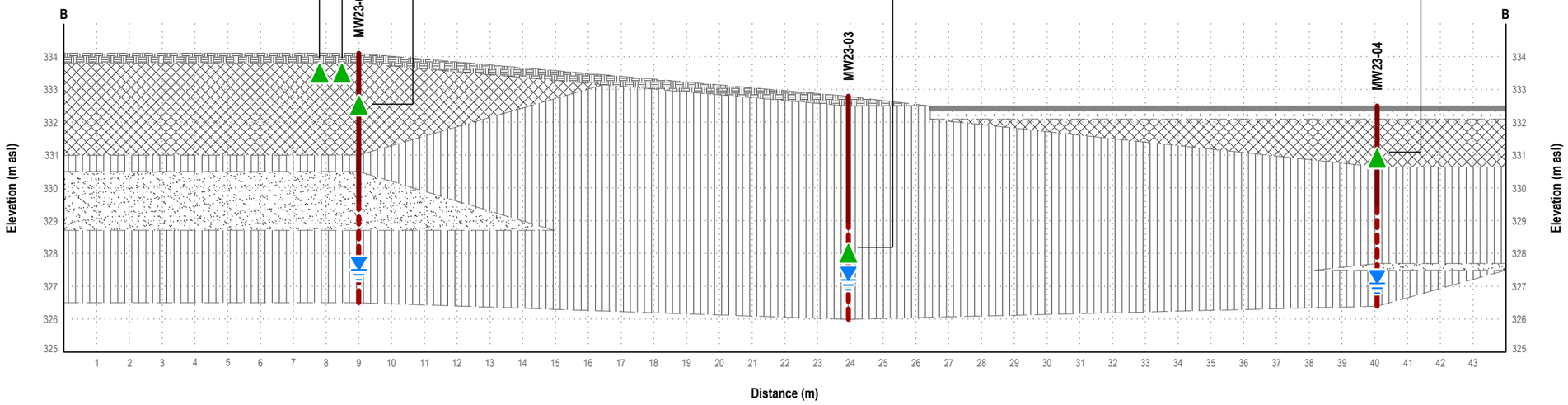
Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-02	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
TP23-01	Soil	0.46 - 0.76	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Soil	1.52 -1.83	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-04	Soil	1.52 – 1.83	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Soil	4.57 – 5.18	All soil samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters



SECTION B-B'

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample Meets Table 2 SCS
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:150

0 2.5 5 7.5 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: **Habitat for Humanity Wellington Dufferin Guelph**

Site: **303, 309 & 317 Speedvale Avenue East, Guelph, ON**

Report Title: **Phase Two Environmental Site Assessment**

Drawing Title: **Soil Sample Summary - Cross Section B-B'**

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No. **13**

Drawing 12-13 Soil Sections A & B.dwg Folder: Y:\Shared\CAD\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

TP23-02		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.235
SAR		0.15

TP23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.110
SAR		0.11

MW23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	1.52 - 1.83	0.195
SAR		0.79

TP23-03		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.134
SAR		0.13

MW23-02		
Parameter	Depth (mbgs)	Result (µg/g)
EC	3.96 – 4.57	0.105
SAR		0.86

MW23-03		
Parameter	Depth (mbgs)	Result (µg/g)
EC	3.96 – 4.57	0.173
SAR		0.17

MW23-04		
Parameter	Depth (mbgs)	Result (µg/g)
EC	1.52 – 1.83	1.49
SAR		11.1

ENGLOBE

Note

1. SAR and/or EC exceeded the MECP Table 2 Standards at the investigative MW23-04. However, the elevated SAR and/or EC are associated with the use of de-icing salt on the parking lot. In accordance with O.Reg. 153/04, the applicable site condition standard is deemed to not be exceeded for the purpose of Part XV.1 of the Act, because the qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both
2. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Soil Sample Meets Table 2 SCS
- Sample is Not Considered to Exceed Site Condition Standards As Per O.Reg. 153/04
- Cross Section Reference
- Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) Plan View

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No.
14

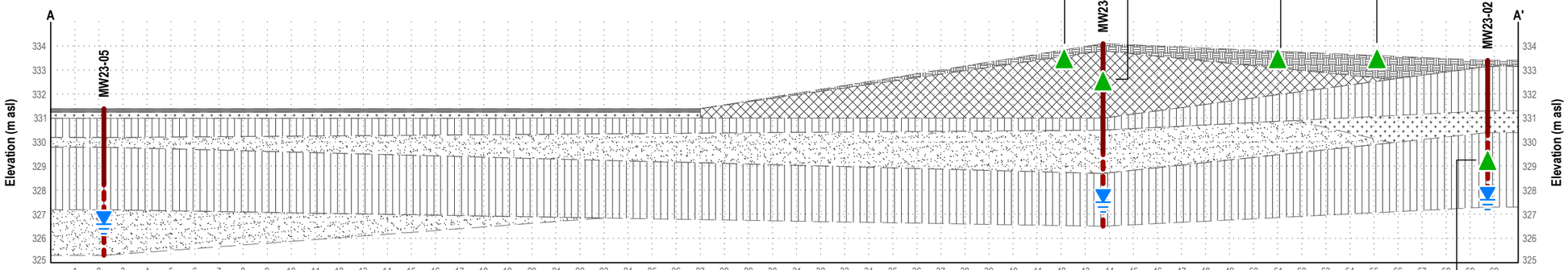
2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

TP23-02		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.235
SAR		0.15

MW23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	1.52 - 1.83	0.195
SAR		0.79

TP23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.110
SAR		0.11

TP23-03		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.134
SAR		0.13



SECTION A-A'

MW23-02		
Parameter	Depth (mbgs)	Result (µg/g)
EC	3.96 – 4.57	0.105
SAR		0.86

ENGLOBE

Note

1. SAR and/or EC exceeded the MECP Table 2 Standards at the investigative MW23-04. However, the elevated SAR and/or EC are associated with the use of de-icing salt on the parking lot. In accordance with O.Reg. 153/04, the applicable site condition standard is deemed to not be exceeded for the purpose of Part XV.1 of the Act, because the qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both
2. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample Meets Table 2 SCS
- Sample is Not Considered to Exceed Site Condition Standards As Per O.Reg. 153/04
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:200

0 2 4 6 8 10 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Soil Sample Summary - Cross Section A-A'

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No.
15

Drawing 15-16 Soil Sections A & B.dwg Folder: Y:\Shared\CA\Ottawa\Department\TS\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs Thursday, November 09, 2023 @ 20:21 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

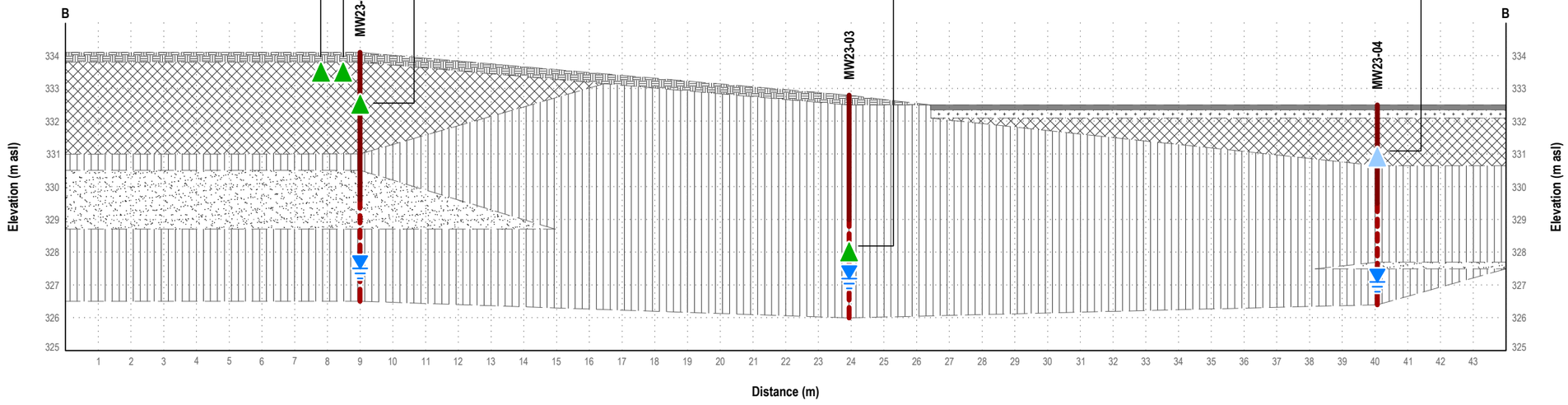
TP23-02		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.235
SAR		0.15

TP23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	0.46 - 0.76	0.110
SAR		0.11

MW23-01		
Parameter	Depth (mbgs)	Result (µg/g)
EC	1.52 - 1.83	0.195
SAR		0.79

MW23-03		
Parameter	Depth (mbgs)	Result (µg/g)
EC	3.96 – 4.57	0.173
SAR		0.17

MW23-04		
Parameter	Depth (mbgs)	Result (µg/g)
EC	1.52 – 1.83	1.49
SAR		11.1



SECTION B-B'

Note

1. SAR and/or EC exceeded the MECP Table 2 Standards at the investigative MW23-04. However, the elevated SAR and/or EC are associated with the use of de-icing salt on the parking lot. In accordance with O.Reg. 153/04, the applicable site condition standard is deemed to not be exceeded for the purpose of Part XV.1 of the Act, because the qualified person has determined, based on a phase one environmental site assessment or a phase two environmental site assessment, that a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both
2. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Soil Sample Meets Table 2 SCS
- Sample is Not Considered to Exceed Site Condition Standards As Per O.Reg. 153/04
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:150

0 2.5 5 7.5 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: **Habitat for Humanity Wellington Dufferin Guelph**

Site: **303, 309 & 317 Speedvale Avenue East, Guelph, ON**

Report Title: **Phase Two Environmental Site Assessment**

Drawing Title: **Soil Sample Summary - Cross Section B-B'**

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No. **16** **DRAFT**

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	All groundwater samples were below the MECP Table 2 SCS for all PHC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Groundwater	3.81 - 6.86	All groundwater samples were below the MECP Table 2 SCS for all PHC Parameters

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Test Pit Location
- Soil Sample Meets Table 2 SCS
- A / 17 — Cross Section Reference / Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Petroleum Hydrocarbon (PHCs) in Groundwater Plan View

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No.
17

Thursday, November 09, 2023 @ 17:02 by Joven Mendoza

Folder: Y:\Shared\CA\Ottawa\Department\TSI\CAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs

Drawing: 17 PHC in Groundwater.dwg

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	All groundwater samples were below the MECP Table 2 SCS for all VOC Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Groundwater	3.81 - 6.86	All groundwater samples were below the MECP Table 2 SCS for all VOC Parameters

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Test Pit Location
- Soil Sample Meets Table 2 SCS
- A / 17 — Cross Section Reference / Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

Drawing Title
Volatile Organic Compounds (VOCs) in Groundwater Plan View

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No. **18**

Folder: Y:\Shared\CA\Ottawa\Department\TSIC\AD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs
Drawing: 18 VOC in Groundwater.dwg
Thursday, November 09, 2023 @ 17:02 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	All groundwater samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Groundwater	3.81 - 6.86	All groundwater samples were below the MECP Table 2 SCS for all Metals, As, Sb, Se Parameters

ENGLOBE

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Approximate Project Limits
- Monitoring Well Location
- Test Pit Location
- Soil Sample Meets Table 2 SCS
- Cross Section Reference (A 17)
- Cross Section Figure #

1:500

0 5 10 15 20 25 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client
Habitat for Humanity Wellington Dufferin Guelph

Site
303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title
Phase Two Environmental Site Assessment

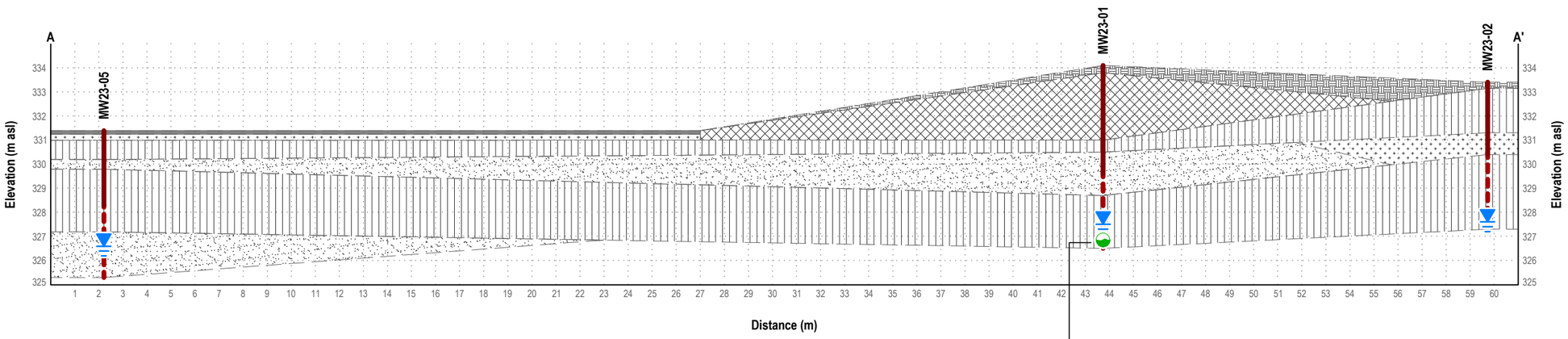
Drawing Title
Metals, As, Sb, Se in Groundwater Plan View

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No.
19

Folder: Y:\Shared\CA\Ottawa\Department\TSICAD\Projects\Vantage point\02302109 Speedvale Ave\Phase II ESA\DWGs
Drawing: 19 Metals in Groundwater.dwg
Thursday, November 09, 2023 @ 17:01 by Joven Mendoza

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada



SECTION A-A'

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	All groundwater samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Groundwater Sample Meets Table 2 SCS
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:200

0 2 4 6 8 10 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: **Habitat for Humanity Wellington Dufferin Guelph**

Site: **303, 309 & 317 Speedvale Avenue East, Guelph, ON**

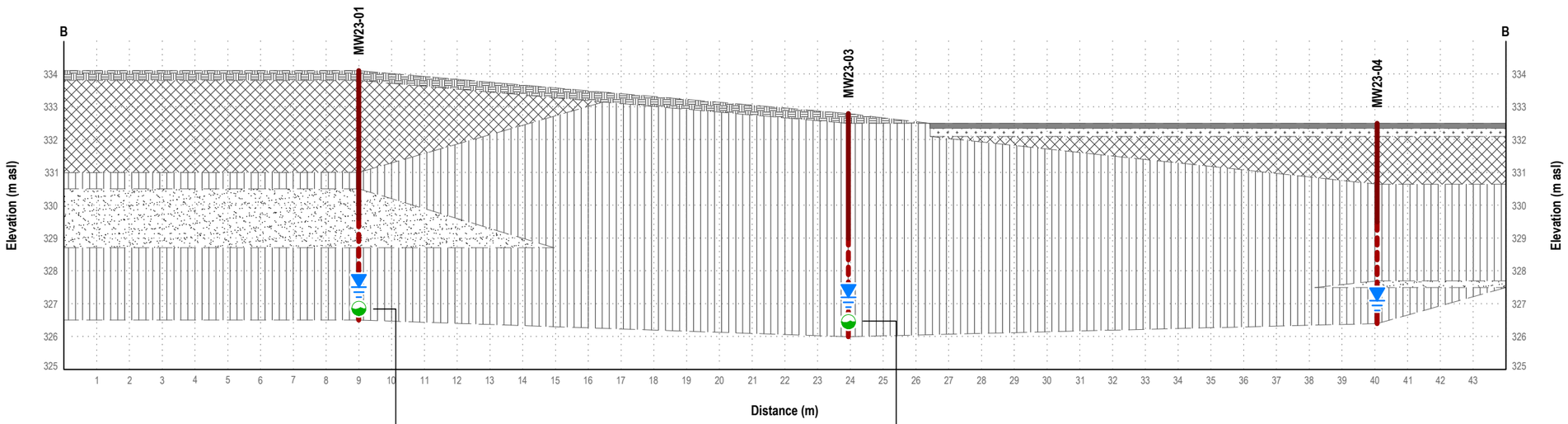
Report Title: **Phase Two Environmental Site Assessment**

Drawing Title: **Groundwater Sample Summary - Cross Section A-A'**

Designed By	Scale
JG	As Shown
Drawn By	**Date**
JM	November 2023
Approved By	**Project No.**
KB	02302109.001

Figure No. **20**

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada



SECTION B-B'

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-01	Groundwater	4.57 -7.62	All groundwater samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Sample Location	Sample Media	Sample Depth (mbgs)	Parameters
MW23-03	Groundwater	3.81 - 6.86	All groundwater samples were below the MECP Table 2 SCS for all PHC, VOC, Metals, As, Sb, Se Parameters

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Monitoring Well
- Monitoring Well Screen
- Groundwater Sample Meets Table 2 SCS
- Groundwater Elevation
- Asphalt
- Top Soil
- Gravel and Sand
- Fill
- Sand / Silty Sand
- Silt / Sandy Silt

1:150

0 2.5 5 7.5 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023/11/10	Preliminary	KB

Client: Habitat for Humanity Wellington Dufferin Guelph

Site: 303, 309 & 317 Speedvale Avenue East, Guelph, ON

Report Title: Phase Two Environmental Site Assessment

Drawing Title: Groundwater Sample Summary - Cross Section B-B'

Designed By	Scale
JG	As Shown
Drawn By	Date
JM	November 2023
Approved By	Project No.
KB	02302109.001

Figure No. 21

2713 Lancaster Road, Unit 101, Ottawa, Ontario K1B 5R6 Tel: (613) 748-1415 Fax: (613) 748-1356 Website: www.englobecorp.com/canada

Appendix B
Borehole Logs

ENGLOBE

LOG OF BOREHOLE MW-23-01

ENGLOBE REF. No.: **02302109.001**
CLIENT: **Habitat for Humanity Wellington Dufferin Guelph**
PROJECT: **Phase Two ESA- 303, 309 and 317 Speedvale Avenue East, Guelph, ON**
LOCATION: **303, 309 and 317 Speedvale Avenue East, Guelph, ON**
SURFACE ELEV.: **334.11 meters above sea level (MASL)**

Drilling Data
METHOD: **Direct Push**
DIAMETER: **150 mm**
DATE: **September 19, 2023**
COORDINATES: **4823820.174** m N, **559842.306** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (W_p W W_l)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	Su (kPa) VANE ✕ PP ✳ SPT (N) □ DCPT ◆ Blows/0.3m	HEX(ppm)	IBL(ppm)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0	334				TOPSOIL: organic, moist, dark brown							
					FILL: Dark brown silt, organics, trace gravel	1				0	0	
1.0	333					2				0	0	
					FILL: Light brown sand, moist							
					FILL: Dark brown silt, trace sand, moist	3				0	0	
2.0	332				FILL: Light brown silt, moist							
						4				0	0	
3.0	331				SILT: light brown, moist	5				0	50	
					SAND: trace silt, moist, grey							
4.0	330					6				0	100	
					SILTY SAND: sand, light brown	7				0	50	
5.0	329				SILT: very moist, light brown							
						8				0	150	
6.0	328				light brown, moist	9				0	50	
					Light brown, very moist							
7.0	327					10				0	0	
8.0	326											

ENGLOBE CORP.
353 BRIDGE STREET EAST
KITCHENER, ON, N2K 2Y5
PH: 1-877-300-4800
FX: 1-888-979-6772
Web: www.englobecorp.com

SAMPLE TYPE LEGEND
- Auger Sample
- Split Spoon Sample
- Tube Sample
- Rock Core
- Core Sample
- Shelby Tube

WELL LEGEND
- Bentonite
- Sand
- Screen

[3] Numbers refers to Sensitivity
PP: Pocket Penetrometer
CHVC: Combustable Headspace Vapor Concentration
NFP: No Further Penetration
m bgs: Meters Below Ground Surface
PHCs-petroleum hdyrocarbon fractions
PAHs-polycyclic aromatic hdyrocarbons
VOCs- Volatile Oragnis

SHEP 02302109.000.GPJ DATA TEMPLATE.GDT 10/13/23

LOG OF BOREHOLE MW-23-02

ENGLOBE REF. No.: **02302109.001**
CLIENT: **Habitat for Humanity Wellington Dufferin Guelph**
PROJECT: **Phase Two ESA- 303, 309 and 317 Speedvale Avenue East, Guelph, ON**
LOCATION: **303, 309 and 317 Speedvale Avenue East, Guelph, ON**
SURFACE ELEV.: **333.38 meters above sea level (MASL)**

Drilling Data
METHOD: **Direct Push**
DIAMETER: **150 mm**
DATE: **September 19, 2023**
COORDINATES: **4823830.912** m N, **559854.175** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (Wp, W, Wl; 20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	Su (kPa) VANE ✕ PP ✳ (40 80 120 160); SPT (N) Blows/0.3m □ DCPT ◆ (20 40 60 80)	HEX(ppm)	IBL(ppm)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0	333				TOPSOIL: crushed rock, moist, dark brown	1				0	0	
					SILT: trace sand, some gravel, dark brown							
1.0	332					2				0	50	
					SILT: gravel layers, very moist, dark brown	3				0	50	
2.0	331				SAND AND GRAVEL: light brown/grey	4				0	0	
3.0	330				SANDY SILT: moist, light brown	5				0	50	
4.0	329				SILT: moist, light brown	6				0	100	
					very moist							
5.0	328					7				0	100	
6.0	327					8				0	100	
7.0	326											
8.0	325											

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SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Tube Sample
- Rock Core
- Core Sample
- Shelby Tube

WELL LEGEND

- Bentonite
- Sand
- Screen

✕3 Numbers refers to Sensitivity
PP: Pocket Penetrometer
CHVC: Combustable Headspace Vapor Concentration
NFP: No Further Penetration
m bgs: Meters Below Ground Surface
PHCs-petroleum hdyrocarbon fractions
PAHs-polycyclic aromatic hdyrocarbons
VOCs- Volatile Oragnis

SHEP 02302109.000.GPJ DATA TEMPLATE.GDT 10/13/23

LOG OF BOREHOLE MW-23-03

ENGLOBE REF. No.: **02302109.001**
CLIENT: **Habitat for Humanity Wellington Dufferin Guelph**
PROJECT: **Phase Two ESA- 303, 309 and 317 Speedvale Avenue East, Guelph, ON**
LOCATION: **303, 309 and 317 Speedvale Avenue East, Guelph, ON**
SURFACE ELEV.: **332.84 meters above sea level (MASL)**

Drilling Data
METHOD: **Direct Push**
DIAMETER: **150 mm**
DATE: **September 19, 2023**
COORDINATES: **4823820.487** m N, **559863.457** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (Wp, W, Wl; 20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	Su (kPa) VANE ✕ PP ✳ (40 80 120 160); SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	HEX(ppm)	IBL(ppm)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0					TOPSOIL: dark brown, moist							
					SANDY SILT: silt, some sand, dark brown	1				20	0	
	332				SILT: some sand, dark brown	2				10	0	
1.0												
					SILT: some sand, moist, light brown	3				0	0	
2.0	331					4				5	0	
	330				coarse sand layers							
3.0					SANDY SILT: till, trace gravel, moist, light brown	5				5	0	
	329					6				0	0	
4.0												
					SILT: very moist, light grey	7				35	0	
5.0	328					8				0	0	
	327											
6.0					SANDY SILT: saturated, silty sand	9				5	0	
	326											
7.0												
	325											
8.0												
	324											

SHEP 02302109.000.GPJ DATA TEMPLATE.GDT 10/13/23

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KITCHENER, ON, N2K 2Y5
PH: 1-877-300-4800
FX: 1-888-979-6772
Web: www.englobecorp.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Tube Sample
- Rock Core
- Core Sample
- Shelby Tube

WELL LEGEND

- Bentonite
- Sand
- Screen

✕3 Numbers refers to Sensitivity
PP: Pocket Penetrometer
CHVC: Combustable Headspace Vapor Concentration
NFP: No Further Penetration
m bgs: Meters Below Ground Surface
PHCs-petroleum hdyrocarbon fractions
PAHs-polycyclic aromatic hdyrocarbons
VOCs- Volatile Oragnis

LOG OF BOREHOLE MW-23-04

ENGLOBE REF. No.: **02302109.001**
CLIENT: **Habitat for Humanity Wellington Dufferin Guelph**
PROJECT: **Phase Two ESA- 303, 309 and 317 Speedvale Avenue East, Guelph, ON**
LOCATION: **303, 309 and 317 Speedvale Avenue East, Guelph, ON**
SURFACE ELEV.: **332.49 meters above sea level (MASL)**

Drilling Data
METHOD: **Direct Push**
DIAMETER: **150 mm**
DATE: **September 19, 2023**
COORDINATES: **4823794.795** m N, **559860.972** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (Wp W WI; 20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	Su (kPa) VANE ✕ PP ✳ (40 80 120 160); SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	HEX(ppm)	IBL(ppm)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0	332				ASPHALT: sand and gravel, light brown,							
					SAND AND GRAVEL: trace silt, light brown (from 0.01-0.3m)	1				20	0	
1.0					FILL: silt with sand, trace silt, trace gravel, dark brown	2				20	0	
	331				FILL: sand and gravel, dark brown							
2.0					SILT: dark brown, very moist	3				25	0	
	330					4				25	0	
3.0					SILT: light brown/grey							
	329					5				15	0	
4.0						6				15	0	
	328											
5.0					SILTY SAND: saturated, light brown	7				15	20	
					SILT: saturated, light brown,							
	327				SILT: trace gravel, trace sand, saturated, light brown/grey	8				25	50	
6.0												
	326											
7.0												
	325											
8.0												
	324											

ENGLOBE CORP.
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KITCHENER, ON, N2K 2Y5
PH: 1-877-300-4800
FX: 1-888-979-6772
Web: www.englobecorp.com

SAMPLE TYPE LEGEND
- Auger Sample
- Split Spoon Sample
- Tube Sample
- Rock Core
- Core Sample
- Shelby Tube

WELL LEGEND
- Bentonite
- Sand
- Screen

✕3 Numbers refers to Sensitivity
PP: Pocket Penetrometer
CHVC: Combustable Headspace Vapor Concentration
NFP: No Further Penetration
m bgs: Meters Below Ground Surface
PHCs-petroleum hdyrocarbon fractions
PAHs-polycyclic aromatic hdyrocarbons
VOCs- Volatile Oragnis

SHEP 02302109.000.GPJ DATA TEMPLATE.GDT 10/13/23

LOG OF BOREHOLE MW-23-05

ENGLOBE REF. No.: **02302109.001**
CLIENT: **Habitat for Humanity Wellington Dufferin Guelph**
PROJECT: **Phase Two ESA- 303, 309 and 317 Speedvale Avenue East, Guelph, ON**
LOCATION: **303, 309 and 317 Speedvale Avenue East, Guelph, ON**
SURFACE ELEV.: **331.44 meters above sea level (MASL)**

Drilling Data
METHOD: **Direct Push**
DIAMETER: **150 mm**
DATE: **September 19, 2023**
COORDINATES: **4823790.771** m N, **559812.975** m E

DEPTH (m)	ELEV. (m)	Water Data	% MOISTURE (Wp — W — Wl; 20 40 60 80)	Symbol	MATERIAL DESCRIPTION	SAMPLE #	SAMPLE TYPE	'N' VALUE	Su (kPa) VANE ✕ PP ✳ (40 80 120 160); SPT (N) □ Blows/0.3m DCPT ◆ (20 40 60 80)	HEX(ppm)	IBL(ppm)	REMARKS & GRAINSIZE DISTRIBUTION (%) GR SA SI CL
0	331				ASPHALT							
					SAND AND GRAVEL: dark brown							
					SILT: some sand, dark brown	1				25	0	
1.0						2				10	50	
	330				SAND: dark brown							
					SILT: very moist, light brown	3				0	50	
2.0												
	329					4				0	100	
3.0					light brown, wet							
	328					5				0	50	
4.0						6				15	100	
	327				SAND: light brown, wet							
					SILTY SAND: some silt, saturated	7				0	0	
5.0												
	326				SAND: some silt, saturated	8				0	50	
6.0					with saturated fine sand							
	325											
7.0												
	324											
8.0												
	323											

ENGLOBE CORP.
353 BRIDGE STREET EAST
KITCHENER, ON, N2K 2Y5
PH: 1-877-300-4800
FX: 1-888-979-6772
Web: www.englobecorp.com

SAMPLE TYPE LEGEND

- Auger Sample
- Split Spoon Sample
- Tube Sample
- Rock Core
- Core Sample
- Shelby Tube

WELL LEGEND

- Bentonite
- Sand
- Screen

✕3 Numbers refers to Sensitivity
PP: Pocket Penetrometer
CHVC: Combustable Headspace Vapor Concentration
NFP: No Further Penetration
m bgs: Meters Below Ground Surface
PHCs-petroleum hdyrocarbon fractions
PAHs-polycyclic aromatic hdyrocarbons
VOCs- Volatile Oragnis

SHEP 02302109.000.GPJ DATA TEMPLATE.GDT 10/13/23

TEST PIT STRATIGRAPHY LOG

Project Name:	**Phase Two Environmental Site Assessment**			**Test Pit Designation:**	**TP23-01**
Project Number:	**02302109.001**	**Ground Surface Elevation[1] (m): 334.227**		**Date Started:**	**9/21/2023**
Client:	**Habitat for Humanit Wellington Dufferin Guelph**	**Test Pit Method:**	**Hand Auger**	**Date Completed:**	**9/21/2023**
Excavating Agency:	**Englobe Corp.**	**Operator:**	**TA**	**Equipment:**	**Hand Auger**
Location:	**303, 309 and 317 Speedvale Avenue East, Guelph, Ontario**			**Englobe Supervisor:**	**Taylor Akimov**

Depth From (m)	Depth To (m)	*Soil Symbol, Primary Component, Secondary Components, Relative Density/Consistency, Grain Size/Plasticity, Gradation/Structure, Colour, Moisture Content, Supplementary Descriptors*	Sample No.	Sample Interval	PID (ppm)	Location: Geologic Profile
0.00	0.25	Top Soil Dark Brown				Photo not available
0.25	0.76	SILT Dark brown, with trace GRAVEL	S1	0.46-0.76	20	
		End Test Pit @ 0.76 m bgs				

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Elevation in metres (m) above mean sea level

TEST PIT STRATIGRAPHY LOG

Project Name:	**Phase Two Environmental Site Assessment**	**Test Pit Designation:**	**TP23-02**
Project Number:	**02302109.001**	**Ground Surface Elevation[1] (m): 334.207**	**Date Started: 9/21/2023**
Client:	**Habitat for Humanit Wellington Dufferin Guelph**	**Test Pit Method: Hand Auger**	**Date Completed: 9/21/2023**
Excavating Agency:	**Englobe Corp.**	**Operator: TA**	**Equipment: Hand Auger**
Location: 303, 309 and 317 Speedvale Avenue East, Guelph, Ontario			**Englobe Supervisor: Taylor Akimov**

Depth From (m)	Depth To (m)	*Soil Symbol, Primary Component, Secondary Components, Relative Density/Consistency, Grain Size/Plasticity, Gradation/Structure, Colour, Moisture Content, Supplementary Descriptors*	Sample No.	Sample Interval	PID (ppm)	Location: Geologic Profile
0.00	0.30	Topsoil Dark brown				Photo not available
0.30	0.46	SILT Dark brown, trace GRAVEL	S1	0.15-0.46	15	
		End Test Pit @ 0.46 m bgs				

ENGLOBE

Elevation in metres (m) above mean sea level

TEST PIT STRATIGRAPHY LOG

Project Name:	**Phase Two Environmental Site Assessment**			**Test Pit Designation:**	**TP23-03**
Project Number:	**02302109.001**	**Ground Surface Elevation(1) (m): 334.108**		**Date Started:**	**9/21/2023**
Client:	**Habitat for Humanit Wellington Dufferin Guelph**	**Test Pit Method:**	**Hand Auger**	**Date Completed:**	**9/21/2023**
Excavating Agency:	**Englobe Corp.**	**Operator:**	**TA**	**Equipment:**	**Hand Auger**
Location:	**303, 309 and 317 Speedvale Avenue East, Guelph, Ontario**			**Englobe Supervisor:**	**Taylor Akimov**

Depth From (m)	Depth To (m)	*Soil Symbol, Primary Component, Secondary Components, Relative Density/Consistency, Grain Size/Plasticity, Gradation/Structure, Colour, Moisture Content, Supplementary Descriptors*	Sample No.	Sample Interval	PID (ppm)
0.00	0.30	Topsoil Dark brown			
0.30	0.85	SILT Dark brown, trace GRAVEL	S1	0.55-0.85	20
		End Test Pit @ 0.85 m bgs			

Location:

Geologic Profile

Photo not available

Elevation in metres (m) above mean sea level

Appendix C
Analytical Tables

ENGLOBE

TABLE 101

PETROLEUM HYDROCARBON FRACTIONS (PHC) F1 to F4 AND BTEX ANALYSIS - SOIL

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL PROPERTY USE FINE SOILS	MW23-01 SA3			MW23-02 SA6	MW23-03 SA7	MW23-04 SA3	TP23-01	TP23-02	TP23-03
			19-Sep-2023	19-Sep-2023	RPD (%)	19-Sep-2023	19-Sep-2023	19-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023
			1.53-1.83 mbgs	Field Duplicate		3.96-4.57 mbgs	4.57-5.18 mbgs	1.52-1.83 mbgs	0.46-0.76 mbgs	0.15-0.46 mbgs	0.55-0.85 mbgs
Benzene	0.02	0.17	<0.0050	<0.0050	NC	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	0.05	1.6	<0.015	<0.015	NC	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Toluene	0.2	6	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (Total)	0.05	25	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
F1 (C6-C10)	25	65	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	25	65	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	150	<10	<10	NC	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	240	1300	<50	<50	NC	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	120	5600	<50	<50	NC	<50	<50	<50	<50	<50	<50
Chrom. to baseline at nC50	NA	NA	YES	YES	NC	YES	YES	YES	YES	YES	YES

Notes:

- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. April 15. 2011. O. Reg. 153/04 as amended document for Full Deoth Backoround Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MECP Soil. Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional Property Use - Potable Groundwater Condition/Fine Textured Soil.
- Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards, as amended.
- Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards, as amended.
- Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.
- All Standards and results shown in µg/g.
- mbgs - metres below ground surface
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 102
O.REG. 153/04 METALS AND/OR INORGANICS ANALYSIS - SOIL

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL PROPERTY USE FINE SOILS	MW23-01 SA3			MW23-02 SA6	MW23-03 SA7	MW23-04 SA3	TP23-01	TP23-02	TP23-03
			19-Sep-2023	19-Sep-2023	RPD (%)	19-Sep-2023	19-Sep-2023	19-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023
			1.53-1.83 mbgs	Field Duplicate		3.96-4.57 mbgs	4.57-5.18 mbgs	1.52-1.83 mbgs	0.46-0.76 mbgs	0.15-0.46 mbgs	0.55-0.85 mbgs
Antimony (Sb)	1.3	7.5	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	0.28	<0.10
Arsenic (As)	18	18	1.76	2.66	20%	1.91	1.30	2.39	2.30	4.17	3.12
Barium (Ba)	220	390	15.2	26.6	27%	23.1	11.5	16.4	29.6	50.5	38.8
Beryllium (Be)	2.5	5	0.18	0.27	20%	0.19	0.12	0.15	0.29	0.42	0.36
Boron (B), Hot Water Ext.	NA	1.5	0.12	0.13	4%	<0.10	<0.10	<0.10	<0.10	0.47	0.11
Boron (B)	36	120	5.2	<5.0	NC	6.9	5.1	<5.0	6.8	8.0	6.6
Cadmium (Cd)	1.2	1.2	0.113	0.222	33%	0.249	0.154	0.231	0.317	0.561	0.389
Chromium (Cr)	70	160	9.73	12.3	12%	8.01	7.00	7.00	10.4	17.2	13.4
Chromium, Hexavalent	0.66	10	0.12	0.14	8%	<0.10	<0.10	<0.10	<0.10	<0.10	0.12
Cobalt (Co)	21	22	2.22	3.51	23%	2.72	1.56	2.80	3.50	4.90	4.33
Copper (Cu)	92	180	<14.0	<14.0	NC	<14.0	<14.0	<14.0	8.82	18.0	9.88
Cyanide, Weak Acid Diss	0.051	0.051	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Conductivity	0.57	0.7	0.195	0.220	6%	0.105	0.173	**1.49**	0.110	0.235	0.134
Lead (Pb)	120	120	8.35	14.0	25%	13.4	10.4	19.5	18.5	48.5	37.4
Mercury (Hg)	0.27	1.8	0.0104	0.0231	38%	0.0059	<0.0050	0.0070	0.0165	0.0967	0.0236
Molybdenum (Mo)	2	6.9	0.97	0.47	35%	0.28	0.61	0.23	0.20	0.57	0.30
Nickel (Ni)	82	130	5.20	7.50	18%	5.61	3.16	6.14	7.42	10.3	8.57
Selenium (Se)	1.5	2.4	<0.20	<0.20	NC	<0.20	<0.20	<0.20	<0.20	0.23	<0.20
Silver (Ag)	0.5	25	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	0.10	<0.10
SAR	2.4	5	0.79	0.86	4%	0.17	0.79	**11.1**	0.11	0.15	0.13
Thallium (Tl)	1	1	<0.050	0.064	NC	0.050	<0.050	<0.050	0.066	0.099	0.079
Uranium (U)	2.5	23	0.372	0.396	3%	0.410	0.397	0.398	0.458	0.497	0.589
Vanadium (V)	86	86	16.4	25.3	21%	14.9	12.4	15.7	18.8	28.4	29.1
Zinc (Zn)	290	340	44.4	78.3	28%	85.0	47.1	177	114	176	124
pH	5 to 9 and 5 to 11	5 to 9 and 5 to 11	7.75	7.66	1%	7.97	8.11	7.96	7.67	7.36	7.53

Notes:
- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional Property Use - Potable Groundwater Condition/Fine Textured Soil.

Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards, as amended.
Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards, as amended.
Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.

- All Standards and results shown in µg/g [exceptions, SAR (unitless) and Conductivity (mS/cm)]
- mbgs - metres below ground surface
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- pH criteria refers to surface and subsurface soils, respectively.
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 103
VOLATILE ORGANIC COMPOUNDS (VOCs) ANALYSIS - SOIL

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL PROPERTY USE FINE SOILS	MW23-01 SA3			MW23-02 SA6	MW23-03 SA7	MW23-04 SA3
			19-Sep-2023	19-Sep-2023	RPD (%)	19-Sep-2023	19-Sep-2023	19-Sep-2023
			1.53-1.83 mbgs	Field Duplicate		3.96-4.57 mbgs	4.57-5.18 mbgs	1.52-1.83 mbgs
Acetone	0.5	28	<0.50	<0.50	NC	<0.50	<0.50	<0.50
Benzene	0.02	0.17	<0.0050	<0.0050	NC	<0.0050	<0.0050	<0.0050
Bromodichloromethane	0.05	1.9	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Bromoform	0.05	0.26	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Bromomethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Carbon tetrachloride	0.05	0.12	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Chlorobenzene	0.05	2.7	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Chloroform	0.05	0.17	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Dibromochloromethane	0.05	2.9	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	0.05	1.7	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	0.05	6	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.05	0.097	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Dichlorodifluoromethane	0.05	25	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.05	0.6	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	0.05	2.5	<0.050	<0.050	NC	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.05	0.75	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	0.085	<0.050	<0.050	NC	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	0.05	0.081	<0.030	<0.030	NC	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	0.05	0.081	<0.030	<0.030	NC	<0.030	<0.030	<0.030
Dichloropropene, 1,3-	0.05	0.081	<0.030	<0.030	NC	<0.030	<0.030	<0.030
Ethylbenzene	0.05	1.6	<0.015	<0.015	NC	<0.015	<0.015	<0.015
1,2-Dibromoethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
n-Hexane	0.05	34	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.5	44	<0.50	<0.50	NC	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.5	4.3	<0.50	<0.50	NC	<0.50	<0.50	<0.50
MTBE	0.05	1.4	<0.040	<0.040	NC	<0.040	<0.040	<0.040
Methylene Chloride	0.05	0.96	**<0.135**	**<0.085**	NC	**<0.096**	**<0.148**	**<0.090**
Styrene	0.05	2.2	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Tetrachloroethylene	0.05	2.3	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Toluene	0.2	6	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	0.05	3.4	<0.050	<0.050	NC	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	0.05	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Trichloroethylene	0.05	0.52	<0.010	<0.010	NC	<0.010	<0.010	<0.010
Trichlorofluoromethane	0.25	5.8	<0.050	<0.050	NC	<0.050	<0.050	<0.050
Vinyl chloride	0.02	0.022	<0.020	<0.020	NC	<0.020	<0.020	<0.020
Xylenes (Total)	0.05	25	<0.050	<0.050	NC	<0.050	<0.050	<0.050

Notes:
- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional Property Use - Potable Groundwater Condition/Fine Textured Soil.
  Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards, as amended.
  Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards, as amended.
  Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.
- All Standards and results shown in µg/g.
- mbgs - metres below ground surface
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 104

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) ANALYSIS - SOIL

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL PROPERTY USE FINE SOILS	TP23-01			TP23-02	TP23-03
			21-Sep-2023	21-Sep-2022	RPD (%)	21-Sep-2023	21-Sep-2023
			0.46-0.76 mbgs	Field Duplicate		0.15-0.46 mbgs	0.55-0.85 mbgs
Acenaphthene	0.072	29	<0.050	<0.050	NC	<0.050	<0.050
Acenaphthylene	0.093	0.17	<0.050	<0.050	NC	<0.050	<0.050
Anthracene	0.16	0.74	<0.050	<0.050	NC	<0.050	<0.050
Benzo(a)anthracene	0.36	0.63	<0.050	<0.050	NC	<0.050	<0.050
Benzo(a)pyrene	0.3	0.3	<0.050	<0.050	NC	<0.050	<0.050
Benzo(b)fluoranthene	0.47	0.78	<0.050	<0.050	NC	0.064	<0.050
Benzo(g,h,i)perylene	0.68	7.8	<0.050	<0.050	NC	<0.050	<0.050
Benzo(k)fluoranthene	0.48	0.78	<0.050	<0.050	NC	<0.050	<0.050
Chrysene	2.8	7.8	<0.050	<0.050	NC	<0.050	<0.050
Dibenzo(ah)anthracene	0.1	0.1	<0.050	<0.050	NC	<0.050	<0.050
Fluoranthene	0.56	0.69	<0.050	<0.050	NC	0.070	<0.050
Fluorene	0.12	69	<0.050	<0.050	NC	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.23	0.48	<0.050	<0.050	NC	<0.050	<0.050
1+2-Methylnaphthalenes	0.59	3.4	<0.050	<0.050	NC	<0.050	<0.050
1-Methylnaphthalene	0.59	3.4	<0.030	<0.030	NC	<0.030	<0.030
2-Methylnaphthalene	0.59	3.4	<0.030	<0.030	NC	<0.030	<0.030
Naphthalene	0.09	0.75	<0.010	<0.010	NC	<0.010	<0.010
Phenanthrene	0.69	7.8	<0.050	<0.050	NC	<0.050	<0.050
Pyrene	1	78	<0.050	<0.050	NC	0.055	<0.050

Notes:

- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 as amended document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional Property Use - Potable Groundwater Condition/Fine Textured Soil.
- Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards, as amended.
- Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards, as amended.
- Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.
- All Standards and results shown in µg/g.
- mbgs - metres below ground surface
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 201
MONITORING WELL FIELD DATA & ELEVATIONS - GROUNDWATER

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

Monitoring Well ID	Monitoring Well Diameter (inch)	Date Monitored	Elevation (mASL)		Depth to Bottom of Well (mbgs)	Depth to Water (mbgs)	Screen Interval (mbgs)		Bottom of Well Elevation (mASL)	Groundwater Elevation (mASL)	Screen Interval (mASL)	
			Grade	Top of Pipe			Top	Bottom			Top	Bottom
MW23-01	2.00	9/22/2023	334.11	334.98	7.56	6.66	4.56	7.56	326.55	327.45	329.55	326.55
MW23-02	2.00	9/22/2023	333.38	334.25	5.98	5.98	2.98	5.98	327.40	327.40	330.40	327.40
MW23-03	2.00	9/22/2023	332.84	333.81	6.97	5.37	3.97	6.97	325.87	327.47	328.87	325.87
MW23-04	2.00	9/22/2023	332.49	332.30	6.15	5.25	3.15	6.15	326.34	327.24	329.34	326.34
MW23-05	2.00	9/22/2023	331.44	331.28	6.16	4.62	3.16	6.16	325.28	326.83	328.28	325.28

Notes:
mbgs - metres below ground surface
mad - metres above datum
mASL - metres above sea level
n/a - not available/not applicable

TABLE 202

PETROLEUM HYDROCARBONS (PHCs) F1 to F4 AND BTEX ANALYSIS - GROUNDWATER

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE FINE SOILS	MW23-01	TRIP BLANK	MW23-03		
			29-Sep-2023	29-Sep-2023		Field Duplicate	RPD (%)
Benzene	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
Ethylbenzene	0.5	2.4	<0.50	<0.50	<0.50	<0.50	NC
Toluene	0.8	24	<0.50	<0.50	<0.50	<0.50	NC
Xylenes (Total)	72	300	<0.50	<0.50	<0.50	<0.50	NC
F1 (C6-C10)	420	750	<25	<25	<25	<25	NC
F1-BTEX	420	750	<25	<25	<25	<25	NC
F2 (C10-C16)	150	150	<100	-	<100	<100	NC
F2-Naphth	150	150	-	-	-	-	NC
F3 (C16-C34)	500	500	<250	-	<250	<250	NC
F3-PAH	500	500	-	-	-	-	NC
F4 (C34-C50)	500	500	<250	-	<250	<250	NC
Chrom. to baseline at nC50	NA	NA	-	-	-	-	NC
F4G-SG (GHH-Silica)	500	500	-	-	-	-	NC

Notes:

- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Fine Textured Soil.
- Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards.
- Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards.
- Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.
- All Standards and results shown in µg/L.
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 203

O.REG. 153/04 METALS AND/OR INORGANICS ANALYSIS - GROUNDWATER

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE FINE SOILS	MW23-01	MW23-03		
			29-Sep-2023	29-Sep-2023	Field Duplicate	RPD (%)
Antimony (Sb)-Dissolved	1.5	6	0.22	0.26	0.25	4%
Arsenic (As)-Dissolved	13	25	0.33	0.53	0.54	2%
Barium (Ba)-Dissolved	610	1000	78.3	120	115	4%
Beryllium (Be)-Dissolved	0.5	4	<0.020	<0.020	<0.020	NC
Boron (B)-Dissolved	1700	5000	16	38	38	0
Cadmium (Cd)-Dissolved	0.5	2.7	0.0189	0.0318	0.0313	2%
Chloride (Cl)	790000	790000	199	366	429	16%
Chromium (Cr)-Dissolved	11	50	<0.50	<0.50	<0.50	NC
Chromium, Hexavalent	25	25	<0.50	<0.50	<0.50	NC
Cobalt (Co)-Dissolved	3.8	3.8	0.32	0.52	0.51	2%
Copper (Cu)-Dissolved	5	87	4.37	1.46	1.52	4%
Cyanide, Weak Acid Diss	5	66	<2.0	<2.0	<2.0	NC
Lead (Pb)-Dissolved	1.9	10	0.280	0.066	0.071	7%
Mercury (Hg)-Dissolved	0.1	1	<0.0050	<0.0050	<0.0050	NC
Molybdenum (Mo)-Dissolved	23	70	0.590	3.51	3.36	4%
Nickel (Ni)-Dissolved	14	100	4.08	2.10	2.13	1%
Selenium (Se)-Dissolved	5	10	0.326	1.25	1.24	1%
Silver (Ag)-Dissolved	0.3	1.5	<0.010	<0.010	<0.010	NC
Sodium (Na)-Dissolved	490000	490000	134000	164000	159000	3%
Thallium (Tl)-Dissolved	0.5	2	0.017	0.020	0.018	11%
Uranium (U)-Dissolved	8.9	20	1.03	0.766	0.733	4%
Vanadium (V)-Dissolved	3.9	6.2	<0.50	0.58	0.59	2%
Zinc (Zn)-Dissolved	160	1100	6.1	5.7	5.2	9%

Notes:

- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Fine Textured Soil.

Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards.
Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards.
Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.

- All Standards and results shown in µg/L.
- NC - RPD not calculable/not valid
- "-" parameter not analyzed
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

TABLE 204
VOLATILE ORGANIC COMPOUNDS (VOCs) ANALYSIS - GROUNDWATER

Phase Two Environmental Site Assessment
303, 309 and 317 Speedvale Avenue East

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE FINE SOILS	MW23-01	TRIP BLANK	MW23-03		
			29-Sep-2023	29-Sep-2023	29-Sep-2023	Field Duplicate	RPD (%)
Acetone	2700	2700	<20	<20	<20	<20	NC
Benzene	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
Bromodichloromethane	2	16	<0.50	<0.50	<0.50	<0.50	NC
Bromoform	5	25	<0.50	<0.50	<0.50	<0.50	NC
Bromomethane	0.89	0.89	<0.50	<0.50	<0.50	<0.50	NC
Carbon tetrachloride	0.2	5	<0.20	<0.20	<0.20	<0.20	NC
Chlorobenzene	0.5	30	<0.50	<0.50	<0.50	<0.50	NC
Chloroform	2	22	<0.50	<0.50	<0.50	<0.50	NC
Dibromochloromethane	2	25	<0.50	<0.50	<0.50	<0.50	NC
1,2-Dichlorobenzene	0.5	3	<0.50	<0.50	<0.50	<0.50	NC
1,3-Dichlorobenzene	0.5	59	<0.50	<0.50	<0.50	<0.50	NC
1,4-Dichlorobenzene	0.5	1	<0.50	<0.50	<0.50	<0.50	NC
Dichlorodifluoromethane	590	590	<0.50	<0.50	<0.50	<0.50	NC
1,1-Dichloroethane	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
1,2-Dichloroethane	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
1,1-Dichloroethylene	0.5	14	<0.50	<0.50	<0.50	<0.50	NC
cis-1,2-Dichloroethylene	1.6	17	<0.50	<0.50	<0.50	<0.50	NC
trans-1,2-Dichloroethylene	1.6	17	<0.50	<0.50	<0.50	<0.50	NC
1,2-Dichloropropane	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
cis-1,3-Dichloropropene	0.5	0.5	<0.30	<0.30	<0.30	<0.30	NC
trans-1,3-Dichloropropene	0.5	0.5	<0.30	<0.30	<0.30	<0.30	NC
Dichloropropene, 1,3-	0.5	0.5	<0.30	<0.30	<0.30	<0.30	NC
Ethylbenzene	0.5	2.4	<0.50	<0.50	<0.50	<0.50	NC
1,2-Dibromoethane	0.2	0.2	<0.20	<0.20	<0.20	<0.20	NC
n-Hexane	5	520	<0.50	<0.50	<0.50	<0.50	NC
Methyl Ethyl Ketone	400	1800	<20	<20	<20	<20	NC
Methyl Isobutyl Ketone	640	640	<20	<20	<20	<20	NC
MTBE	15	15	<0.50	<0.50	<0.50	<0.50	NC
Methylene Chloride	5	50	<1.0	<1.0	<1.0	<1.0	NC
Styrene	0.5	5.4	<0.50	<0.50	<0.50	<0.50	NC
1,1,1,2-Tetrachloroethane	1.1	1.1	<0.50	<0.50	<0.50	<0.50	NC
1,1,2,2-Tetrachloroethane	0.5	1	<0.50	<0.50	<0.50	<0.50	NC
Tetrachloroethylene	0.5	17	<0.50	<0.50	<0.50	<0.50	NC
Toluene	0.8	24	<0.50	<0.50	<0.50	<0.50	NC
1,1,1-Trichloroethane	0.5	200	<0.50	<0.50	<0.50	<0.50	NC
1,1,2-Trichloroethane	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
Trichloroethylene	0.5	5	<0.50	<0.50	<0.50	<0.50	NC
Trichlorofluoromethane	150	150	<0.50	<0.50	<0.50	<0.50	NC
Vinyl chloride	0.5	1.7	<0.50	<0.50	<0.50	<0.50	NC
Xylenes (Total)	72	300	<0.50	<0.50	<0.50	<0.50	NC

Notes:
- Standards from Table 1 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 153/04 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Fine Textured Soil.

Test results shown in bold type exceeded the MECP Table 1 O. Reg. 153/04 Standards.
Test results shown in bold type exceeded the MECP Table 2 O. Reg. 153/04 Standards.
Laboratory detection limits for the test results shown in bold type exceeded the applicable standards.

- All Standards and results shown in µg/L.
- Tests carried out by: ALS Environmental of Waterloo, Ontario.

Appendix D
Laboratory Certificates of Analysis

ENGLOBE

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2330022**	Page	: 1 of 10
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 19-Sep-2023 18:40
PO	: ----	Date Analysis Commenced	: 20-Sep-2023
C-O-C number	: 20-1083252	Issue Date	: 26-Sep-2023 12:54
Sampler	: TA		
Site	: ----		
Quote number	: KITCHENER/LONDON EXCESS SOIL		
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
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
BH23-01 SA3	Soil/Solid	Dichloromethane		ON153/04	T2-RPI-C	<0.135	0.1 mg/kg
BH23-03 SA7	Soil/Solid	Dichloromethane		ON153/04	T2-RPI-C	<0.148	0.1 mg/kg
BH23-04 SA3	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T2-RPI-C	1.49 mS/cm	0.7 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T2-RPI-C	11.1 -	5 -
	Soil/Solid	Conductivity (1:2 leachate)		ON153/04	T2-RPI-F	1.49 mS/cm	0.7 mS/cm
	Soil/Solid	Sodium adsorption ratio [SAR]		ON153/04	T2-RPI-F	11.1 -	5 -

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
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: 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.

Workorder Comments

RRR: DCM LOR increased due to the potential of laboratory contamination.

Qualifiers

Qualifier	Description
RRR	*Refer to report comments for issues regarding this analysis.*

Analytical Results Evaluation

Matrix: Soil/Solid

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH23-01 SA3	BH23-02 SA6	BH23-03 SA7	BH23-04 SA3	DUP-01	----	----
				Sampling date/time	19-Sep-2023 13:05	19-Sep-2023 12:40	19-Sep-2023 08:55	19-Sep-2023 14:00	19-Sep-2023 00:00	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----
					WT2330022-001	WT2330022-002	WT2330022-003	WT2330022-004	WT2330022-005	--------	--------
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT	mS/cm		0.195	0.105	0.173	1.49	0.220	----	----
Moisture	----	E144/WT	%		7.39	7.44	9.99	6.64	9.51	----	----
pH (1:2 soil:CaCl2-aq)	----	E108A/WT	pH units		7.75	7.97	8.11	7.96	7.66	----	----
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT	mg/L		8.01	3.24	4.88	30.4	8.00	----	----
Magnesium, soluble ion content	7439-95-4	E484/WT	mg/L		1.93	0.85	1.88	4.62	1.88	----	----
Sodium, soluble ion content	17341-25-2	E484/WT	mg/L		9.65	1.33	8.07	248	10.4	----	----
Sodium adsorption ratio [SAR]	----	E484/WT	-		0.79	0.17	0.79	11.1	0.86	----	----
Metals											
Antimony	7440-36-0	E440C/WT	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	----	----
Arsenic	7440-38-2	E440C/WT	mg/kg		1.76	1.91	1.30	2.39	2.66	----	----
Barium	7440-39-3	E440C/WT	mg/kg		15.2	23.1	11.5	16.4	26.6	----	----
Beryllium	7440-41-7	E440C/WT	mg/kg		0.18	0.19	0.12	0.15	0.27	----	----
Boron	7440-42-8	E440C/WT	mg/kg		5.2	6.9	5.1	<5.0	<5.0	----	----
Boron, hot water soluble	7440-42-8	E487/WT	mg/kg		0.12	<0.10	<0.10	<0.10	0.13	----	----
Cadmium	7440-43-9	E440C/WT	mg/kg		0.113	0.249	0.154	0.231	0.222	----	----
Chromium	7440-47-3	E440C/WT	mg/kg		9.73	8.01	7.00	7.00	12.3	----	----
Cobalt	7440-48-4	E440C/WT	mg/kg		2.22	2.72	1.56	2.80	3.51	----	----
Copper	7440-50-8	E440C/WT	mg/kg		<14.0	<14.0	<14.0	<14.0	<14.0	----	----
Lead	7439-92-1	E440C/WT	mg/kg		8.35	13.4	10.4	19.5	14.0	----	----
Mercury	7439-97-6	E510C/WT	mg/kg		0.0104	0.0059	<0.0050	0.0070	0.0231	----	----
Molybdenum	7439-98-7	E440C/WT	mg/kg		0.97	0.28	0.61	0.23	0.47	----	----
Nickel	7440-02-0	E440C/WT	mg/kg		5.20	5.61	3.16	6.14	7.50	----	----
Selenium	7782-49-2	E440C/WT	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20	----	----
Silver	7440-22-4	E440C/WT	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: BH23-01 SA3	BH23-02 SA6	BH23-03 SA7	BH23-04 SA3	DUP-01	----	----
				Sampling date/time: 19-Sep-2023 13:05	19-Sep-2023 12:40	19-Sep-2023 08:55	19-Sep-2023 14:00	19-Sep-2023 00:00	----	----
				Sub-Matrix: Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----
				WT2330022-001	WT2330022-002	WT2330022-003	WT2330022-004	WT2330022-005	--------	--------
Metals										
Thallium	7440-28-0	E440C/WT	mg/kg	<0.050	0.050	<0.050	<0.050	0.064	----	----
Uranium	7440-61-1	E440C/WT	mg/kg	0.372	0.410	0.397	0.398	0.396	----	----
Vanadium	7440-62-2	E440C/WT	mg/kg	16.4	14.9	12.4	15.7	25.3	----	----
Zinc	7440-66-6	E440C/WT	mg/kg	44.4	85.0	47.1	177	78.3	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT	mg/kg	0.12	<0.10	<0.10	<0.10	0.14	----	----
Volatile Organic Compounds										
Acetone	67-64-1	E611D/WT	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	----	----
Benzene	71-43-2	E611D/WT	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	----	----
Bromodichloromethane	75-27-4	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Bromoform	75-25-2	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Bromomethane	74-83-9	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Carbon tetrachloride	56-23-5	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Chlorobenzene	108-90-7	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Chloroform	67-66-3	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dibromochloromethane	124-48-1	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloromethane	75-09-2	E611D/WT	mg/kg	<0.135 RRR	<0.096 RRR	<0.148 RRR	<0.090 RRR	<0.085 RRR	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH23-01 SA3	BH23-02 SA6	BH23-03 SA7	BH23-04 SA3	DUP-01	----	----
				Sampling date/time	19-Sep-2023 13:05	19-Sep-2023 12:40	19-Sep-2023 08:55	19-Sep-2023 14:00	19-Sep-2023 00:00	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----
					WT2330022-001	WT2330022-002	WT2330022-003	WT2330022-004	WT2330022-005	--------	--------
Volatile Organic Compounds											
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	----	----
Ethylbenzene	100-41-4	E611D/WT	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015	----	----
Hexane, n-	110-54-3	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	mg/kg		<0.040	<0.040	<0.040	<0.040	<0.040	----	----
Styrene	100-42-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Tetrachloroethylene	127-18-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Toluene	108-88-3	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Trichloroethylene	79-01-6	E611D/WT	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
Vinyl chloride	75-01-4	E611D/WT	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020	----	----
Xylene, m+p-	179601-23-1	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	----	----
Xylene, o-	95-47-6	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	<0.030	----	----
Xylenes, total	1330-20-7	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050	----	----
BTEX, total	----	E611D/WT	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10	----	----
Hydrocarbons											
F1 (C6-C10)	----	E581.F1/WT	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	----	----
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg		<10	<10	<10	<10	<10	----	----
F3 (C16-C34)	----	E601.SG-L/WT	mg/kg		<50	<50	<50	<50	<50	----	----
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg		<50	<50	<50	<50	<50	----	----
F1-BTEX	----	EC580/WT	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH23-01 SA3	BH23-02 SA6	BH23-03 SA7	BH23-04 SA3	DUP-01	----	----
				Sampling date/time	19-Sep-2023 13:05	19-Sep-2023 12:40	19-Sep-2023 08:55	19-Sep-2023 14:00	19-Sep-2023 00:00	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----
					WT2330022-001	WT2330022-002	WT2330022-003	WT2330022-004	WT2330022-005	--------	--------
Hydrocarbons											
Hydrocarbons, total (C6-C50)	----	EC581/WT	mg/kg		<80	<80	<80	<80	<80	----	----
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT	-		YES	YES	YES	YES	YES	----	----
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	%		85.5	87.5	84.8	85.4	86.5	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT	%		94.8	94.4	101	96.4	93.7	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%		81.8	79.7	83.4	82.3	81.8	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%		91.0	89.1	91.5	92.3	91.0	----	----

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.

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F					
Physical Tests									
Conductivity (1:2 leachate)	----	mS/cm	0.7 mS/cm	0.7 mS/cm					
Moisture	----	%	--	--					
pH (1:2 soil:CaCl2-aq)	----	pH units	--	--					
Cyanides									
Cyanide, weak acid dissociable	----	mg/kg	0.051 mg/kg	0.051 mg/kg					
Fixed-Ratio Extractables									
Calcium, soluble ion content	7440-70-2	mg/L	--	--					
Magnesium, soluble ion content	7439-95-4	mg/L	--	--					
Sodium adsorption ratio [SAR]	----	-	5 -	5 -					
Sodium, soluble ion content	17341-25-2	mg/L	--	--					
Metals									
Antimony	7440-36-0	mg/kg	7.5 mg/kg	7.5 mg/kg					
Arsenic	7440-38-2	mg/kg	18 mg/kg	18 mg/kg					
Barium	7440-39-3	mg/kg	390 mg/kg	390 mg/kg					
Beryllium	7440-41-7	mg/kg	4 mg/kg	5 mg/kg					
Boron, hot water soluble	7440-42-8	mg/kg	1.5 mg/kg	1.5 mg/kg					
Boron	7440-42-8	mg/kg	120 mg/kg	120 mg/kg					
Cadmium	7440-43-9	mg/kg	1.2 mg/kg	1.2 mg/kg					
Chromium	7440-47-3	mg/kg	160 mg/kg	160 mg/kg					
Cobalt	7440-48-4	mg/kg	22 mg/kg	22 mg/kg					
Copper	7440-50-8	mg/kg	140 mg/kg	180 mg/kg					
Lead	7439-92-1	mg/kg	120 mg/kg	120 mg/kg					
Mercury	7439-97-6	mg/kg	0.27 mg/kg	1.8 mg/kg					
Molybdenum	7439-98-7	mg/kg	6.9 mg/kg	6.9 mg/kg					
Nickel	7440-02-0	mg/kg	100 mg/kg	130 mg/kg					
Selenium	7782-49-2	mg/kg	2.4 mg/kg	2.4 mg/kg					
Silver	7440-22-4	mg/kg	20 mg/kg	25 mg/kg					
Thallium	7440-28-0	mg/kg	1 mg/kg	1 mg/kg					
Uranium	7440-61-1	mg/kg	23 mg/kg	23 mg/kg					
Vanadium	7440-62-2	mg/kg	86 mg/kg	86 mg/kg					
Zinc	7440-66-6	mg/kg	340 mg/kg	340 mg/kg					
Speciated Metals									
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg	8 mg/kg	10 mg/kg					
Volatile Organic Compounds									
Acetone	67-64-1	mg/kg	16 mg/kg	28 mg/kg					
Benzene	71-43-2	mg/kg	0.21 mg/kg	0.17 mg/kg					
Bromodichloromethane	75-27-4	mg/kg	1.5 mg/kg	1.9 mg/kg					

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F
Volatile Organic Compounds - Continued				
Bromoform	75-25-2	mg/kg	**0.27 mg/kg**	**0.26 mg/kg**
Bromomethane	74-83-9	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
BTEX, total	----	mg/kg	--	--
Carbon tetrachloride	56-23-5	mg/kg	**0.05 mg/kg**	**0.12 mg/kg**
Chlorobenzene	108-90-7	mg/kg	**2.4 mg/kg**	**2.7 mg/kg**
Chloroform	67-66-3	mg/kg	**0.05 mg/kg**	**0.18 mg/kg**
Dibromochloromethane	124-48-1	mg/kg	**2.3 mg/kg**	**2.9 mg/kg**
Dibromoethane, 1,2-	106-93-4	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
Dichlorobenzene, 1,2-	95-50-1	mg/kg	**1.2 mg/kg**	**1.7 mg/kg**
Dichlorobenzene, 1,3-	541-73-1	mg/kg	**4.8 mg/kg**	**6 mg/kg**
Dichlorobenzene, 1,4-	106-46-7	mg/kg	**0.083 mg/kg**	**0.097 mg/kg**
Dichlorodifluoromethane	75-71-8	mg/kg	**16 mg/kg**	**25 mg/kg**
Dichloroethane, 1,1-	75-34-3	mg/kg	**0.47 mg/kg**	**0.6 mg/kg**
Dichloroethane, 1,2-	107-06-2	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
Dichloroethylene, 1,1-	75-35-4	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
Dichloroethylene, cis-1,2-	156-59-2	mg/kg	**1.9 mg/kg**	**2.5 mg/kg**
Dichloroethylene, trans-1,2-	156-60-5	mg/kg	**0.084 mg/kg**	**0.75 mg/kg**
Dichloromethane	75-09-2	mg/kg	**0.1 mg/kg**	**0.96 mg/kg**
Dichloropropane, 1,2-	78-87-5	mg/kg	**0.05 mg/kg**	**0.085 mg/kg**
Dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg	**0.05 mg/kg**	**0.081 mg/kg**
Dichloropropylene, cis-1,3-	10061-01-5	mg/kg	--	--
Dichloropropylene, trans-1,3-	10061-02-6	mg/kg	--	--
Ethylbenzene	100-41-4	mg/kg	**1.1 mg/kg**	**1.6 mg/kg**
Hexane, n-	110-54-3	mg/kg	**2.8 mg/kg**	**34 mg/kg**
Methyl ethyl ketone [MEK]	78-93-3	mg/kg	**16 mg/kg**	**44 mg/kg**
Methyl isobutyl ketone [MIBK]	108-10-1	mg/kg	**1.7 mg/kg**	**4.3 mg/kg**
Methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg	**0.75 mg/kg**	**1.4 mg/kg**
Styrene	100-42-5	mg/kg	**0.7 mg/kg**	**2.2 mg/kg**
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	**0.058 mg/kg**	**0.05 mg/kg**
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
Tetrachloroethylene	127-18-4	mg/kg	**0.28 mg/kg**	**2.3 mg/kg**
Toluene	108-88-3	mg/kg	**2.3 mg/kg**	**6 mg/kg**
Trichloroethane, 1,1,1-	71-55-6	mg/kg	**0.38 mg/kg**	**3.4 mg/kg**
Trichloroethane, 1,1,2-	79-00-5	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**
Trichloroethylene	79-01-6	mg/kg	**0.061 mg/kg**	**0.52 mg/kg**
Trichlorofluoromethane	75-69-4	mg/kg	**4 mg/kg**	**5.8 mg/kg**
Vinyl chloride	75-01-4	mg/kg	**0.02 mg/kg**	**0.022 mg/kg**
Xylene, m+p-	179601-23-1	mg/kg	--	--
Xylene, o-	95-47-6	mg/kg	--	--

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F					
Volatile Organic Compounds - Continued									
Xylenes, total	1330-20-7	mg/kg	**3.1 mg/kg**	**25 mg/kg**					
Hydrocarbons									
Chromatogram to baseline at nC50	n/a	-	**--**	**--**					
F1 (C6-C10)	----	mg/kg	**55 mg/kg**	**65 mg/kg**					
F1-BTEX	----	mg/kg	**55 mg/kg**	**65 mg/kg**					
F2 (C10-C16)	----	mg/kg	**98 mg/kg**	**150 mg/kg**					
F3 (C16-C34)	----	mg/kg	**300 mg/kg**	**1300 mg/kg**					
F4 (C34-C50)	----	mg/kg	**2800 mg/kg**	**5600 mg/kg**					
Hydrocarbons, total (C6-C50)	----	mg/kg	**--**	**--**					
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%							
Dichlorotoluene, 3,4-	95-75-0	%							
Bromofluorobenzene, 4-	460-00-4	%							
Difluorobenzene, 1,4-	540-36-3	%							

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

Key:

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2330022**	Page	: 1 of 14
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 19-Sep-2023 18:40
PO	: ----	Issue Date	: 26-Sep-2023 12:54
C-O-C number	: 20-1083252		
Sampler	: TA		
Site	: ----		
Quote number	: KITCHENER/LONDON EXCESS SOIL		
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: **Soil/Solid**

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

Analyte Group / 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
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA3	E336A	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA6	E336A	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA7	E336A	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA3	E336A	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] DUP-01	E336A	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	14 days	2 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA3	E484	19-Sep-2023	22-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA3	E484	19-Sep-2023	22-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E484	19-Sep-2023	22-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E484	19-Sep-2023	22-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E484	19-Sep-2023	22-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-01 SA3	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-02 SA6	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-03 SA7	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH23-04 SA3	E581.F1	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
DUP-01	E581.F1	19-Sep-2023	21-Sep-2023	14 days	3 days	✓	21-Sep-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E601.SG-L	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	40 days	2 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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 PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E601.SG-L	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA3	E601.SG-L	19-Sep-2023	20-Sep-2023	14 days	1 days	✓	22-Sep-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E601.SG-L	19-Sep-2023	20-Sep-2023	14 days	2 days	✓	22-Sep-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E601.SG-L	19-Sep-2023	20-Sep-2023	14 days	2 days	✓	22-Sep-2023	40 days	2 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E487	19-Sep-2023	22-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E487	19-Sep-2023	22-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA3	E487	19-Sep-2023	22-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E487	19-Sep-2023	22-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E487	19-Sep-2023	22-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E510C	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	22-Sep-2023	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E510C	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	22-Sep-2023	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA3	E510C	19-Sep-2023	21-Sep-2023	28 days	2 days	✓	22-Sep-2023	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E510C	19-Sep-2023	21-Sep-2023	28 days	3 days	✓	22-Sep-2023	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E510C	19-Sep-2023	21-Sep-2023	28 days	3 days	✓	22-Sep-2023	28 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E440C	19-Sep-2023	21-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E440C	19-Sep-2023	21-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA3	E440C	19-Sep-2023	21-Sep-2023	180 days	2 days	✓	22-Sep-2023	180 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E440C	19-Sep-2023	21-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP] DUP-01	E440C	19-Sep-2023	21-Sep-2023	180 days	3 days	✓	22-Sep-2023	180 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA3	E100-L	19-Sep-2023	22-Sep-2023	30 days	2 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA3	E100-L	19-Sep-2023	22-Sep-2023	30 days	2 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA6	E100-L	19-Sep-2023	22-Sep-2023	30 days	3 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA7	E100-L	19-Sep-2023	22-Sep-2023	30 days	3 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] DUP-01	E100-L	19-Sep-2023	22-Sep-2023	30 days	3 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-01 SA3	E144	19-Sep-2023	----	----	----		20-Sep-2023	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-02 SA6	E144	19-Sep-2023	----	----	----		20-Sep-2023	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA7	E144	19-Sep-2023	----	----	----		20-Sep-2023	----	1 days	

Matrix: **Soil/Solid**

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

Analyte Group / 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]										
BH23-04 SA3	E144	19-Sep-2023	----	----	----		20-Sep-2023	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E144	19-Sep-2023	----	----	----		20-Sep-2023	----	2 days	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E108A	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E108A	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-03 SA7	E108A	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-04 SA3	E108A	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	30 days	3 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-01	E108A	19-Sep-2023	20-Sep-2023	30 days	2 days	✓	22-Sep-2023	30 days	4 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-01 SA3	E532	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
BH23-02 SA6	E532	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	7 days	2 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH23-03 SA7	E532	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH23-04 SA3	E532	19-Sep-2023	20-Sep-2023	30 days	1 days	✓	22-Sep-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] DUP-01	E532	19-Sep-2023	20-Sep-2023	30 days	2 days	✓	22-Sep-2023	7 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-01 SA3	E611D	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-02 SA6	E611D	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-03 SA7	E611D	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH23-04 SA3	E611D	19-Sep-2023	21-Sep-2023	14 days	2 days	✓	21-Sep-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] DUP-01	E611D	19-Sep-2023	21-Sep-2023	14 days	3 days	✓	21-Sep-2023	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)							
Boron-Hot Water Extractable by ICPOES	E487	1143057	1	14	7.1	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1146358	1	16	6.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1143539	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1143056	1	14	7.1	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1143036	1	18	5.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1143058	1	14	7.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1143059	1	14	7.1	5.0	✓
Moisture Content by Gravimetry	E144	1143540	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1143535	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1143055	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1150861	2	29	6.9	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1143049	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1143057	2	14	14.2	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1146358	1	16	6.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1143539	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1143056	2	14	14.2	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1143036	2	18	11.1	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1143058	2	14	14.2	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1143059	2	14	14.2	10.0	✓
Moisture Content by Gravimetry	E144	1143540	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1143535	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1143055	2	14	14.2	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1150861	2	29	6.9	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1143049	1	20	5.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1143057	1	14	7.1	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1146358	1	16	6.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1143539	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1143056	1	14	7.1	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1143036	1	18	5.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1143058	1	14	7.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1143059	1	14	7.1	5.0	✓
Moisture Content by Gravimetry	E144	1143540	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1143055	1	14	7.1	5.0	✓

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*
Method Blanks (MB) - Continued							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1150861	2	29	6.9	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1143049	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	1146358	1	16	6.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1143539	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1150861	2	29	6.9	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1143049	1	20	5.0	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
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L ALS Environmental - Waterloo	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A ALS Environmental - Waterloo	Soil/Solid	MECP E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
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.
WAD Cyanide (0.01M NaOH Extraction)	E336A ALS Environmental - Waterloo	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C ALS Environmental - Waterloo	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 355 µm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 ALS Environmental - Waterloo	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
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.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D 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.
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
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Waterloo	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A ALS Environmental - Waterloo	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling or decanting and then analyzed using a pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A ALS Environmental - Waterloo	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.
Digestion for Metals and Mercury (355 µm Sieve)	EP440C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2 (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with weak calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011)
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 ALS Environmental - Waterloo	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
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.

QUALITY CONTROL REPORT

Work Order	: **WT2330022**	Page	: 1 of 19
Client	: Englobe Corp.	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 19-Sep-2023 18:40
PO	: ----	Date Analysis Commenced	: 20-Sep-2023
C-O-C number	: 20-1083252	Issue Date	: 26-Sep-2023 12:59
Sampler	: TA ----		
Site	: ----		
Quote number	: KITCHENER/LONDON EXCESS SOIL		
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
- Reference Material (RM) 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
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Waterloo Metals, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario
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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: 1143056)											
WT2328825-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.268 mS/cm	270	0.743%	20%	----
Physical Tests (QC Lot: 1143535)											
WT2329799-036	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.70	7.72	0.259%	5%	----
Physical Tests (QC Lot: 1143540)											
WT2329799-036	Anonymous	Moisture	----	E144	0.25	%	4.62	4.76	3.01%	20%	----
Cyanides (QC Lot: 1143049)											
WT2328825-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 1143055)											
WT2328825-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	14.9	15.0	0.669%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	1.33	1.35	0.02	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	16.3	16.4	0.612%	30%	----
Metals (QC Lot: 1143057)											
WT2328825-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.10	<0.10	0.0002	Diff <2x LOR	----
Metals (QC Lot: 1143058)											
WT2328825-001	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 1143059)											
WT2328825-001	Anonymous	Antimony	7440-36-0	E440C	0.10	mg/kg	0.82	0.92	11.2%	30%	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	0.85	0.88	3.24%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	15.5	15.1	2.80%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.12	0.12	0.002	Diff <2x LOR	----
		Boron	7440-42-8	E440C	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.031	0.033	0.002	Diff <2x LOR	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	8.83	6.87	24.9%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	1.38	1.35	2.43%	30%	----
		Copper	7440-50-8	E440C	14.0	mg/kg	<14.0	<14.0	0	Diff <2x LOR	----
		Lead	7439-92-1	E440C	0.50	mg/kg	2.19	2.31	0.12	Diff <2x LOR	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.23	0.25	0.02	Diff <2x LOR	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	3.63	3.34	8.22%	30%	----
		Selenium	7782-49-2	E440C	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440C	0.10	mg/kg	<0.10	<0.10	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*
Metals (QC Lot: 1143059) - continued											
WT2328825-001	Anonymous	Thallium	7440-28-0	E440C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.308	0.304	0.004	Diff <2x LOR	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	10.8	12.1	11.3%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	22.2	20.2	9.36%	30%	----
Speciated Metals (QC Lot: 1143036)											
WT2328825-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1146357)											
WT2329574-024	Anonymous	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	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*
Volatile Organic Compounds (QC Lot: 1146357) - continued											
WT2329574-024	Anonymous	Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1150861)											
WT2330225-004	Anonymous	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	0.241	0.241	0.117%	40%	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	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*
Volatile Organic Compounds (QC Lot: 1150861) - continued											
WT2330225-004	Anonymous	Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	0.278	0.279	0.202%	40%	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	2.18	2.18	0.142%	40%	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	0.539	0.543	0.729%	40%	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	0.152	0.152	0.370%	40%	----
Hydrocarbons (QC Lot: 1143539)											
WT2329799-036	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	----
Hydrocarbons (QC Lot: 1146358)											
WT2329574-024	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	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: 1143056)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 1143540)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 1143049)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 1143055)						
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	<0.50	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	<0.50	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	<0.50	----
Metals (QCLot: 1143057)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 1143058)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1143059)						
Antimony	7440-36-0	E440C	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440C	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440C	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440C	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440C	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440C	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440C	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440C	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440C	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440C	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440C	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 1143036)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 1146357)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1146357) - continued						
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Volatile Organic Compounds (QCLot: 1150861)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1150861) - continued						
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 1143539)						
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	----
Hydrocarbons (QCLot: 1146358)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----

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: 1143056)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	99.0	90.0	110	----
Physical Tests (QCLot: 1143535)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1143540)									
Moisture	----	E144	0.25	%	50 %	100.0	90.0	110	----
Cyanides (QCLot: 1143049)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	1.25 mg/kg	95.0	80.0	120	----
Metals (QCLot: 1143055)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	109	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	106	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	109	80.0	120	----
Metals (QCLot: 1143057)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	99.7	70.0	130	----
Metals (QCLot: 1143058)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	108	80.0	120	----
Metals (QCLot: 1143059)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	106	80.0	120	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	112	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	107	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	103	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	106	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	100	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	106	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	104	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	104	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	104	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	103	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	110	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	94.3	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	106	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1143059) - continued									
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	101	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	108	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	101	80.0	120	----
Speciated Metals (QCLot: 1143036)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	94.5	80.0	120	----
Volatile Organic Compounds (QCLot: 1146357)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	91.6	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	89.7	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	94.6	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	92.3	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	91.7	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	93.9	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	93.2	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	93.7	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	87.7	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	89.0	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	95.5	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	94.8	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	94.0	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	91.4	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	94.4	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	89.6	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	93.0	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	93.4	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	92.7	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	91.0	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	92.3	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	93.8	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	93.6	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	94.9	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	91.0	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	84.9	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	82.6	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	96.2	70.0	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
Volatile Organic Compounds (QCLot: 1146357) - continued									
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	91.6	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	93.5	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	94.3	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	95.5	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	91.9	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	95.4	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	91.1	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	93.6	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	88.1	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	86.6	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	94.0	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	94.4	70.0	130	----
Volatile Organic Compounds (QCLot: 1150861)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	104	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	95.7	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	96.5	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	85.6	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	95.0	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	93.5	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	92.6	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	96.2	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	89.0	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	88.4	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	92.6	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	92.7	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	92.3	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	58.4	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	90.1	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	96.9	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	95.7	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	96.9	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	96.7	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	98.8	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	96.6	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	89.8	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	82.2	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1150861) - continued									
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	88.3	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	86.2	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	95.0	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	93.0	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	90.3	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	92.5	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	90.9	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	96.2	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	92.4	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	91.4	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	92.3	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	92.0	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	95.9	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	89.0	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	92.9	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	88.9	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	93.1	70.0	130	----
Hydrocarbons (QCLot: 1143539)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	656.4125 mg/kg	103	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1332.613 mg/kg	103	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	761.4625 mg/kg	103	70.0	130	----
Hydrocarbons (QCLot: 1146358)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	98.5	80.0	120	----

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
Cyanides (QCLot: 1143049)										
WT2328825-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.18 mg/kg	1.25 mg/kg	95.7	70.0	130	----
Volatile Organic Compounds (QCLot: 1146357)										
WT2329574-024	Anonymous	Acetone	67-64-1	E611D	1.64 mg/kg	3.125 mg/kg	73.5	50.0	140	----
		Benzene	71-43-2	E611D	1.62 mg/kg	3.125 mg/kg	72.7	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	1.65 mg/kg	3.125 mg/kg	74.0	50.0	140	----
		Bromoform	75-25-2	E611D	1.68 mg/kg	3.125 mg/kg	75.3	50.0	140	----
		Bromomethane	74-83-9	E611D	1.69 mg/kg	3.125 mg/kg	76.0	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	1.72 mg/kg	3.125 mg/kg	77.4	50.0	140	----
		Chlorobenzene	108-90-7	E611D	1.67 mg/kg	3.125 mg/kg	75.1	50.0	140	----
		Chloroform	67-66-3	E611D	1.66 mg/kg	3.125 mg/kg	74.4	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	1.57 mg/kg	3.125 mg/kg	70.5	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	1.56 mg/kg	3.125 mg/kg	70.0	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	1.74 mg/kg	3.125 mg/kg	78.1	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	1.78 mg/kg	3.125 mg/kg	80.0	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	1.75 mg/kg	3.125 mg/kg	78.6	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	1.50 mg/kg	3.125 mg/kg	67.1	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	1.69 mg/kg	3.125 mg/kg	76.1	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	1.58 mg/kg	3.125 mg/kg	71.0	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	1.73 mg/kg	3.125 mg/kg	77.8	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	1.65 mg/kg	3.125 mg/kg	73.9	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	1.70 mg/kg	3.125 mg/kg	76.1	50.0	140	----
		Dichloromethane	75-09-2	E611D	1.64 mg/kg	3.125 mg/kg	73.6	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	1.63 mg/kg	3.125 mg/kg	73.2	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	1.62 mg/kg	3.125 mg/kg	72.6	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	1.63 mg/kg	3.125 mg/kg	73.0	50.0	140	----
		Ethylbenzene	100-41-4	E611D	1.71 mg/kg	3.125 mg/kg	76.8	50.0	140	----
		Hexane, n-	110-54-3	E611D	1.68 mg/kg	3.125 mg/kg	75.5	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	1.43 mg/kg	3.125 mg/kg	64.3	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	1.34 mg/kg	3.125 mg/kg	60.1	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	1.79 mg/kg	3.125 mg/kg	80.5	50.0	140	----
		Styrene	100-42-5	E611D	1.66 mg/kg	3.125 mg/kg	74.5	50.0	140	----

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: 1146357) - continued										
WT2329574-024	Anonymous	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	1.68 mg/kg	3.125 mg/kg	75.7	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	1.67 mg/kg	3.125 mg/kg	75.1	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	1.75 mg/kg	3.125 mg/kg	78.7	50.0	140	----
		Toluene	108-88-3	E611D	1.68 mg/kg	3.125 mg/kg	75.3	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.73 mg/kg	3.125 mg/kg	77.7	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	1.62 mg/kg	3.125 mg/kg	72.5	50.0	140	----
		Trichloroethylene	79-01-6	E611D	1.66 mg/kg	3.125 mg/kg	74.6	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	1.72 mg/kg	3.125 mg/kg	77.1	50.0	140	----
		Vinyl chloride	75-01-4	E611D	1.81 mg/kg	3.125 mg/kg	81.3	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	3.39 mg/kg	6.25 mg/kg	76.1	50.0	140	----
		Xylene, o-	95-47-6	E611D	1.69 mg/kg	3.125 mg/kg	75.8	50.0	140	----
Volatile Organic Compounds (QCLot: 1150861)										
WT2330225-004	Anonymous	Acetone	67-64-1	E611D	2.57 mg/kg	3.125 mg/kg	125	50.0	140	----
		Benzene	71-43-2	E611D	2.10 mg/kg	3.125 mg/kg	102	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.13 mg/kg	3.125 mg/kg	104	50.0	140	----
		Bromoform	75-25-2	E611D	1.94 mg/kg	3.125 mg/kg	94.2	50.0	140	----
		Bromomethane	74-83-9	E611D	2.07 mg/kg	3.125 mg/kg	100	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	1.99 mg/kg	3.125 mg/kg	96.6	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.00 mg/kg	3.125 mg/kg	97.1	50.0	140	----
		Chloroform	67-66-3	E611D	2.12 mg/kg	3.125 mg/kg	103	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	1.98 mg/kg	3.125 mg/kg	96.2	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.02 mg/kg	3.125 mg/kg	98.2	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.01 mg/kg	3.125 mg/kg	97.8	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.02 mg/kg	3.125 mg/kg	98.4	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.01 mg/kg	3.125 mg/kg	97.8	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	1.76 mg/kg	3.125 mg/kg	85.5	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	1.68 mg/kg	3.125 mg/kg	81.7	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	2.19 mg/kg	3.125 mg/kg	106	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.05 mg/kg	3.125 mg/kg	99.5	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.13 mg/kg	3.125 mg/kg	103	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.09 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.18 mg/kg	3.125 mg/kg	106	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.14 mg/kg	3.125 mg/kg	104	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	1.94 mg/kg	3.125 mg/kg	94.2	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	1.80 mg/kg	3.125 mg/kg	87.3	50.0	140	----

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: 1150861) - continued										
WT2330225-004	Anonymous	Ethylbenzene	100-41-4	E611D	1.93 mg/kg	3.125 mg/kg	93.8	50.0	140	----
		Hexane, n-	110-54-3	E611D	1.56 mg/kg	3.125 mg/kg	75.6	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.31 mg/kg	3.125 mg/kg	112	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.13 mg/kg	3.125 mg/kg	104	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	1.93 mg/kg	3.125 mg/kg	93.7	50.0	140	----
		Styrene	100-42-5	E611D	2.00 mg/kg	3.125 mg/kg	97.1	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	1.98 mg/kg	3.125 mg/kg	96.2	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.19 mg/kg	3.125 mg/kg	106	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	1.96 mg/kg	3.125 mg/kg	95.2	50.0	140	----
		Toluene	108-88-3	E611D	2.11 mg/kg	3.125 mg/kg	102	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.98 mg/kg	3.125 mg/kg	96.3	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.08 mg/kg	3.125 mg/kg	101	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.06 mg/kg	3.125 mg/kg	99.8	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	1.94 mg/kg	3.125 mg/kg	94.1	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.10 mg/kg	3.125 mg/kg	102	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	3.88 mg/kg	6.25 mg/kg	94.3	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.02 mg/kg	3.125 mg/kg	98.0	50.0	140	----
Hydrocarbons (QCLot: 1143539)										
WT2329799-036	Anonymous	F2 (C10-C16)	----	E601.SG-L	544 mg/kg	656.4125 mg/kg	104	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1120 mg/kg	1332.613 mg/kg	106	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	615 mg/kg	761.4625 mg/kg	102	60.0	140	----
Hydrocarbons (QCLot: 1146358)										
WT2329574-024	Anonymous	F1 (C6-C10)	----	E581.F1	40.4 mg/kg	62.5 mg/kg	90.6	60.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

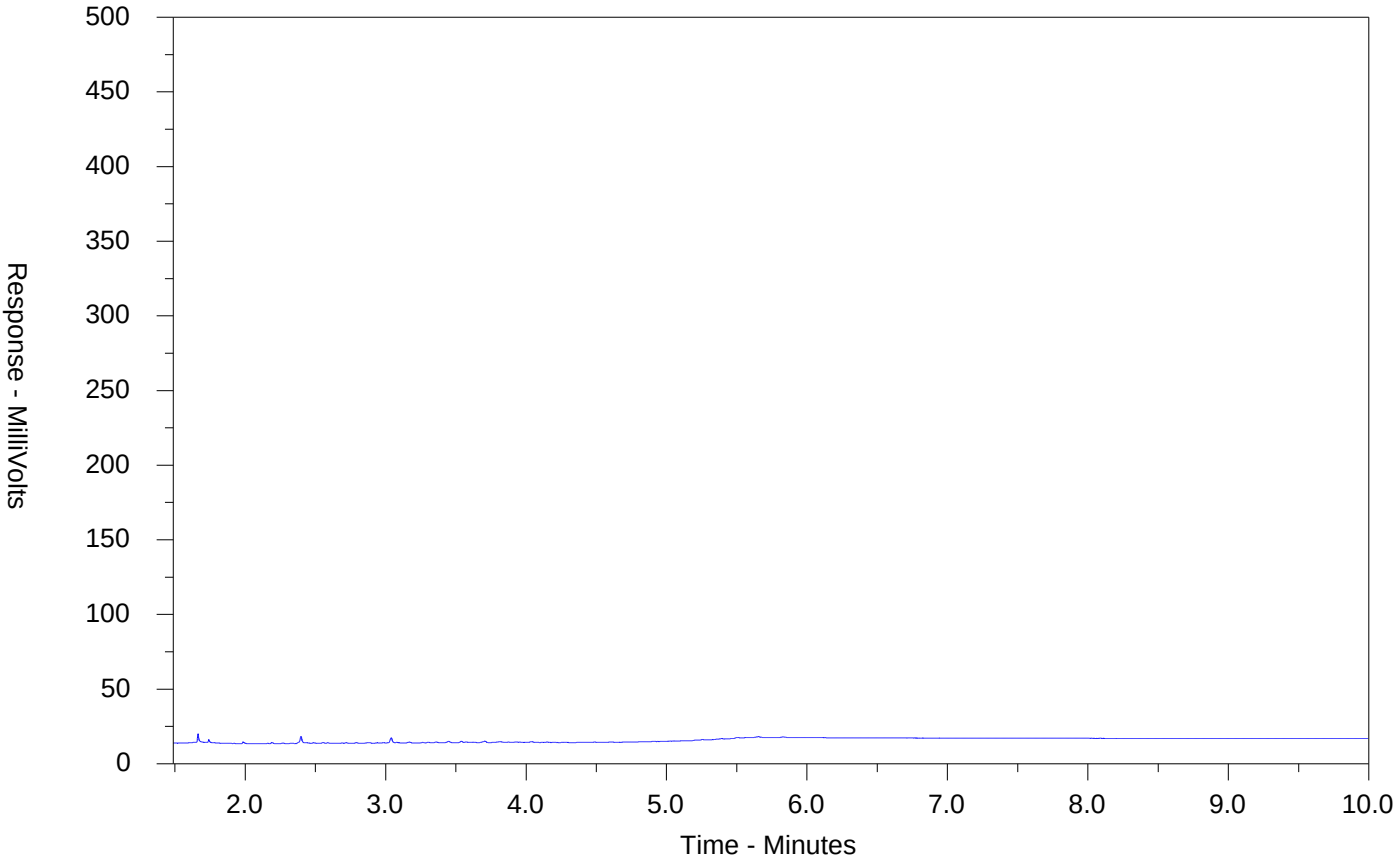
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1143056)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1725.6 µS/cm	104	70.0	130	----
Metals (QCLot: 1143055)									
	RM	Calcium, soluble ion content	7440-70-2	E484	78.94 mg/L	113	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	24.16 mg/L	114	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	72.46 mg/L	108	70.0	130	----
Metals (QCLot: 1143057)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.6542 mg/kg	94.0	60.0	140	----
Metals (QCLot: 1143058)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	99.7	70.0	130	----
Metals (QCLot: 1143059)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	97.0	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	101	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	104	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	108	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	120	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	92.3	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	102	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	98.6	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	106	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	101	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	103	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	96.8	70.0	130	----
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	125	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	98.9	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	95.8	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	99.2	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	96.1	70.0	130	----
Speciated Metals (QCLot: 1143036)									

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 1143036) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	85.7	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2330022-001-E601.SG-L
Client Sample ID: BH23-01 SA3



←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.

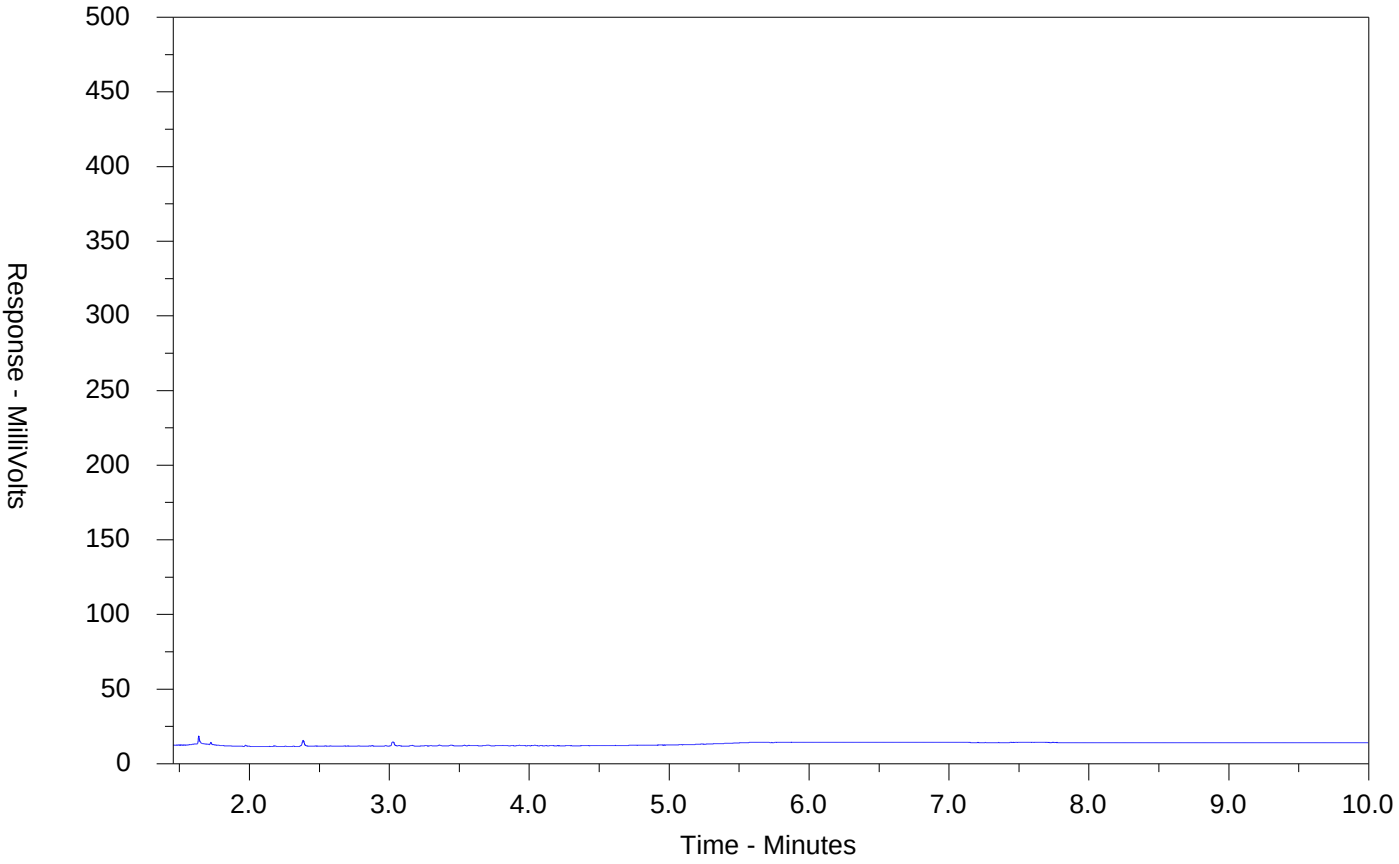
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2330022-002-E601.SG-L
Client Sample ID: BH23-02 SA6



←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.

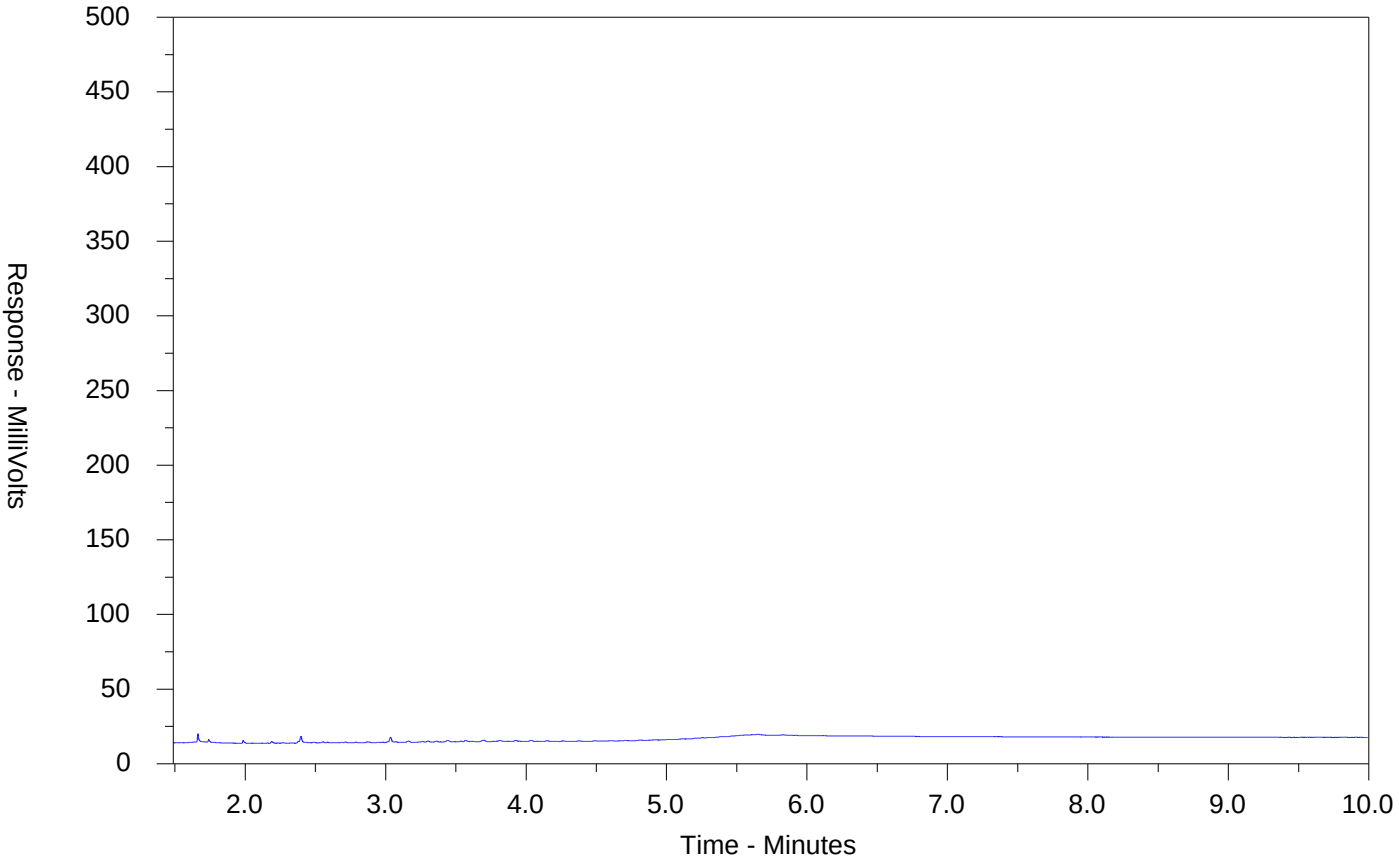
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2330022-003-E601.SG-L
Client Sample ID: BH23-03 SA7



←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.

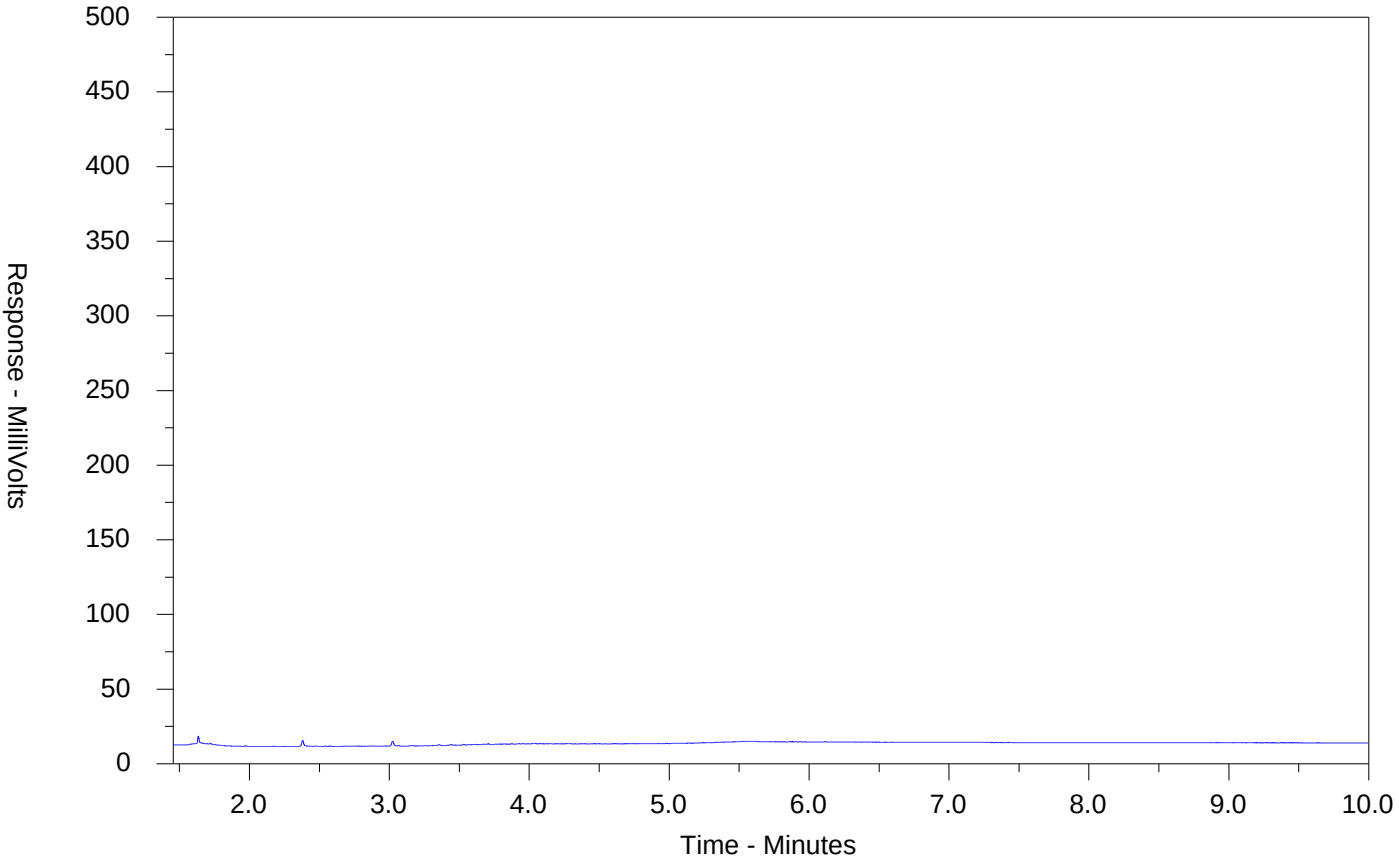
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2330022-004-E601.SG-L
Client Sample ID: BH23-04 SA3



←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.

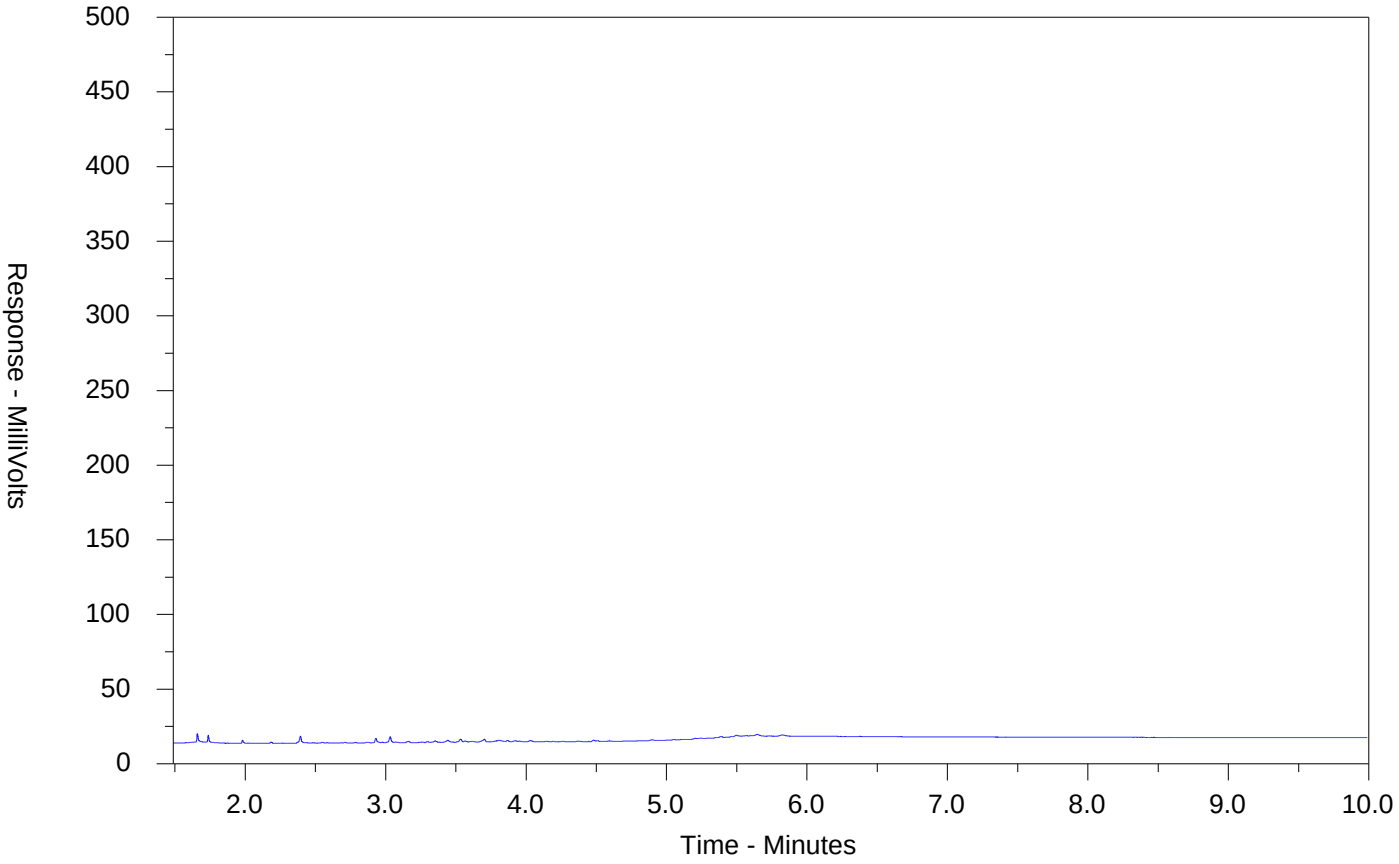
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2330022-005-E601.SG-L
Client Sample ID: DUP-01



←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.

FA

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1083252

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page 1

Environmental Division
Waterloo
Work Order Reference
WT2330022

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Englobe
Contact:	Jessica Godin
Phone:	226 752 9370
	Company address below will appear on the final report
Street:	353 Bridge St. E
City/Province:	Kitchener ON
Postal Code:	N2K 2Y5
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

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: jessica.godin@englobecorp.com

Email 2: taylor.atkinw@englobecorp.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: AP-ONT@englobecorp.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. 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

Project Information

ALS Account # / Quote #:

Job #: 02302109.001

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): WT2330022 FA

ALS Contact: Gayle B

Sampler: TA

Analysis Request — 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	PHCs (F1-F4)	VOCs	O.Reg 153/04 metals	+inorganics (incl. EC, pH, SAR)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH23-01 SA3	19-09-23	1305	Soil	4	✓	✓	✓	✓			
	BH23-02 SA6	↓	1240	↓	4	✓	✓	✓	✓			
	BH23-03 SA7	↓	855	↓	4	✓	✓	✓	✓			
	BH23-04 SA3	↓	1400	↓	4	✓	✓	✓	✓			
	DUP-01	↓	0:00	↓	4	✓	✓	✓	✓			

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)

O.Reg 153/04 Table 2 RPI

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: -1.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Taylor Atkinw	Date: Sept. 19/23	Time: 1835	Received by:	Date:	Time:	Received by: EC	Date: Sept. 19/23	Time: 18:40

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**.

S01_695
VS_195

FA

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2330461**	Page	: 1 of 9
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 21-Sep-2023 16:20
PO	: ----	Date Analysis Commenced	: 23-Sep-2023
C-O-C number	: 20-1081178	Issue Date	: 28-Sep-2023 18:03
Sampler	: TA		
Site	: ----		
Quote number	: KITCHENER/LONDON SOIL SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

No Breaches Found

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
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: 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 Evaluation

Matrix: Soil/Solid

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	TP23-01	TP23-02	TP23-03	DUP-02	----	----	----
				Sampling date/time	21-Sep-2023 10:10	21-Sep-2023 10:30	21-Sep-2023 11:00	21-Sep-2023 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2330461-001	WT2330461-002	WT2330461-003	WT2330461-004	--------	--------	--------
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT	mS/cm		0.110	0.235	0.134	----	----	----	----
Moisture	----	E144/WT	%		8.48	15.8	10.0	8.85	----	----	----
pH (1:2 soil:CaCl2-aq)	----	E108A/WT	pH units		7.67	7.36	7.53	----	----	----	----
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT	mg/kg		<0.050	<0.050	<0.050	----	----	----	----
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT	mg/L		5.07	15.7	7.22	----	----	----	----
Magnesium, soluble ion content	7439-95-4	E484/WT	mg/L		0.72	2.62	1.05	----	----	----	----
Sodium, soluble ion content	17341-25-2	E484/WT	mg/L		0.97	2.51	1.46	----	----	----	----
Sodium adsorption ratio [SAR]	----	E484/WT	-		0.11	0.15	0.13	----	----	----	----
Metals											
Antimony	7440-36-0	E440C/WT	mg/kg		<0.10	0.28	<0.10	----	----	----	----
Arsenic	7440-38-2	E440C/WT	mg/kg		2.30	4.17	3.12	----	----	----	----
Barium	7440-39-3	E440C/WT	mg/kg		29.6	50.5	38.8	----	----	----	----
Beryllium	7440-41-7	E440C/WT	mg/kg		0.29	0.42	0.36	----	----	----	----
Boron	7440-42-8	E440C/WT	mg/kg		6.8	8.0	6.6	----	----	----	----
Boron, hot water soluble	7440-42-8	E487/WT	mg/kg		<0.10	0.47	0.11	----	----	----	----
Cadmium	7440-43-9	E440C/WT	mg/kg		0.317	0.561	0.389	----	----	----	----
Chromium	7440-47-3	E440C/WT	mg/kg		10.4	17.2	13.4	----	----	----	----
Cobalt	7440-48-4	E440C/WT	mg/kg		3.50	4.90	4.33	----	----	----	----
Copper	7440-50-8	E440C/WT	mg/kg		8.82	18.0	9.88	----	----	----	----
Lead	7439-92-1	E440C/WT	mg/kg		18.5	48.5	37.4	----	----	----	----
Mercury	7439-97-6	E510C/WT	mg/kg		0.0165	0.0967	0.0236	----	----	----	----
Molybdenum	7439-98-7	E440C/WT	mg/kg		0.20	0.57	0.30	----	----	----	----
Nickel	7440-02-0	E440C/WT	mg/kg		7.42	10.3	8.57	----	----	----	----
Selenium	7782-49-2	E440C/WT	mg/kg		<0.20	0.23	<0.20	----	----	----	----
Silver	7440-22-4	E440C/WT	mg/kg		<0.10	0.10	<0.10	----	----	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: TP23-01	TP23-02	TP23-03	DUP-02	----	----	----
				Sampling date/time: 21-Sep-2023 10:10	21-Sep-2023 10:30	21-Sep-2023 11:00	21-Sep-2023 00:00	----	----	----
				Sub-Matrix: Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
				WT2330461-001	WT2330461-002	WT2330461-003	WT2330461-004	--------	--------	--------
Metals										
Thallium	7440-28-0	E440C/WT	mg/kg	0.066	0.099	0.079	----	----	----	----
Uranium	7440-61-1	E440C/WT	mg/kg	0.458	0.497	0.589	----	----	----	----
Vanadium	7440-62-2	E440C/WT	mg/kg	18.8	28.4	29.1	----	----	----	----
Zinc	7440-66-6	E440C/WT	mg/kg	114	176	124	----	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT	mg/kg	<0.10	<0.10	0.12	----	----	----	----
Volatile Organic Compounds										
Benzene	71-43-2	E611A/WT	mg/kg	<0.0050	<0.0050	<0.0050	----	----	----	----
Ethylbenzene	100-41-4	E611A/WT	mg/kg	<0.015	<0.015	<0.015	----	----	----	----
Toluene	108-88-3	E611A/WT	mg/kg	<0.050	<0.050	<0.050	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/WT	mg/kg	<0.030	<0.030	<0.030	----	----	----	----
Xylene, o-	95-47-6	E611A/WT	mg/kg	<0.030	<0.030	<0.030	----	----	----	----
Xylenes, total	1330-20-7	E611A/WT	mg/kg	<0.050	<0.050	<0.050	----	----	----	----
BTEX, total	----	E611A/WT	mg/kg	<0.10	<0.10	<0.10	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1/WT	mg/kg	<5.0	<5.0	<5.0	----	----	----	----
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg	<10	<10	<10	----	----	----	----
F3 (C16-C34)	----	E601.SG-L/WT	mg/kg	<50	<50	<50	----	----	----	----
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg	<50	<50	<50	----	----	----	----
F1-BTEX	----	EC580/WT	mg/kg	<5.0	<5.0	<5.0	----	----	----	----
F2-Naphthalene	----	EC600/WT	mg/kg	<25	<25	<25	----	----	----	----
F3-PAH	n/a	EC600/WT	mg/kg	<50	<50	<50	----	----	----	----
Hydrocarbons, total (C6-C50)	----	EC581/WT	mg/kg	<80	<80	<80	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT	-	YES	YES	YES	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	%	96.4	95.1	95.3	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT	%	75.8	78.4	66.3	----	----	----	----
Volatile Organic Compounds Surrogates										

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	TP23-01	TP23-02	TP23-03	DUP-02	----	----	----
				Sampling date/time	21-Sep-2023 10:10	21-Sep-2023 10:30	21-Sep-2023 11:00	21-Sep-2023 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2330461-001	WT2330461-002	WT2330461-003	WT2330461-004	--------	--------	--------
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611A/WT	%		66.5	69.6	64.0	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/WT	%		96.5	101	93.9	----	----	----	----
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Acenaphthylene	208-96-8	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Anthracene	120-12-7	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	mg/kg		<0.050	0.064	<0.050	<0.050	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Chrysene	218-01-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Fluoranthene	206-44-0	E641A/WT	mg/kg		<0.050	0.070	<0.050	<0.050	----	----	----
Fluorene	86-73-7	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Naphthalene	91-20-3	E641A/WT	mg/kg		<0.010	<0.010	<0.010	<0.010	----	----	----
Phenanthrene	85-01-8	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Pyrene	129-00-0	E641A/WT	mg/kg		<0.050	0.055	<0.050	<0.050	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Acridine-d9	34749-75-2	E641A/WT	%		95.7	94.8	91.1	91.1	----	----	----
Chrysene-d12	1719-03-5	E641A/WT	%		89.3	87.0	84.8	85.7	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	%		102	102	98.8	99.7	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT	%		100	97.9	95.6	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.

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F					
Physical Tests									
Conductivity (1:2 leachate)	----	mS/cm	**0.7 mS/cm**	**0.7 mS/cm**					
Moisture	----	%	**--**	**--**					
pH (1:2 soil:CaCl2-aq)	----	pH units	**--**	**--**					
Cyanides									
Cyanide, weak acid dissociable	----	mg/kg	**0.051 mg/kg**	**0.051 mg/kg**					
Fixed-Ratio Extractables									
Calcium, soluble ion content	7440-70-2	mg/L	**--**	**--**					
Magnesium, soluble ion content	7439-95-4	mg/L	**--**	**--**					
Sodium adsorption ratio [SAR]	----	-	**5 -**	**5 -**					
Sodium, soluble ion content	17341-25-2	mg/L	**--**	**--**					
Metals									
Antimony	7440-36-0	mg/kg	**7.5 mg/kg**	**7.5 mg/kg**					
Arsenic	7440-38-2	mg/kg	**18 mg/kg**	**18 mg/kg**					
Barium	7440-39-3	mg/kg	**390 mg/kg**	**390 mg/kg**					
Beryllium	7440-41-7	mg/kg	**4 mg/kg**	**5 mg/kg**					
Boron, hot water soluble	7440-42-8	mg/kg	**1.5 mg/kg**	**1.5 mg/kg**					
Boron	7440-42-8	mg/kg	**120 mg/kg**	**120 mg/kg**					
Cadmium	7440-43-9	mg/kg	**1.2 mg/kg**	**1.2 mg/kg**					
Chromium	7440-47-3	mg/kg	**160 mg/kg**	**160 mg/kg**					
Cobalt	7440-48-4	mg/kg	**22 mg/kg**	**22 mg/kg**					
Copper	7440-50-8	mg/kg	**140 mg/kg**	**180 mg/kg**					
Lead	7439-92-1	mg/kg	**120 mg/kg**	**120 mg/kg**					
Mercury	7439-97-6	mg/kg	**0.27 mg/kg**	**1.8 mg/kg**					
Molybdenum	7439-98-7	mg/kg	**6.9 mg/kg**	**6.9 mg/kg**					
Nickel	7440-02-0	mg/kg	**100 mg/kg**	**130 mg/kg**					
Selenium	7782-49-2	mg/kg	**2.4 mg/kg**	**2.4 mg/kg**					
Silver	7440-22-4	mg/kg	**20 mg/kg**	**25 mg/kg**					
Thallium	7440-28-0	mg/kg	**1 mg/kg**	**1 mg/kg**					
Uranium	7440-61-1	mg/kg	**23 mg/kg**	**23 mg/kg**					
Vanadium	7440-62-2	mg/kg	**86 mg/kg**	**86 mg/kg**					
Zinc	7440-66-6	mg/kg	**340 mg/kg**	**340 mg/kg**					
Speciated Metals									
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg	**8 mg/kg**	**10 mg/kg**					
Volatile Organic Compounds									
Benzene	71-43-2	mg/kg	**0.21 mg/kg**	**0.17 mg/kg**					
BTEX, total	----	mg/kg	**--**	**--**					
Ethylbenzene	100-41-4	mg/kg	**1.1 mg/kg**	**1.6 mg/kg**					

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F					
Volatile Organic Compounds - Continued									
Toluene	108-88-3	mg/kg	**2.3 mg/kg**	**6 mg/kg**					
Xylene, m+p-	179601-23-1	mg/kg	--	--					
Xylene, o-	95-47-6	mg/kg	--	--					
Xylenes, total	1330-20-7	mg/kg	**3.1 mg/kg**	**25 mg/kg**					
Hydrocarbons									
Chromatogram to baseline at nC50	n/a	-	--	--					
F1 (C6-C10)	----	mg/kg	**55 mg/kg**	**65 mg/kg**					
F1-BTEX	----	mg/kg	**55 mg/kg**	**65 mg/kg**					
F2 (C10-C16)	----	mg/kg	**98 mg/kg**	**150 mg/kg**					
F2-Naphthalene	----	mg/kg	--	--					
F3 (C16-C34)	----	mg/kg	**300 mg/kg**	**1300 mg/kg**					
F3-PAH	n/a	mg/kg	--	--					
F4 (C34-C50)	----	mg/kg	**2800 mg/kg**	**5600 mg/kg**					
Hydrocarbons, total (C6-C50)	----	mg/kg	--	--					
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%							
Dichlorotoluene, 3,4-	95-75-0	%							
Bromofluorobenzene, 4-	460-00-4	%							
Difluorobenzene, 1,4-	540-36-3	%							
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	83-32-9	mg/kg	**7.9 mg/kg**	**29 mg/kg**					
Acenaphthylene	208-96-8	mg/kg	**0.15 mg/kg**	**0.17 mg/kg**					
Anthracene	120-12-7	mg/kg	**0.67 mg/kg**	**0.74 mg/kg**					
Benz(a)anthracene	56-55-3	mg/kg	**0.5 mg/kg**	**0.63 mg/kg**					
Benzo(a)pyrene	50-32-8	mg/kg	**0.3 mg/kg**	**0.3 mg/kg**					
Benzo(b+j)fluoranthene	n/a	mg/kg	**0.78 mg/kg**	**0.78 mg/kg**					
Benzo(g,h,i)perylene	191-24-2	mg/kg	**6.6 mg/kg**	**7.8 mg/kg**					
Benzo(k)fluoranthene	207-08-9	mg/kg	**0.78 mg/kg**	**0.78 mg/kg**					
Chrysene	218-01-9	mg/kg	**7 mg/kg**	**7.8 mg/kg**					
Dibenz(a,h)anthracene	53-70-3	mg/kg	**0.1 mg/kg**	**0.1 mg/kg**					
Fluoranthene	206-44-0	mg/kg	**0.69 mg/kg**	**0.69 mg/kg**					
Fluorene	86-73-7	mg/kg	**62 mg/kg**	**69 mg/kg**					
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	**0.38 mg/kg**	**0.48 mg/kg**					
Methylnaphthalene, 1+2-	----	mg/kg	**0.99 mg/kg**	**3.4 mg/kg**					
Methylnaphthalene, 1-	90-12-0	mg/kg	**0.99 mg/kg**	**3.4 mg/kg**					
Methylnaphthalene, 2-	91-57-6	mg/kg	**0.99 mg/kg**	**3.4 mg/kg**					
Naphthalene	91-20-3	mg/kg	**0.6 mg/kg**	**0.75 mg/kg**					
Phenanthrene	85-01-8	mg/kg	**6.2 mg/kg**	**7.8 mg/kg**					
Pyrene	129-00-0	mg/kg	**78 mg/kg**	**78 mg/kg**					
Acridine-d9	34749-75-2	%							

Analyte	CAS Number	Unit	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F					
Polycyclic Aromatic Hydrocarbons Surrogates - Continued									
Chrysene-d12	1719-03-5	%							
Naphthalene-d8	1146-65-2	%							
Phenanthrene-d10	1517-22-2	%							

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

Key:

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2330461**	Page	: 1 of 12
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 21-Sep-2023 16:20
PO	: ----	Issue Date	: 28-Sep-2023 17:41
C-O-C number	: 20-1081178		
Sampler	: TA		
Site	: ----		
Quote number	: KITCHENER/LONDON SOIL SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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 / 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
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E336A	21-Sep-2023	23-Sep-2023	14 days	2 days	✓	25-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E336A	21-Sep-2023	23-Sep-2023	14 days	2 days	✓	25-Sep-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E336A	21-Sep-2023	23-Sep-2023	14 days	2 days	✓	25-Sep-2023	14 days	2 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E484	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E484	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E484	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
TP23-01	E581.F1	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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] TP23-02	E581.F1	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] TP23-03	E581.F1	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] TP23-01	E601.SG-L	21-Sep-2023	25-Sep-2023	14 days	4 days	✓	27-Sep-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] TP23-02	E601.SG-L	21-Sep-2023	25-Sep-2023	14 days	4 days	✓	27-Sep-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] TP23-03	E601.SG-L	21-Sep-2023	25-Sep-2023	14 days	4 days	✓	27-Sep-2023	40 days	2 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] TP23-01	E487	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] TP23-02	E487	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] TP23-03	E487	21-Sep-2023	27-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP] TP23-01	E510C	21-Sep-2023	26-Sep-2023	28 days	6 days	✓	27-Sep-2023	28 days	6 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E510C	21-Sep-2023	26-Sep-2023	28 days	6 days	✓	27-Sep-2023	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E510C	21-Sep-2023	26-Sep-2023	28 days	6 days	✓	27-Sep-2023	28 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E440C	21-Sep-2023	26-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E440C	21-Sep-2023	26-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E440C	21-Sep-2023	26-Sep-2023	180 days	6 days	✓	27-Sep-2023	180 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E100-L	21-Sep-2023	27-Sep-2023	30 days	6 days	✓	27-Sep-2023	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E100-L	21-Sep-2023	27-Sep-2023	30 days	6 days	✓	27-Sep-2023	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E100-L	21-Sep-2023	27-Sep-2023	30 days	6 days	✓	27-Sep-2023	30 days	6 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E144	21-Sep-2023	----	----	----		24-Sep-2023	----	3 days	

Matrix: **Soil/Solid**

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

Analyte Group / 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]										
TP23-02	E144	21-Sep-2023	----	----	----		24-Sep-2023	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E144	21-Sep-2023	----	----	----		24-Sep-2023	----	3 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-02	E144	21-Sep-2023	----	----	----		24-Sep-2023	----	4 days	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E108A	21-Sep-2023	25-Sep-2023	30 days	4 days	✓	27-Sep-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E108A	21-Sep-2023	25-Sep-2023	30 days	4 days	✓	27-Sep-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-03	E108A	21-Sep-2023	25-Sep-2023	30 days	4 days	✓	27-Sep-2023	30 days	6 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP-02	E641A	21-Sep-2023	25-Sep-2023	60 days	4 days	✓	25-Sep-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-01	E641A	21-Sep-2023	25-Sep-2023	60 days	4 days	✓	25-Sep-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
TP23-02	E641A	21-Sep-2023	25-Sep-2023	60 days	4 days	✓	25-Sep-2023	40 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / 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] TP23-03	E641A	21-Sep-2023	25-Sep-2023	60 days	4 days	✓	25-Sep-2023	40 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] TP23-01	E532	21-Sep-2023	23-Sep-2023	30 days	2 days	✓	25-Sep-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] TP23-02	E532	21-Sep-2023	23-Sep-2023	30 days	2 days	✓	25-Sep-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] TP23-03	E532	21-Sep-2023	23-Sep-2023	30 days	2 days	✓	25-Sep-2023	7 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] TP23-01	E611A	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] TP23-02	E611A	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] TP23-03	E611A	21-Sep-2023	24-Sep-2023	14 days	3 days	✓	25-Sep-2023	40 days	1 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)							
Boron-Hot Water Extractable by ICPOES	E487	1151161	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1151058	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1151059	1	19	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1150965	1	18	5.5	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1151157	1	12	8.3	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1149690	1	18	5.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1151160	1	3	33.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1151159	1	9	11.1	5.0	✓
Moisture Content by Gravimetry	E144	1151165	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1150966	1	14	7.1	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1151154	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1151158	1	12	8.3	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1149689	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1151161	2	10	20.0	10.0	✓
BTEX by Headspace GC-MS	E611A	1151058	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1151059	1	19	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1150965	1	18	5.5	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1151157	2	12	16.6	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1149690	2	18	11.1	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1151160	2	3	66.6	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1151159	2	9	22.2	10.0	✓
Moisture Content by Gravimetry	E144	1151165	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1150966	1	14	7.1	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1151154	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1151158	2	12	16.6	10.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1149689	1	18	5.5	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1151161	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1151058	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1151059	1	19	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1150965	1	18	5.5	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1151157	1	12	8.3	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1149690	1	18	5.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1151160	1	3	33.3	5.0	✓

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*
Method Blanks (MB) - Continued							
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1151159	1	9	11.1	5.0	✓
Moisture Content by Gravimetry	E144	1151165	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1150966	1	14	7.1	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1151158	1	12	8.3	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1149689	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1151058	1	19	5.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1151059	1	19	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1150965	1	18	5.5	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1150966	1	14	7.1	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1149689	1	18	5.5	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
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L ALS Environmental - Waterloo	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A ALS Environmental - Waterloo	Soil/Solid	MECP E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
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.
WAD Cyanide (0.01M NaOH Extraction)	E336A ALS Environmental - Waterloo	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C ALS Environmental - Waterloo	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 355 µm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 ALS Environmental - Waterloo	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
F2 to F3 minus PAH	EC600 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	F2-PAH = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus select Polycyclic Aromatic Hydrocarbons (PAH) as per CCME Soil Tier 1

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Waterloo	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A ALS Environmental - Waterloo	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling or decanting and then analyzed using a pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A ALS Environmental - Waterloo	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.
Digestion for Metals and Mercury (355 µm Sieve)	EP440C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2 (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with weak calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011)
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 ALS Environmental - Waterloo	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
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.

QUALITY CONTROL REPORT

Work Order	: **WT2330461**	Page	: 1 of 15
Client	: Englobe Corp.	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 21-Sep-2023 16:20
PO	: ----	Date Analysis Commenced	: 23-Sep-2023
C-O-C number	: 20-1081178	Issue Date	: 28-Sep-2023 17:58
Sampler	: TA ----		
Site	: ----		
Quote number	: KITCHENER/LONDON SOIL SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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
- Reference Material (RM) 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
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, 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: 1151154)											
EO2308578-010	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	5.97	5.96	0.168%	5%	----
Physical Tests (QC Lot: 1151157)											
WT2330375-003	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.0851 mS/cm	84.6	0.589%	20%	----
Physical Tests (QC Lot: 1151165)											
WT2330241-012	Anonymous	Moisture	----	E144	0.25	%	16.6	15.6	5.90%	20%	----
Cyanides (QC Lot: 1149689)											
WT2330383-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 1151158)											
WT2330375-003	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	2.20	2.20	0	Diff <2x LOR	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	1.95	1.91	0.04	Diff <2x LOR	----
Metals (QC Lot: 1151159)											
WT2330461-001	TP23-01	Antimony	7440-36-0	E440C	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	2.30	2.29	0.591%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	29.6	28.3	4.38%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.29	0.27	0.02	Diff <2x LOR	----
		Boron	7440-42-8	E440C	5.0	mg/kg	6.8	6.4	0.4	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.317	0.338	6.20%	30%	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	10.4	10.1	2.83%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	3.50	3.54	1.09%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	8.82	8.70	1.40%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	18.5	17.9	3.41%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.20	0.28	0.07	Diff <2x LOR	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	7.42	7.32	1.34%	30%	----
		Selenium	7782-49-2	E440C	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440C	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440C	0.050	mg/kg	0.066	0.060	0.006	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.458	0.463	0.978%	30%	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	18.8	19.4	3.19%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	114	109	3.69%	30%	----

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*
Metals (QC Lot: 1151160)											
WT2330461-001	TP23-01	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0165	0.0142	0.0023	Diff <2x LOR	----
Metals (QC Lot: 1151161)											
WT2330461-002	TP23-02	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.47	0.59	23.1%	40%	----
Speciated Metals (QC Lot: 1149690)											
WT2330383-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1151058)											
WT2330430-001	Anonymous	Benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1150965)											
WT2330337-025	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	----
Hydrocarbons (QC Lot: 1151059)											
WT2330430-001	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1150966)											
WT2330337-025	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: 1150966) - continued											
WT2330337-025	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: 1151157)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 1151165)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 1149689)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 1151158)						
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	<0.50	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	<0.50	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	<0.50	----
Metals (QCLot: 1151159)						
Antimony	7440-36-0	E440C	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440C	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440C	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440C	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440C	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440C	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440C	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440C	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440C	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440C	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440C	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----
Metals (QCLot: 1151160)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1151161)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 1149690)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 1151058)						
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: 1150965)						
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	----
Hydrocarbons (QCLot: 1151059)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1150966)						
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: 1151154)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	99.7	98.0	102	----
Physical Tests (QCLot: 1151157)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 1151165)									
Moisture	----	E144	0.25	%	50 %	99.5	90.0	110	----
Cyanides (QCLot: 1149689)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	1.25 mg/kg	89.5	80.0	120	----
Metals (QCLot: 1151158)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	104	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Metals (QCLot: 1151159)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	100.0	80.0	120	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	110	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	111	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	98.6	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	97.8	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	106	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	106	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	104	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	102	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	101	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	104	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	106	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	92.1	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	99.2	80.0	120	----
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	104	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	107	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	102	80.0	120	----
Metals (QCLot: 1151160)									

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1151160) - continued									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	107	80.0	120	----
Metals (QCLot: 1151161)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	99.8	70.0	130	----
Speciated Metals (QCLot: 1149690)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	92.1	80.0	120	----
Volatile Organic Compounds (QCLot: 1151058)									
Benzene	71-43-2	E611A	0.005	mg/kg	3.475 mg/kg	106	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	3.475 mg/kg	93.7	70.0	130	----
Toluene	108-88-3	E611A	0.05	mg/kg	3.475 mg/kg	94.1	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	6.95 mg/kg	98.0	70.0	130	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	3.475 mg/kg	97.6	70.0	130	----
Hydrocarbons (QCLot: 1150965)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	656.4125 mg/kg	108	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1332.613 mg/kg	110	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	761.4625 mg/kg	102	70.0	130	----
Hydrocarbons (QCLot: 1151059)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	91.5	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1150966)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	88.0	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	88.4	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	90.1	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	89.8	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	95.7	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	94.1	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	91.2	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	84.5	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	94.0	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	92.0	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	93.0	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	96.3	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	74.3	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1150966) - continued									
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	80.0	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	71.9	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	89.8	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	90.2	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
Cyanides (QCLot: 1149689)										
WT2330383-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.12 mg/kg	1.25 mg/kg	90.2	70.0	130	----
Volatile Organic Compounds (QCLot: 1151058)										
WT2330430-001	Anonymous	Benzene	71-43-2	E611A	2.66 mg/kg	3.125 mg/kg	108	60.0	140	----
		Ethylbenzene	100-41-4	E611A	2.33 mg/kg	3.125 mg/kg	94.5	60.0	140	----
		Toluene	108-88-3	E611A	2.31 mg/kg	3.125 mg/kg	94.0	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	4.80 mg/kg	6.25 mg/kg	97.5	60.0	140	----
		Xylene, o-	95-47-6	E611A	2.41 mg/kg	3.125 mg/kg	98.0	60.0	140	----
Hydrocarbons (QCLot: 1150965)										
WT2330337-025	Anonymous	F2 (C10-C16)	----	E601.SG-L	568 mg/kg	656.4125 mg/kg	108	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1160 mg/kg	1332.613 mg/kg	109	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	615 mg/kg	761.4625 mg/kg	101	60.0	140	----
Hydrocarbons (QCLot: 1151059)										
WT2330430-001	Anonymous	F1 (C6-C10)	----	E581.F1	45.8 mg/kg	62.5 mg/kg	93.1	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1150966)										
WT2330337-025	Anonymous	Acenaphthene	83-32-9	E641A	0.360 mg/kg	0.5 mg/kg	90.3	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.362 mg/kg	0.5 mg/kg	90.8	50.0	140	----
		Anthracene	120-12-7	E641A	0.358 mg/kg	0.5 mg/kg	89.8	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.358 mg/kg	0.5 mg/kg	89.8	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.352 mg/kg	0.5 mg/kg	88.1	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.381 mg/kg	0.5 mg/kg	95.4	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.362 mg/kg	0.5 mg/kg	90.6	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.361 mg/kg	0.5 mg/kg	90.5	50.0	140	----
		Chrysene	218-01-9	E641A	0.339 mg/kg	0.5 mg/kg	84.8	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.367 mg/kg	0.5 mg/kg	91.8	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.362 mg/kg	0.5 mg/kg	90.7	50.0	140	----
		Fluorene	86-73-7	E641A	0.366 mg/kg	0.5 mg/kg	91.8	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.368 mg/kg	0.5 mg/kg	92.2	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.336 mg/kg	0.5 mg/kg	84.2	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.369 mg/kg	0.5 mg/kg	92.5	50.0	140	----
		Naphthalene	91-20-3	E641A	0.351 mg/kg	0.5 mg/kg	87.9	50.0	140	----

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
Polycyclic Aromatic Hydrocarbons (QCLot: 1150966) - continued										
WT2330337-025	Anonymous	Phenanthrene	85-01-8	E641A	0.358 mg/kg	0.5 mg/kg	89.6	50.0	140	----
		Pyrene	129-00-0	E641A	0.357 mg/kg	0.5 mg/kg	89.4	50.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

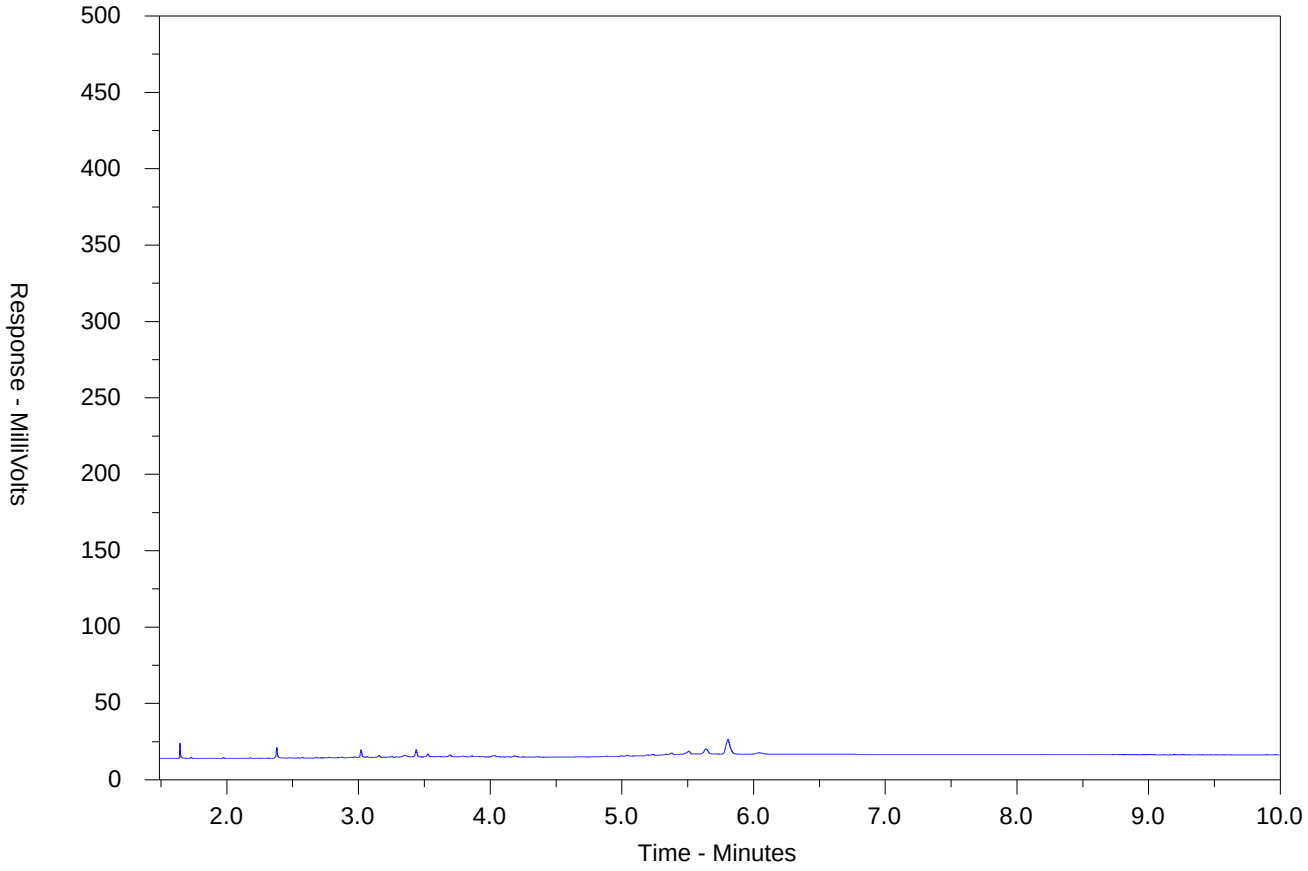
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1151157)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1725.6 µS/cm	110	70.0	130	----
Metals (QCLot: 1151158)									
	RM	Calcium, soluble ion content	7440-70-2	E484	78.94 mg/L	117	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	24.16 mg/L	120	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	72.46 mg/L	112	70.0	130	----
Metals (QCLot: 1151159)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	121	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	105	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	112	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	107	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	124	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	112	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	107	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	104	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	114	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	106	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	105	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	104	70.0	130	----
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	95.2	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	102	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	103	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	105	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	99.0	70.0	130	----
Metals (QCLot: 1151160)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	104	70.0	130	----
Metals (QCLot: 1151161)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.6542 mg/kg	103	60.0	140	----
Speciated Metals (QCLot: 1149690)									

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals (QCLot: 1149690) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	90.0	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2330461-001-E601.SG-L
Client Sample ID: TP23-01



←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 characterizin hydrocarbon products that may be present in your sample.

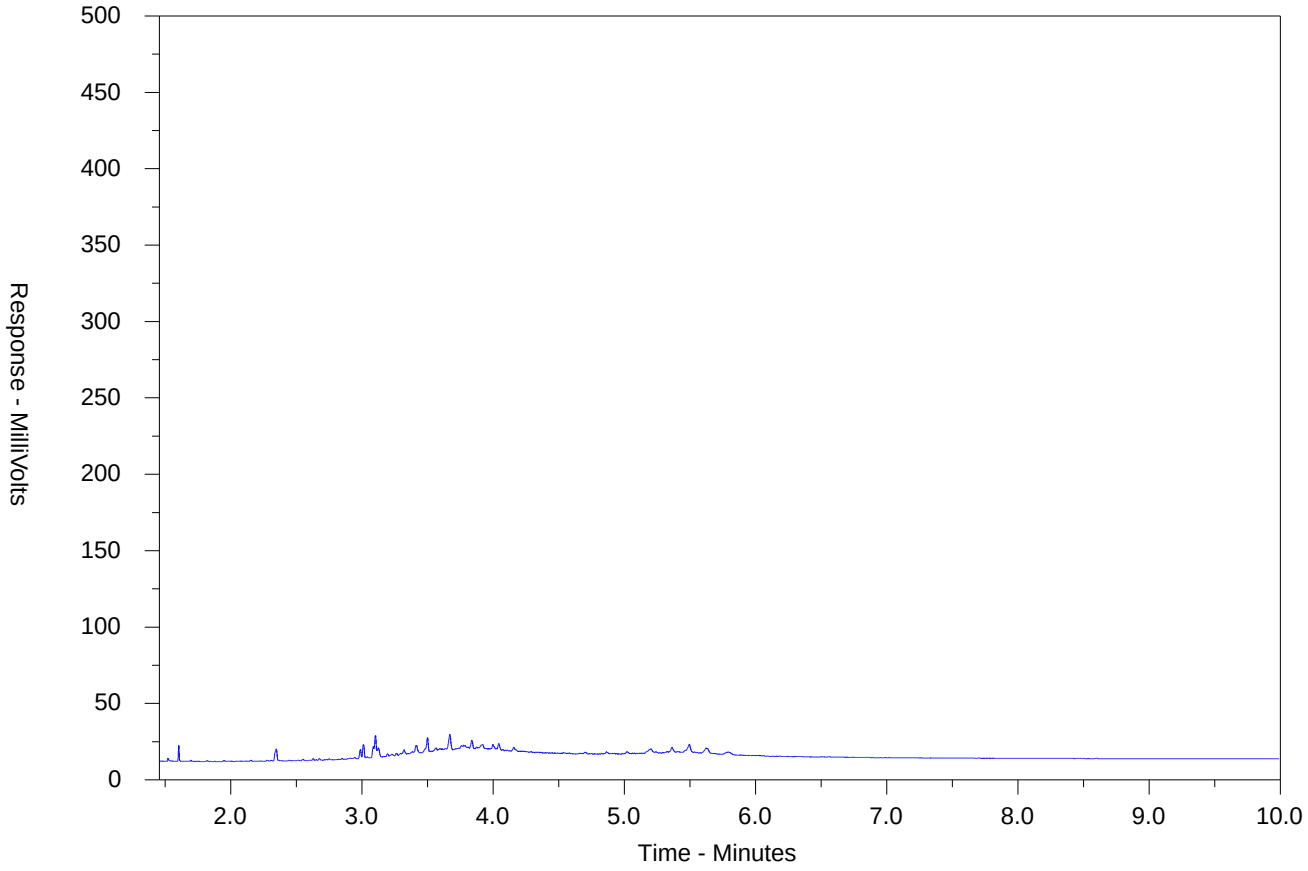
The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th 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-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro 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: WT2330461-002-E601.SG-L
Client Sample ID: TP23-02



←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 characterizin hydrocarbon products that may be present in your sample.

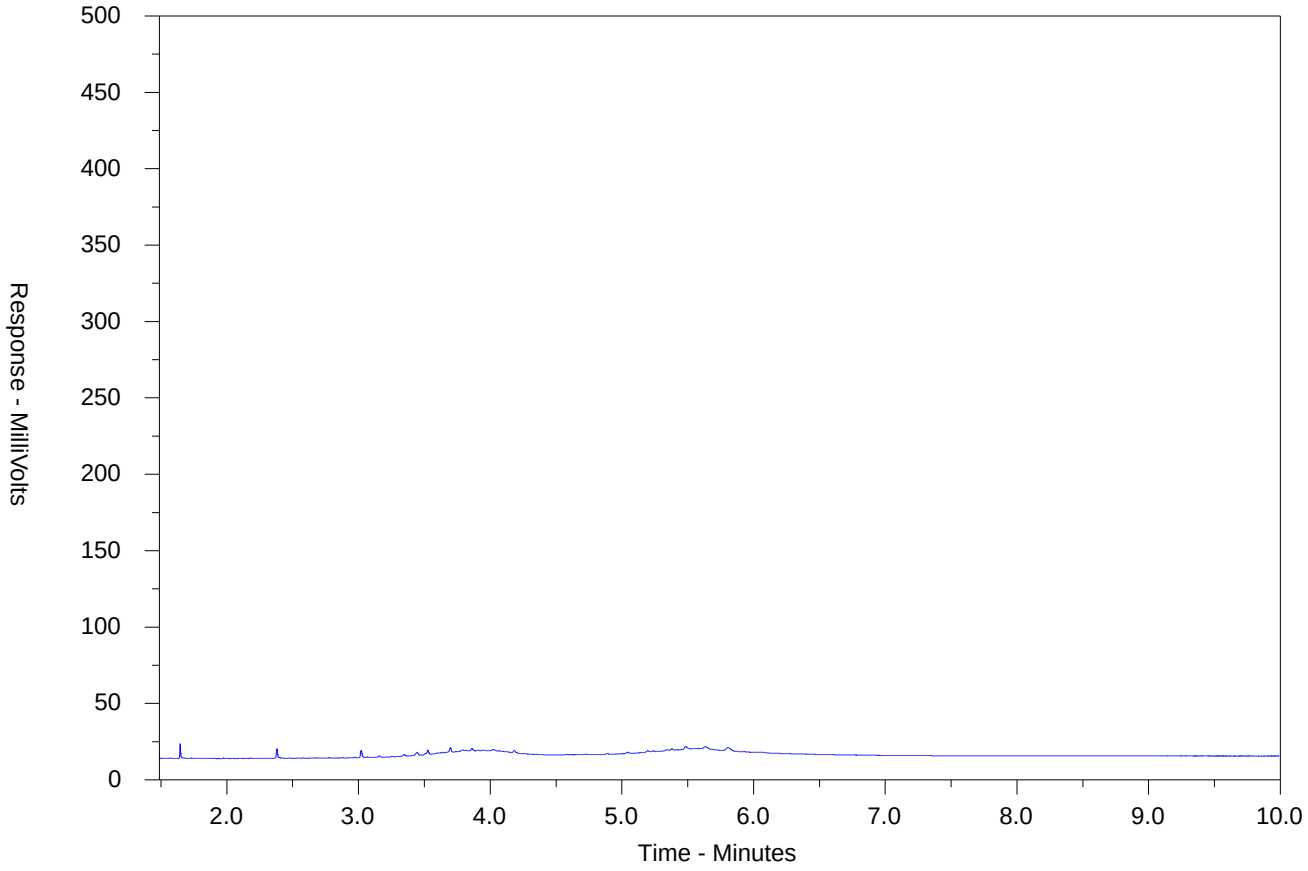
The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th 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-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro 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: WT2330461-003-E601.SG-L
Client Sample ID: TP23-03



←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 characterizin hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee 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, th 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-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 20

Page

Environmental Division Waterloo

Work Order Reference WT2330461

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Englobe
Contact:	Jessica Godin
Phone:	226 752 9370
	Company address below will appear on the final report
Street:	353 Bridge St. E
City/Province:	Kitchener, ON
Postal Code:	N2K 2Y5
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

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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: Jessica.Godin@englobecorp.com

Email 2: Taylor.akimov@englobecorp.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: AP-ONT@englobecorp.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. Additional charges 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 #:

Job #: 02302109.001

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): WT2330461

ALS Contact: Gayle B Sampler: TA

Analysis Request

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	PHCs (F1-F4)	BTEX	PAHs	O.Reg 153/04 metals + inorganics	Cond. pH, SAR, EC	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	TP23-01	21-Sep-23	1010	Soil	4	✓	✓	✓	✓	✓			
	TP23-02	↓	1030	↓	4	✓	✓	✓	✓	✓			
	TP23-03		1100		4	✓	✓	✓	✓	✓			
	DUP-02		000		1	✓	✓	✓	✓	✓			

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)

O.Reg 153/04 Table 2 RPI

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			
				2.8			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Taylor Akimov	Sept. 21 2023	16:15

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
TL	Sept 21/23	16:20

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-211

SOL-748EC

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2331569**	Page	: 1 of 10
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 02-Oct-2023 08:30
PO	: ----	Date Analysis Commenced	: 02-Oct-2023
C-O-C number	: 20-1083259	Issue Date	: 10-Oct-2023 14:19
Sampler	: AG		
Site	: ----		
Quote number	: KITCHENER/LONDON GW SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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*
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

No Breaches Found

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
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: 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.

Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	MW23-01	MW23-03	DUP23-01	TRIP BLANK	----	----	----
				Sampling date/time	29-Sep-2023 18:15	29-Sep-2023 17:00	29-Sep-2023 00:00	29-Sep-2023 00:00	----	----	----
				Sub-Matrix	Water	Water	Water	Water	----	----	----
					WT2331569-001	WT2331569-002	WT2331569-003	WT2331569-004	--------	--------	--------
Physical Tests											
Conductivity	----	E100/WT	mS/cm		2.18	2.07	2.23	----	----	----	----
pH	----	E108/WT	pH units		7.55	7.52	7.65	----	----	----	----
Anions and Nutrients											
Chloride	16887-00-6	E235.Cl/WT	mg/L		199 DLDS	366 DLDS	429 DLDS	----	----	----	----
Cyanides											
Cyanide, weak acid dissociable	----	E336/WT	µg/L		<2.0	<2.0	<2.0	----	----	----	----
Dissolved Metals											
Antimony, dissolved	7440-36-0	E421/WT	µg/L		0.22	0.26	0.25	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/WT	µg/L		0.33	0.53	0.54	----	----	----	----
Barium, dissolved	7440-39-3	E421/WT	µg/L		78.3	120	115	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/WT	µg/L		<0.020	<0.020	<0.020	----	----	----	----
Boron, dissolved	7440-42-8	E421/WT	µg/L		16	38	38	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/WT	µg/L		0.0189	0.0318	0.0313	----	----	----	----
Chromium, dissolved	7440-47-3	E421/WT	µg/L		<0.50	<0.50	<0.50	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/WT	µg/L		0.32	0.52	0.51	----	----	----	----
Copper, dissolved	7440-50-8	E421/WT	µg/L		4.37	1.46	1.52	----	----	----	----
Lead, dissolved	7439-92-1	E421/WT	µg/L		0.280	0.066	0.071	----	----	----	----
Mercury, dissolved	7439-97-6	E509/WT	µg/L		<0.0050	<0.0050	<0.0050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/WT	µg/L		0.590	3.51	3.36	----	----	----	----
Nickel, dissolved	7440-02-0	E421/WT	µg/L		4.08	2.10	2.13	----	----	----	----
Selenium, dissolved	7782-49-2	E421/WT	µg/L		0.326	1.25	1.24	----	----	----	----
Silver, dissolved	7440-22-4	E421/WT	µg/L		<0.010	<0.010	<0.010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/WT	µg/L		134000	164000	159000	----	----	----	----
Thallium, dissolved	7440-28-0	E421/WT	µg/L		0.017	0.020	0.018	----	----	----	----
Uranium, dissolved	7440-61-1	E421/WT	µg/L		1.03	0.766	0.733	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/WT	µg/L		<0.50	0.58	0.59	----	----	----	----
Zinc, dissolved	7440-66-6	E421/WT	µg/L		6.1	5.7	5.2	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	MW23-01	MW23-03	DUP23-01	TRIP BLANK	----	----	----
				Sampling date/time	29-Sep-2023 18:15	29-Sep-2023 17:00	29-Sep-2023 00:00	29-Sep-2023 00:00	----	----	----
				Sub-Matrix	Water	Water	Water	Water	----	----	----
					WT2331569-001	WT2331569-002	WT2331569-003	WT2331569-004	--------	--------	--------
Dissolved Metals											
Dissolved mercury filtration location	----	EP509/WT	-		Field	Field	Field	----	----	----	----
Dissolved metals filtration location	----	EP421/WT	-		Field	Field	Field	----	----	----	----
Speciated Metals											
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A/WT	µg/L		<0.50	<0.50	<0.50	----	----	----	----
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT	µg/L		<20	<20	<20	<20	----	----	----
Benzene	71-43-2	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Bromodichloromethane	75-27-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Bromoform	75-25-2	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Bromomethane	74-83-9	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Carbon tetrachloride	56-23-5	E611D/WT	µg/L		<0.20	<0.20	<0.20	<0.20	----	----	----
Chlorobenzene	108-90-7	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Chloroform	67-66-3	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dibromochloromethane	124-48-1	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT	µg/L		<0.20	<0.20	<0.20	<0.20	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloromethane	75-09-2	E611D/WT	µg/L		<1.0	<1.0	<1.0	<1.0	----	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	µg/L		<0.30	<0.30	<0.30	<0.30	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	MW23-01	MW23-03	DUP23-01	TRIP BLANK	----	----	----
				Sampling date/time	29-Sep-2023 18:15	29-Sep-2023 17:00	29-Sep-2023 00:00	29-Sep-2023 00:00	----	----	----
				Sub-Matrix	Water	Water	Water	Water	----	----	----
					WT2331569-001	WT2331569-002	WT2331569-003	WT2331569-004	--------	--------	--------
Volatile Organic Compounds											
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	µg/L		<0.30	<0.30	<0.30	<0.30	----	----	----
Ethylbenzene	100-41-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Hexane, n-	110-54-3	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	µg/L		<20	<20	<20	<20	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	µg/L		<20	<20	<20	<20	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Styrene	100-42-5	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Toluene	108-88-3	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Trichloroethylene	79-01-6	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Vinyl chloride	75-01-4	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	µg/L		<0.40	<0.40	<0.40	<0.40	----	----	----
Xylene, o-	95-47-6	E611D/WT	µg/L		<0.30	<0.30	<0.30	<0.30	----	----	----
Xylenes, total	1330-20-7	E611D/WT	µg/L		<0.50	<0.50	<0.50	<0.50	----	----	----
BTEX, total	----	E611D/WT	µg/L		<1.0	<1.0	<1.0	<1.0	----	----	----
Hydrocarbons											
F1 (C6-C10)	----	E581.F1-L/WT	µg/L		<25	<25	<25	<25	----	----	----
F2 (C10-C16)	----	E601.SG/WT	µg/L		<100	<100	<100	----	----	----	----
F3 (C16-C34)	----	E601.SG/WT	µg/L		<250	<250	<250	----	----	----	----
F4 (C34-C50)	----	E601.SG/WT	µg/L		<250	<250	<250	----	----	----	----
F1-BTEX	----	EC580/WT	µg/L		<25	<25	<25	<25	----	----	----
Hydrocarbons, total (C6-C50)	----	EC581SG/WT	µg/L		<370	<370	<370	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG/WT	-		YES	YES	YES	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	MW23-01	MW23-03	DUP23-01	TRIP BLANK	----	----	----
				Sampling date/time	29-Sep-2023 18:15	29-Sep-2023 17:00	29-Sep-2023 00:00	29-Sep-2023 00:00	----	----	----
				Sub-Matrix	Water	Water	Water	Water	----	----	----
					WT2331569-001	WT2331569-002	WT2331569-003	WT2331569-004	--------	--------	--------
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/WT	%		75.7	76.8	74.5	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1-L/WT	%		84.8	86.9	87.7	105	----	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%		93.2	93.0	93.2	91.7	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%		94.1	94.4	94.5	100	----	----	----

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.

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All
Physical Tests				
Conductivity	----	mS/cm	--	--
pH	----	pH units	--	--
Anions and Nutrients				
Chloride	16887-00-6	mg/L	**790 mg/L**	**790 mg/L**
Cyanides				
Cyanide, weak acid dissociable	----	µg/L	**66 µg/L**	**66 µg/L**
Dissolved Metals				
Antimony, dissolved	7440-36-0	µg/L	**6 µg/L**	**6 µg/L**
Arsenic, dissolved	7440-38-2	µg/L	**25 µg/L**	**25 µg/L**
Barium, dissolved	7440-39-3	µg/L	**1000 µg/L**	**1000 µg/L**
Beryllium, dissolved	7440-41-7	µg/L	**4 µg/L**	**4 µg/L**
Boron, dissolved	7440-42-8	µg/L	**5000 µg/L**	**5000 µg/L**
Cadmium, dissolved	7440-43-9	µg/L	**2.7 µg/L**	**2.7 µg/L**
Chromium, dissolved	7440-47-3	µg/L	**50 µg/L**	**50 µg/L**
Cobalt, dissolved	7440-48-4	µg/L	**3.8 µg/L**	**3.8 µg/L**
Copper, dissolved	7440-50-8	µg/L	**87 µg/L**	**87 µg/L**
Dissolved mercury filtration location	----	-	--	--
Dissolved metals filtration location	----	-	--	--
Lead, dissolved	7439-92-1	µg/L	**10 µg/L**	**10 µg/L**
Mercury, dissolved	7439-97-6	µg/L	**0.29 µg/L**	**1 µg/L**
Molybdenum, dissolved	7439-98-7	µg/L	**70 µg/L**	**70 µg/L**
Nickel, dissolved	7440-02-0	µg/L	**100 µg/L**	**100 µg/L**
Selenium, dissolved	7782-49-2	µg/L	**10 µg/L**	**10 µg/L**
Silver, dissolved	7440-22-4	µg/L	**1.5 µg/L**	**1.5 µg/L**
Sodium, dissolved	7440-23-5	µg/L	**490000 µg/L**	**490000 µg/L**
Thallium, dissolved	7440-28-0	µg/L	**2 µg/L**	**2 µg/L**
Uranium, dissolved	7440-61-1	µg/L	**20 µg/L**	**20 µg/L**
Vanadium, dissolved	7440-62-2	µg/L	**6.2 µg/L**	**6.2 µg/L**
Zinc, dissolved	7440-66-6	µg/L	**1100 µg/L**	**1100 µg/L**
Speciated Metals				
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	µg/L	**25 µg/L**	**25 µg/L**
Volatile Organic Compounds				
Acetone	67-64-1	µg/L	**2700 µg/L**	**2700 µg/L**
Benzene	71-43-2	µg/L	**5 µg/L**	**5 µg/L**
Bromodichloromethane	75-27-4	µg/L	**16 µg/L**	**16 µg/L**
Bromoform	75-25-2	µg/L	**25 µg/L**	**25 µg/L**
Bromomethane	74-83-9	µg/L	**0.89 µg/L**	**0.89 µg/L**

Analyte	CAS Number	Unit	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All
Volatile Organic Compounds - Continued				
BTEX, total	----	µg/L	--	--
Carbon tetrachloride	56-23-5	µg/L	0.79 µg/L	5 µg/L
Chlorobenzene	108-90-7	µg/L	30 µg/L	30 µg/L
Chloroform	67-66-3	µg/L	2.4 µg/L	22 µg/L
Dibromochloromethane	124-48-1	µg/L	25 µg/L	25 µg/L
Dibromoethane, 1,2-	106-93-4	µg/L	0.2 µg/L	0.2 µg/L
Dichlorobenzene, 1,2-	95-50-1	µg/L	3 µg/L	3 µg/L
Dichlorobenzene, 1,3-	541-73-1	µg/L	59 µg/L	59 µg/L
Dichlorobenzene, 1,4-	106-46-7	µg/L	1 µg/L	1 µg/L
Dichlorodifluoromethane	75-71-8	µg/L	590 µg/L	590 µg/L
Dichloroethane, 1,1-	75-34-3	µg/L	5 µg/L	5 µg/L
Dichloroethane, 1,2-	107-06-2	µg/L	1.6 µg/L	5 µg/L
Dichloroethylene, 1,1-	75-35-4	µg/L	1.6 µg/L	14 µg/L
Dichloroethylene, cis-1,2-	156-59-2	µg/L	1.6 µg/L	17 µg/L
Dichloroethylene, trans-1,2-	156-60-5	µg/L	1.6 µg/L	17 µg/L
Dichloromethane	75-09-2	µg/L	50 µg/L	50 µg/L
Dichloropropane, 1,2-	78-87-5	µg/L	5 µg/L	5 µg/L
Dichloropropylene, cis+trans-1,3-	542-75-6	µg/L	0.5 µg/L	0.5 µg/L
Dichloropropylene, cis-1,3-	10061-01-5	µg/L	--	--
Dichloropropylene, trans-1,3-	10061-02-6	µg/L	--	--
Ethylbenzene	100-41-4	µg/L	2.4 µg/L	2.4 µg/L
Hexane, n-	110-54-3	µg/L	51 µg/L	520 µg/L
Methyl ethyl ketone [MEK]	78-93-3	µg/L	1800 µg/L	1800 µg/L
Methyl isobutyl ketone [MIBK]	108-10-1	µg/L	640 µg/L	640 µg/L
Methyl-tert-butyl ether [MTBE]	1634-04-4	µg/L	15 µg/L	15 µg/L
Styrene	100-42-5	µg/L	5.4 µg/L	5.4 µg/L
Tetrachloroethane, 1,1,1,2-	630-20-6	µg/L	1.1 µg/L	1.1 µg/L
Tetrachloroethane, 1,1,2,2-	79-34-5	µg/L	1 µg/L	1 µg/L
Tetrachloroethylene	127-18-4	µg/L	1.6 µg/L	17 µg/L
Toluene	108-88-3	µg/L	24 µg/L	24 µg/L
Trichloroethane, 1,1,1-	71-55-6	µg/L	200 µg/L	200 µg/L
Trichloroethane, 1,1,2-	79-00-5	µg/L	4.7 µg/L	5 µg/L
Trichloroethylene	79-01-6	µg/L	1.6 µg/L	5 µg/L
Trichlorofluoromethane	75-69-4	µg/L	150 µg/L	150 µg/L
Vinyl chloride	75-01-4	µg/L	0.5 µg/L	1.7 µg/L
Xylene, m+p-	179601-23-1	µg/L	--	--
Xylene, o-	95-47-6	µg/L	--	--
Xylenes, total	1330-20-7	µg/L	300 µg/L	300 µg/L
Hydrocarbons				

Analyte	CAS Number	Unit	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All					
Hydrocarbons - Continued									
Chromatogram to baseline at nC50	n/a	-	--	--					
F1 (C6-C10)	----	µg/L	**750 µg/L**	**750 µg/L**					
F1-BTEX	----	µg/L	**750 µg/L**	**750 µg/L**					
F2 (C10-C16)	----	µg/L	**150 µg/L**	**150 µg/L**					
F3 (C16-C34)	----	µg/L	**500 µg/L**	**500 µg/L**					
F4 (C34-C50)	----	µg/L	**500 µg/L**	**500 µg/L**					
Hydrocarbons, total (C6-C50)	----	µg/L	--	--					
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%							
Dichlorotoluene, 3,4-	95-75-0	%							
Bromofluorobenzene, 4-	460-00-4	%							
Difluorobenzene, 1,4-	540-36-3	%							

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

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2331569**	Page	: 1 of 10
Client	: **Englobe Corp.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 02-Oct-2023 08:30
PO	: ----	Issue Date	: 10-Oct-2023 14:19
C-O-C number	: 20-1083259		
Sampler	: AG		
Site	: ----		
Quote number	: KITCHENER/LONDON GW SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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 / 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
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] MW23-01	E235.Cl	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] MW23-03	E235.Cl	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP] DUP23-01	E235.Cl	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	5 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) MW23-01	E336	29-Sep-2023	04-Oct-2023	14 days	5 days	✓	04-Oct-2023	14 days	5 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) MW23-03	E336	29-Sep-2023	04-Oct-2023	14 days	5 days	✓	04-Oct-2023	14 days	5 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) DUP23-01	E336	29-Sep-2023	04-Oct-2023	14 days	6 days	✓	04-Oct-2023	14 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW23-01	E509	29-Sep-2023	02-Oct-2023	28 days	3 days	✓	02-Oct-2023	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group / 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
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW23-03	E509	29-Sep-2023	02-Oct-2023	28 days	3 days	✓	02-Oct-2023	28 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) DUP23-01	E509	29-Sep-2023	02-Oct-2023	28 days	4 days	✓	02-Oct-2023	28 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW23-01	E421	29-Sep-2023	02-Oct-2023	180 days	3 days	✓	02-Oct-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW23-03	E421	29-Sep-2023	02-Oct-2023	180 days	3 days	✓	02-Oct-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP23-01	E421	29-Sep-2023	02-Oct-2023	180 days	4 days	✓	02-Oct-2023	180 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) DUP23-01	E581.F1-L	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW23-01	E581.F1-L	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW23-03	E581.F1-L	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) TRIP BLANK	E581.F1-L	29-Sep-2023	04-Oct-2023	14 days	5 days	✓	04-Oct-2023	14 days	5 days	✓

Matrix: **Water**

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

Analyte Group / 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 : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW23-01	E601.SG	29-Sep-2023	02-Oct-2023	14 days	3 days	✓	06-Oct-2023	40 days	4 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW23-03	E601.SG	29-Sep-2023	02-Oct-2023	14 days	3 days	✓	06-Oct-2023	40 days	4 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
DUP23-01	E601.SG	29-Sep-2023	02-Oct-2023	14 days	4 days	✓	06-Oct-2023	40 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
DUP23-01	E100	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
MW23-01	E100	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
MW23-03	E100	29-Sep-2023	03-Oct-2023	28 days	4 days	✓	03-Oct-2023	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
DUP23-01	E108	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
MW23-01	E108	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
MW23-03	E108	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓

Matrix: **Water**

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

Analyte Group / 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
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
DUP23-01	E532A	29-Sep-2023	----	----	----		03-Oct-2023	28 days	4 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
MW23-01	E532A	29-Sep-2023	----	----	----		03-Oct-2023	28 days	4 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
MW23-03	E532A	29-Sep-2023	----	----	----		03-Oct-2023	28 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
DUP23-01	E611D	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW23-01	E611D	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW23-03	E611D	29-Sep-2023	03-Oct-2023	14 days	4 days	✓	03-Oct-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
TRIP BLANK	E611D	29-Sep-2023	04-Oct-2023	14 days	5 days	✓	04-Oct-2023	14 days	5 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)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1168023	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	1165086	1	9	11.1	5.0	✓
Conductivity in Water	E100	1165091	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1165144	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1164701	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1164449	1	18	5.5	5.0	✓
pH by Meter	E108	1165090	1	18	5.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1168022	3	39	7.6	5.0	✓
WAD Cyanide	E336	1167376	1	8	12.5	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1168023	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	1165086	1	9	11.1	5.0	✓
Conductivity in Water	E100	1165091	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1165144	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1164701	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1164449	1	18	5.5	5.0	✓
pH by Meter	E108	1165090	1	18	5.5	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1164560	1	19	5.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1168022	2	39	5.1	5.0	✓
WAD Cyanide	E336	1167376	1	8	12.5	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1168023	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	1165086	1	9	11.1	5.0	✓
Conductivity in Water	E100	1165091	1	5	20.0	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1165144	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1164701	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1164449	1	18	5.5	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1164560	1	19	5.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1168022	2	39	5.1	5.0	✓
WAD Cyanide	E336	1167376	1	8	12.5	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1168023	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	1165086	1	9	11.1	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1165144	1	5	20.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1164701	1	8	12.5	5.0	✓

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*
Matrix Spikes (MS) - Continued							
Dissolved Metals in Water by CRC ICPMS	E421	1164449	1	18	5.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1168022	2	39	5.1	5.0	✓
WAD Cyanide	E336	1167376	1	8	12.5	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
Conductivity in Water	E100 ALS Environmental - Waterloo	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
WAD Cyanide	E336 ALS Environmental - Waterloo	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Waterloo	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Waterloo	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A ALS Environmental - Waterloo	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. sample pretreatment involved field or lab filtration following by sample preservation.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D 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.
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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
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	: **WT2331569**	Page	: 1 of 18
Client	: Englobe Corp.	Laboratory	: ALS Environmental - Waterloo
Contact	: Jessica Godin	Account Manager	: Gayle Braun
Address	: 353 Bridge Street East Kitchener ON Canada N2K 2Y5	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 02302109.001	Date Samples Received	: 02-Oct-2023 08:30
PO	: ----	Date Analysis Commenced	: 02-Oct-2023
C-O-C number	: 20-1083259	Issue Date	: 10-Oct-2023 14:19
Sampler	: AG ----		
Site	: ----		
Quote number	: KITCHENER/LONDON GW SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

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*
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, 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*
Physical Tests (QC Lot: 1165090)											
WT2331569-001	MW23-01	pH	----	E108	0.10	pH units	7.55	7.59	0.528%	4%	----
Physical Tests (QC Lot: 1165091)											
WT2331569-001	MW23-01	Conductivity	----	E100	1.0	µS/cm	2.18 mS/cm	2190	0.458%	10%	----
Anions and Nutrients (QC Lot: 1165086)											
WT2331306-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	25.0	24.8	0.504%	20%	----
Cyanides (QC Lot: 1167376)											
WP2324357-003	Anonymous	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1164449)											
WT2331477-002	Anonymous	Antimony, dissolved	7440-36-0	E421	0.00100	mg/L	<1.00 µg/L	<0.00100	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00100	mg/L	<1.00 µg/L	<0.00100	0	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00100	mg/L	98.2 µg/L	0.0999	1.71%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000200	mg/L	<0.200 µg/L	<0.000200	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.100	mg/L	142 µg/L	0.138	0.004	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000500	mg/L	<0.0500 µg/L	<0.0000500	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00500	mg/L	<5.00 µg/L	<0.00500	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00100	mg/L	<1.00 µg/L	<0.00100	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00200	mg/L	<2.00 µg/L	<0.00200	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000500	mg/L	<0.500 µg/L	<0.000500	0	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000500	mg/L	0.963 µg/L	0.00106	0.000096	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00500	mg/L	<5.00 µg/L	<0.00500	0	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000500	mg/L	1.71 µg/L	0.00194	0.000225	Diff <2x LOR	----
		Silver, dissolved	7440-22-4	E421	0.000100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.500	mg/L	730000 µg/L	734	0.547%	20%	----
		Thallium, dissolved	7440-28-0	E421	0.000100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000100	mg/L	2.54 µg/L	0.00243	4.28%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00500	mg/L	<5.00 µg/L	<0.00500	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0100	mg/L	<10.0 µg/L	<0.0100	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1164701)											
WT2331407-004	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 1165144)											

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*
Speciated Metals (QC Lot: 1165144) - continued											
WT2331569-001	MW23-01	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1165127)											
WT2331562-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

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: 1165127) - continued											
WT2331562-001	Anonymous	Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1168022)											
WT2331542-001	Anonymous	Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
WT2331542-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	19.0	19.6	2.85%	30%	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	2.00	µg/L	<2.00	<2.00	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	1.01	1.03	0.02	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	6.0	µg/L	<6.0	<6.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	34.6	36.0	3.82%	30%	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	7.53	7.67	1.84%	30%	----

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: 1168022) - continued											
WT2331542-001	Anonymous	Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	5.35	5.56	3.85%	30%	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	43.2	44.5	3.15%	30%	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	21.8	22.7	4.09%	30%	----
Hydrocarbons (QC Lot: 1165128)											
WT2331562-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1168023)											
WT2331542-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	25	µg/L	322	369	13.7%	30%	----

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
Physical Tests (QCLot: 1165091)						
Conductivity	----	E100	1	µS/cm	1.5	----
Anions and Nutrients (QCLot: 1165086)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Cyanides (QCLot: 1167376)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Dissolved Metals (QCLot: 1164449)						
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 1164701)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1165144)						
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
Volatile Organic Compounds (QCLot: 1165127)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1165127) - continued						
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1165127) - continued						
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 1168022)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1168022) - continued						
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1164560)						
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: 1165128)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----
Hydrocarbons (QCLot: 1168023)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----

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
Physical Tests (QCLot: 1165090)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 1165091)									
Conductivity	----	E100	1	µS/cm	1409 µS/cm	102	90.0	110	----
Anions and Nutrients (QCLot: 1165086)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.8	90.0	110	----
Cyanides (QCLot: 1167376)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 1164449)									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	101	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	107	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	94.9	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	93.8	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	102	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	102	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	94.0	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.0125 mg/L	97.2	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	100	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	101	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	91.1	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	111	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	99.7	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.00025 mg/L	88.9	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	103	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	107	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	86.2	80.0	120	----
Speciated Metals (QCLot: 1165144)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 1165144) - continued									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.025 mg/L	94.4	80.0	120	----
Volatile Organic Compounds (QCLot: 1165127)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	117	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	114	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	114	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	116	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	114	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	102	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	112	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	90.6	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	115	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	112	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	118	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	116	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	98.5	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	93.1	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	114	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	99.8	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	91.0	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	118	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	118	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1165127) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	115	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	111	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	115	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	108	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	109	70.0	130	----
Volatile Organic Compounds (QCLot: 1168022)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	92.9	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	79.7	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	96.9	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	92.0	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	95.0	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	85.2	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	83.5	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	98.5	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	96.0	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	72.6	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	97.7	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	94.9	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	96.5	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	92.1	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	86.2	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	87.5	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	70.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	96.9	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1168022) - continued									
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	92.1	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	95.2	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	89.0	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	91.8	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	96.3	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	95.2	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	92.1	70.0	130	----
Hydrocarbons (QCLot: 1164560)									
F2 (C10-C16)	----	E601.SG	100	µg/L	3685.12 µg/L	99.3	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	7481.33 µg/L	99.3	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4274.88 µg/L	84.2	70.0	130	----
Hydrocarbons (QCLot: 1165128)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	92.6	80.0	120	----
Hydrocarbons (QCLot: 1168023)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	105	80.0	120	----

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
Anions and Nutrients (QCLot: 1165086)										
WT2331306-001	Anonymous	Chloride	16887-00-6	E235.Cl	100 mg/L	100 mg/L	100	75.0	125	----
Cyanides (QCLot: 1167376)										
WP2324357-003	Anonymous	Cyanide, weak acid dissociable	----	E336	0.142 mg/L	0.125 mg/L	113	75.0	125	----
Dissolved Metals (QCLot: 1164449)										
WT2331477-004	Anonymous	Antimony, dissolved	7440-36-0	E421	0.0530 mg/L	0.05 mg/L	106	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0567 mg/L	0.05 mg/L	113	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.00486 mg/L	0.005 mg/L	97.2	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.05 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00510 mg/L	0.005 mg/L	102	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0130 mg/L	0.0125 mg/L	104	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0126 mg/L	0.0125 mg/L	100	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0122 mg/L	0.0125 mg/L	97.6	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0226 mg/L	0.025 mg/L	90.3	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0128 mg/L	0.0125 mg/L	102	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0243 mg/L	0.025 mg/L	97.3	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0552 mg/L	0.05 mg/L	110	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00439 mg/L	0.005 mg/L	87.8	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2.5 mg/L	ND	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0475 mg/L	0.05 mg/L	94.9	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.000219 mg/L	0.00025 mg/L	87.5	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0270 mg/L	0.025 mg/L	108	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.0252 mg/L	0.025 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 1164701)										
WT2331407-005	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000865 mg/L	0.0001 mg/L	86.5	70.0	130	----
Speciated Metals (QCLot: 1165144)										
WT2331569-001	MW23-01	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
Volatile Organic Compounds (QCLot: 1165127)										
WT2331562-001	Anonymous	Acetone	67-64-1	E611D	119 µg/L	100 µg/L	119	60.0	140	----

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: 1165127) - continued										
WT2331562-001	Anonymous	Benzene	71-43-2	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	109 µg/L	100 µg/L	109	60.0	140	----
		Bromoform	75-25-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Bromomethane	74-83-9	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Chlorobenzene	108-90-7	E611D	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Chloroform	67-66-3	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	77.0 µg/L	100 µg/L	77.0	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	98.4 µg/L	100 µg/L	98.4	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	110 µg/L	100 µg/L	110	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Dichloromethane	75-09-2	E611D	111 µg/L	100 µg/L	111	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	92.6 µg/L	100 µg/L	92.6	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	87.0 µg/L	100 µg/L	87.0	60.0	140	----
		Ethylbenzene	100-41-4	E611D	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		Hexane, n-	110-54-3	E611D	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	93 µg/L	100 µg/L	92.6	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		Styrene	100-42-5	E611D	97.1 µg/L	100 µg/L	97.1	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	116 µg/L	100 µg/L	116	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Toluene	108-88-3	E611D	96.6 µg/L	100 µg/L	96.6	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Trichloroethylene	79-01-6	E611D	105 µg/L	100 µg/L	105	60.0	140	----

Sub-Matrix: **Water**

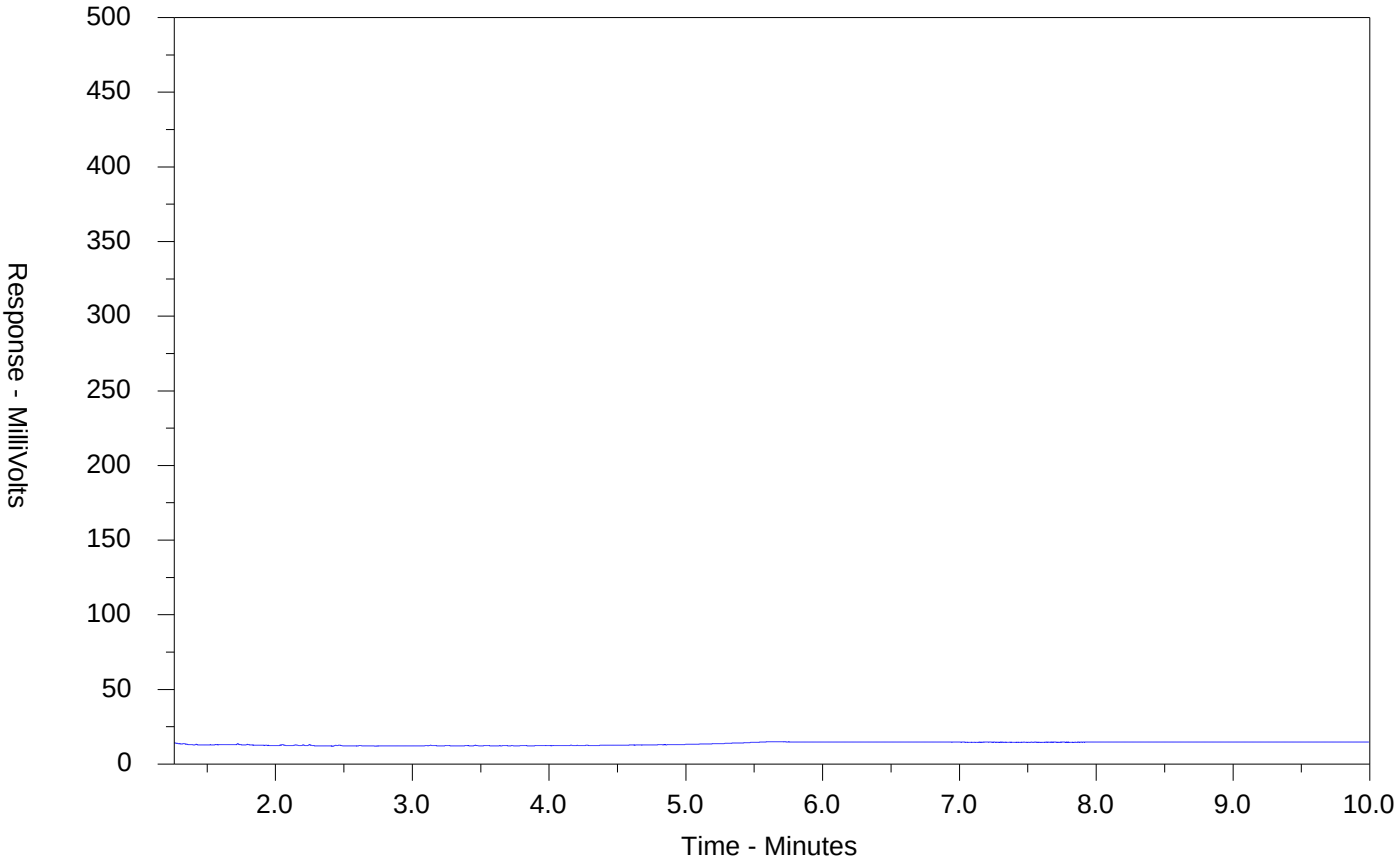
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1165127) - continued										
WT2331562-001	Anonymous	Trichlorofluoromethane	75-69-4	E611D	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Vinyl chloride	75-01-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	192 µg/L	200 µg/L	96.3	60.0	140	----
		Xylene, o-	95-47-6	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
Volatile Organic Compounds (QCLot: 1168022)										
WT2331542-001	Anonymous	Acetone	67-64-1	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Benzene	71-43-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Bromoform	75-25-2	E611D	80.6 µg/L	100 µg/L	80.6	60.0	140	----
		Bromomethane	74-83-9	E611D	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Chlorobenzene	108-90-7	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Chloroform	67-66-3	E611D	96.6 µg/L	100 µg/L	96.6	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	89.6 µg/L	100 µg/L	89.6	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	99.8 µg/L	100 µg/L	99.8	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	94.7 µg/L	100 µg/L	94.7	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	67.0 µg/L	100 µg/L	67.0	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	98.5 µg/L	100 µg/L	98.5	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	111 µg/L	100 µg/L	111	60.0	140	----
		Dichloromethane	75-09-2	E611D	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	89.2 µg/L	100 µg/L	89.2	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	78.3 µg/L	100 µg/L	78.3	60.0	140	----
		Ethylbenzene	100-41-4	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Hexane, n-	110-54-3	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	94 µg/L	100 µg/L	94.4	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	77 µg/L	100 µg/L	76.6	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	99.3 µg/L	100 µg/L	99.3	60.0	140	----
		Styrene	100-42-5	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	88.2 µg/L	100 µg/L	88.2	60.0	140	----

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: 1168022) - continued										
WT2331542-001	Anonymous	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	98.6 µg/L	100 µg/L	98.6	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Toluene	108-88-3	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	95.5 µg/L	100 µg/L	95.5	60.0	140	----
		Trichloroethylene	79-01-6	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	87.5 µg/L	100 µg/L	87.5	60.0	140	----
		Vinyl chloride	75-01-4	E611D	93.6 µg/L	100 µg/L	93.6	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	190 µg/L	200 µg/L	95.1	60.0	140	----
		Xylene, o-	95-47-6	E611D	95.3 µg/L	100 µg/L	95.3	60.0	140	----
Hydrocarbons (QCLot: 1165128)										
WT2331562-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	1680 µg/L	2000 µg/L	84.0	60.0	140	----
Hydrocarbons (QCLot: 1168023)										
WT2331542-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	1740 µg/L	2000 µg/L	87.1	60.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2331569-001-E601.SG
Client Sample ID: MW23-01



←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.

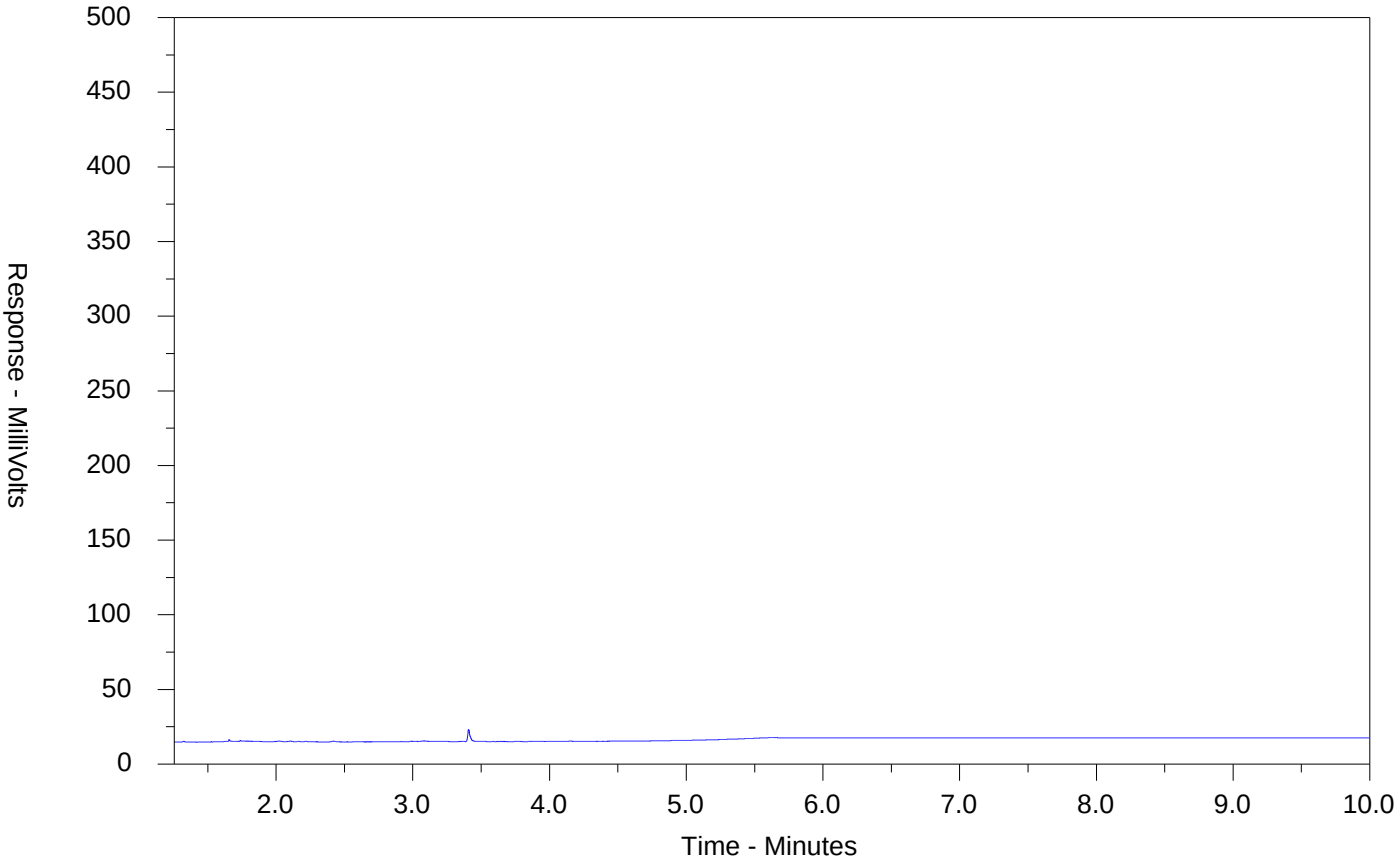
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2331569-002-E601.SG
Client Sample ID: MW23-03



←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.

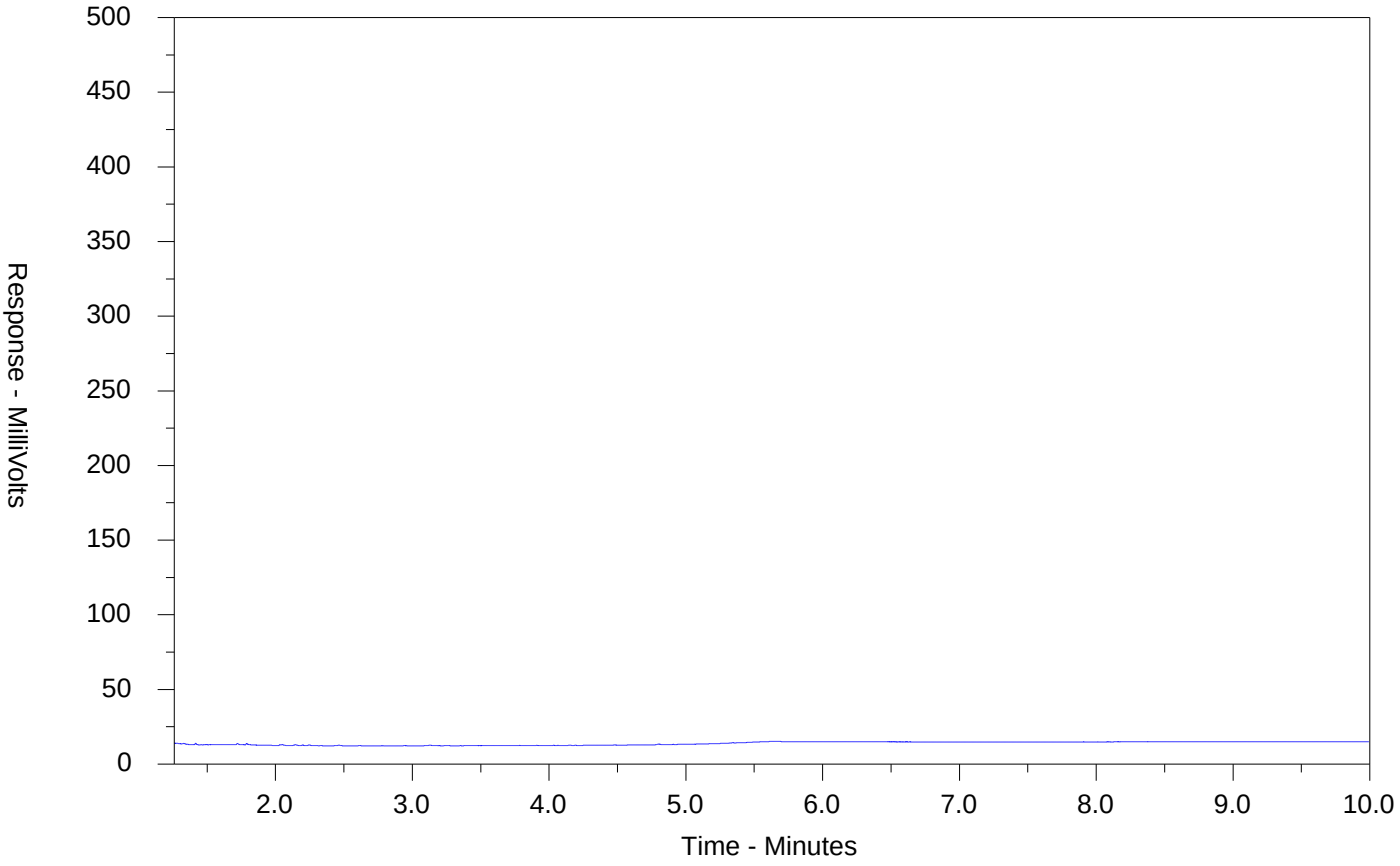
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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: WT2331569-003-E601.SG
Client Sample ID: DUP23-01



←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 - 1083259

Canada Toll Free: 1 800 668 9878

Page 1 of 1

www.alsglobal.com

Environmental Division Waterloo
Work Order Reference
WT2331569

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Englobe Corp.
Contact:	Jessica Godin
Phone:	226 752 9370
	Company address below will appear on the final report
Street:	353 Bridge St. E
City/Province:	Kitchener, ON
Postal Code:	N2K 2Y5
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

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: jessica.godin@englobecorp.com
Email 2: amanda.goncalves@englobecorp.com
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: ap-ont@englobecorp.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. Additi may apply to rush requests on weekends, statutory holidays and non-rou

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please c

Project Information

ALS Account # / Quote #:	
Job #:	2302109.001
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): WT2331569
ALS Contact: Gayle Bradin
Sampler: AG

Analysis Rec

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

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	P	P		P													SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see
						PHCs (F1-F4)	VOCs	O.Reg 153/04 Metals&Inorganics																
	MW23-01	29-SEP-23	18:15	GW	9	X	X	X	X															
	MW23-03		17:00		9	X	X	X	X															
	DUP23-01		NA		9	X	X	X	X															

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)

Compare to Table 2 RPI standards.

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			
				-0.3			

SHIPMENT RELEASE (client use)

Released by: AG Date: Sep 30, 2023 Time: 15:30

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: AP Date: 2-Oct-23 Time: 8:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALIG 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**.

CM

GC-836 SC-491
MM-577 OR-229
CN-366 VW-034

Appendix E
Grain Size Distribution Results

eNGLOBe

ENGLOBE

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02302109.000	**PROJECT NAME:**	Habitat For Humanity - 317 Speedvale Ave East	**CLIENT:**	Habitat For Humanity
LAB NUMBER:	1625	**SAMPLE ID:**	MW-23-01 / Sample - 9	**SAMPLE DEPTH:**	6.10 - 6.71 mbgs
SAMPLED BY:	Taylor Akimov	**DATE RECEIVED:**	September 20, 2023	**DATE COMPLETED:**	September 28, 2023

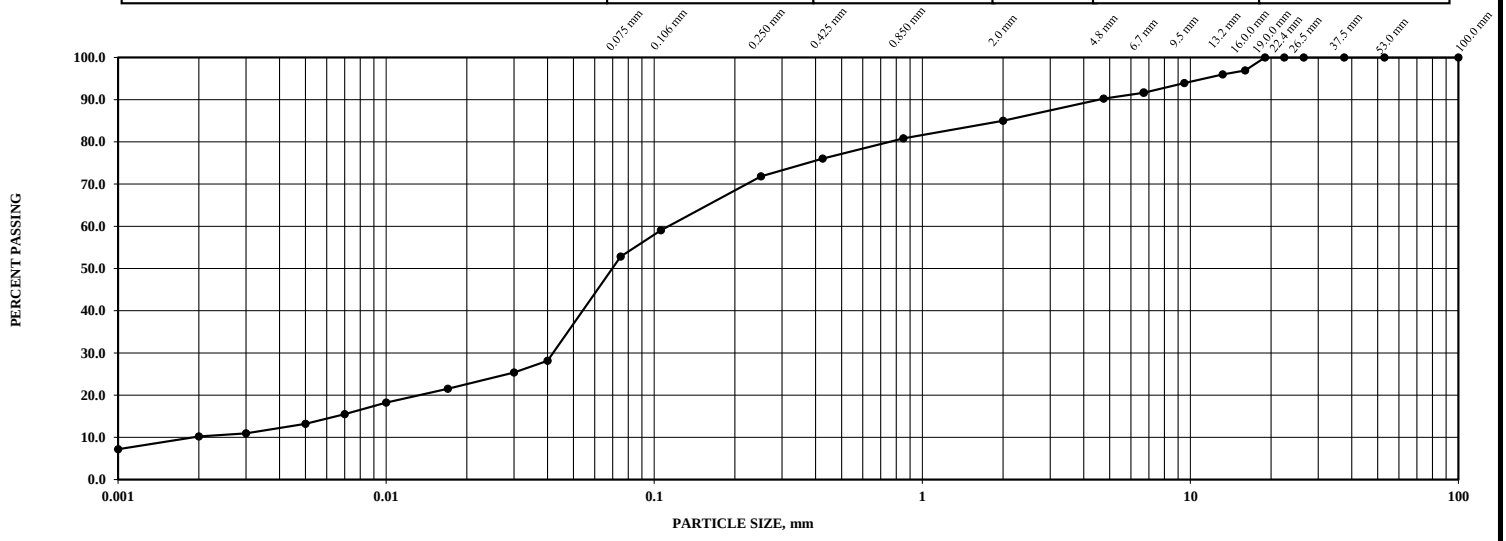
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.117	**D30**	0.043	**D10**	0.002	**Cc**	8.059	**Cu**	60.58

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	28.2
37.5	100.0	0.030	25.4
26.5	100.0	0.017	21.5
22.4	100.0	0.010	18.2
19	100.0	0.007	15.5
16	96.9	0.005	13.2
13.2	96.0	0.002	10.2
9.5	93.9	0.001	7.2
6.7	91.6	**ATTERBERG LIMITS**	
4.75	90.2		
2.00	85.0		
0.850	80.8		
0.425	76.0		
0.250	71.8		
0.106	59.0		
0.075	52.8		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		9.8
% SAND (75 µm to 4.75 mm):		37.4
% SILT (2 µm to 75 µm):		42.6
% CLAY (<2 µm):		10.2
GROUP SYMBOL / SOIL DESCRIPTION:		SAND and SILT, some Clay, trace Gravel

REMARKS

Figure: 1

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02302109.000	**PROJECT NAME:**	Habitat For Humanity - 317 Speedvale Ave East	**CLIENT:**	Habitat For Humanity
LAB NUMBER:	1626	**SAMPLE ID:**	MW-23-02 / Sample - 7	**SAMPLE DEPTH:**	4.57 - 5.33 mbgs
SAMPLED BY:	Taylor Akimov	**DATE RECEIVED:**	September 20, 2023	**DATE COMPLETED:**	September 28, 2023

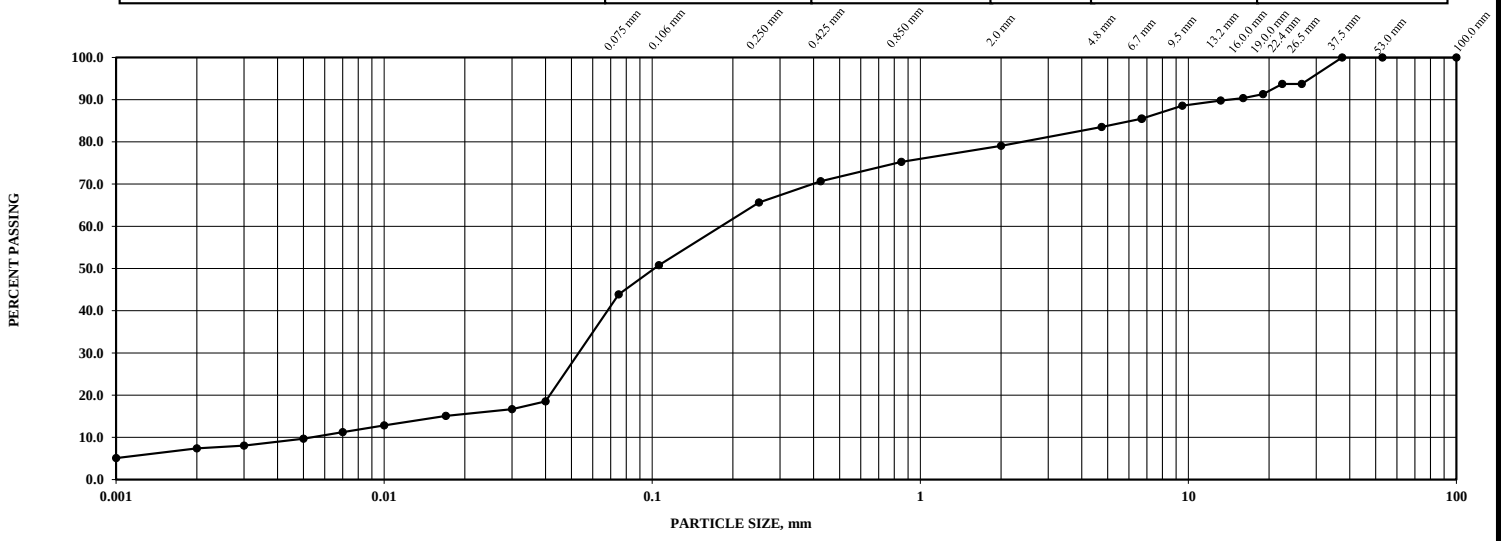
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.195	**D30**	0.056	**D10**	0.005	**Cc**	2.962	**Cu**	36.18

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	18.5
37.5	100.0	0.030	16.7
26.5	93.7	0.017	15.1
22.4	93.7	0.010	12.8
19	91.3	0.007	11.2
16	90.4	0.005	9.7
13.2	89.8	0.002	7.4
9.5	88.6	0.001	5.1
6.7	85.5	**ATTERBERG LIMITS**	
4.75	83.5		
2.00	79.1		
0.850	75.3		
0.425	70.7		
0.250	65.7		
0.106	50.8		
0.075	43.8		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		16.5
% SAND (75 µm to 4.75 mm):		39.7
% SILT (2 µm to 75 µm):		36.4
% CLAY (<2 µm):		7.4
GROUP SYMBOL / SOIL DESCRIPTION:		SAND and SILT, some Gravel, trace Clay

REMARKS

Figure: 2

TESTED BY: Diego Augusto De Arruda, Laboratory Technician

REVIEWED BY: David McBay, CET., Laboratory Supervisor

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02302109.000	**PROJECT NAME:**	Habitat For Humanity - 317 Speedvale Ave East	**CLIENT:**	Habitat For Humanity
LAB NUMBER:	1627	**SAMPLE ID:**	MW-23-03 / Sample - 8	**SAMPLE DEPTH:**	5.18 - 6.10 mbgs
SAMPLED BY:	Taylor Akimov	**DATE RECEIVED:**	September 20, 2023	**DATE COMPLETED:**	September 28, 2023

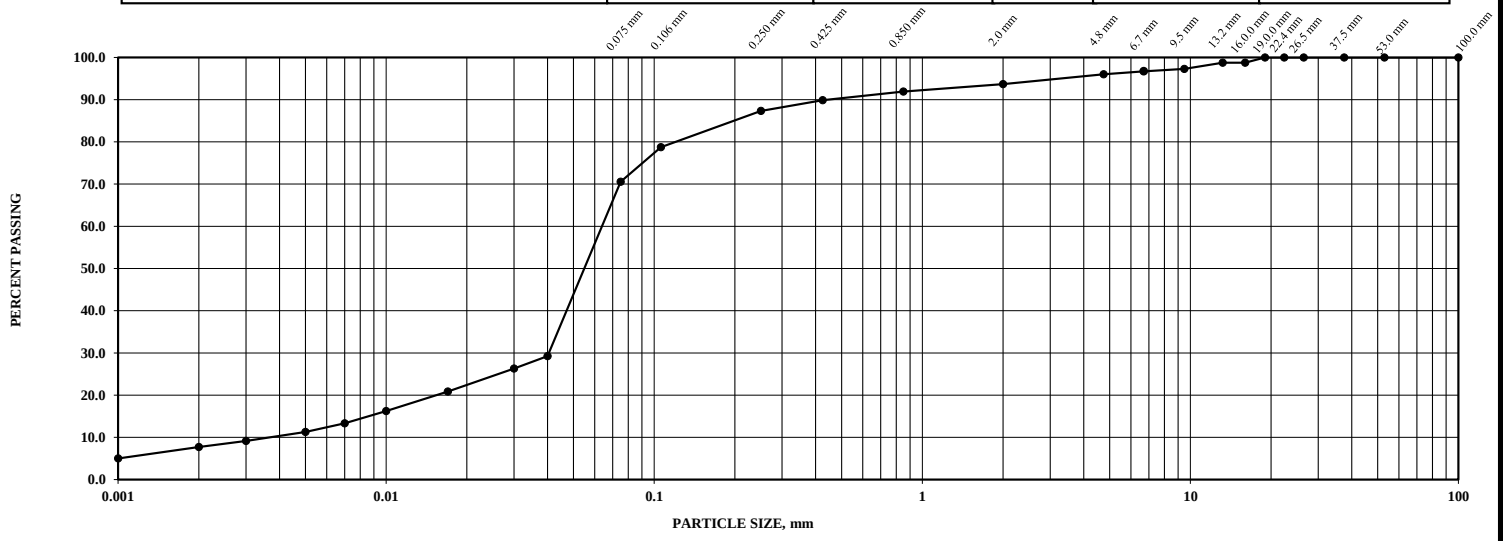
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.066	**D30**	0.041	**D10**	0.004	**Cc**	6.563	**Cu**	17.36

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	29.3
37.5	100.0	0.030	26.3
26.5	100.0	0.017	20.8
22.4	100.0	0.010	16.2
19	100.0	0.007	13.3
16	98.8	0.005	11.3
13.2	98.8	0.002	7.7
9.5	97.3	0.001	5.0
6.7	96.7	**ATTERBERG LIMITS**	
4.75	96.0		
2.00	93.7		
0.850	91.9		
0.425	89.9		
0.250	87.3		
0.106	78.7		
0.075	70.5		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		4.0
% SAND (75 µm to 4.75 mm):		25.5
% SILT (2 µm to 75 µm):		62.8
% CLAY (<2 µm):		7.7
GROUP SYMBOL / SOIL DESCRIPTION:		Sandy SILT, traces of Gravel and Clay

REMARKS

Figure: 3

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02302109.000	**PROJECT NAME:**	Habitat For Humanity - 317 Speedvale Ave East	**CLIENT:**	Habitat For Humanity
LAB NUMBER:	1628	**SAMPLE ID:**	MW-23-04 / Sample - 7	**SAMPLE DEPTH:**	4.57 - 4.88 mbgs
SAMPLED BY:	Taylor Akimov	**DATE RECEIVED:**	September 20, 2023	**DATE COMPLETED:**	September 28, 2023

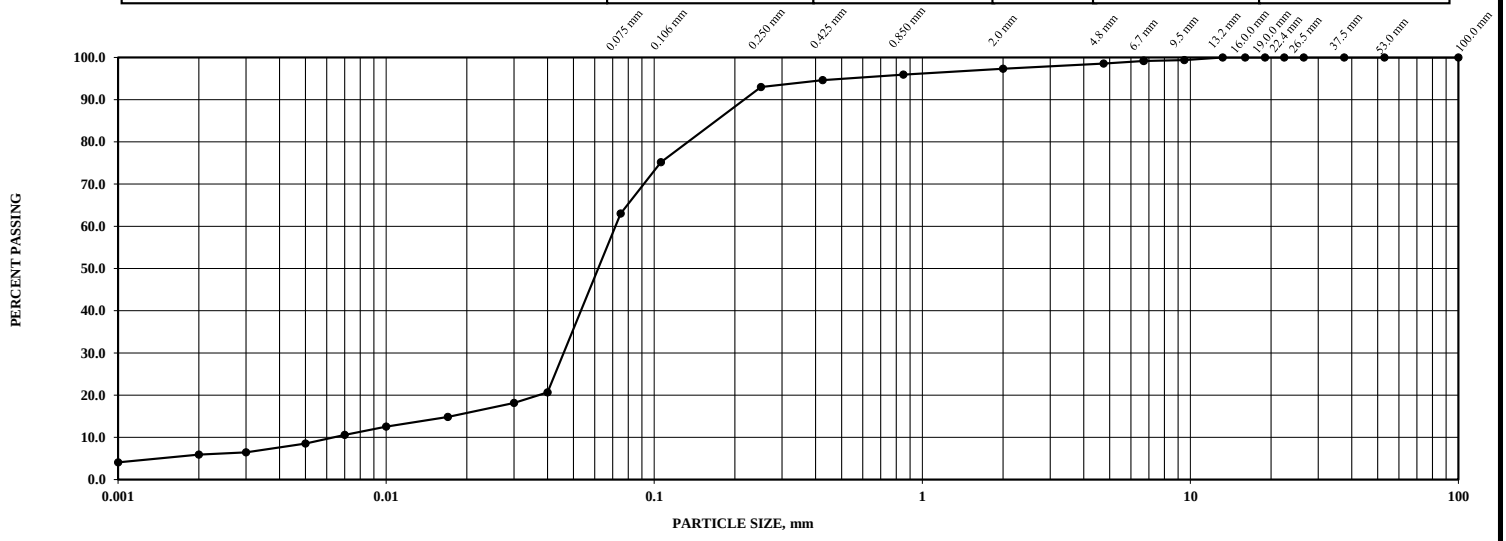
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.073	**D30**	0.048	**D10**	0.006	**Cc**	4.887	**Cu**	11.28

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	20.6
37.5	100.0	0.030	18.2
26.5	100.0	0.017	14.8
22.4	100.0	0.010	12.5
19	100.0	0.007	10.6
16	100.0	0.005	8.5
13.2	100.0	0.002	5.9
9.5	99.4	0.001	4.1
6.7	99.2	**ATTERBERG LIMITS**	
4.75	98.5		
2.00	97.3		
0.850	95.9		
0.425	94.6		
0.250	93.0		
0.106	75.2		
0.075	63.0		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		1.5
% SAND (75 µm to 4.75 mm):		35.5
% SILT (2 µm to 75 µm):		57.1
% CLAY (<2 µm):		5.9
GROUP SYMBOL / SOIL DESCRIPTION:		SAND and SILT, traces of Gravel and Clay

REMARKS

Figure: 4

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:	02302109.000	**PROJECT NAME:**	Habitat For Humanity - 317 Speedvale Ave East	**CLIENT:**	Habitat For Humanity
LAB NUMBER:	1629	**SAMPLE ID:**	MW-23-05 / Sample - 8	**SAMPLE DEPTH:**	5.18 - 6.10 mbgs
SAMPLED BY:	Taylor Akimov	**DATE RECEIVED:**	September 20, 2023	**DATE COMPLETED:**	September 28, 2023

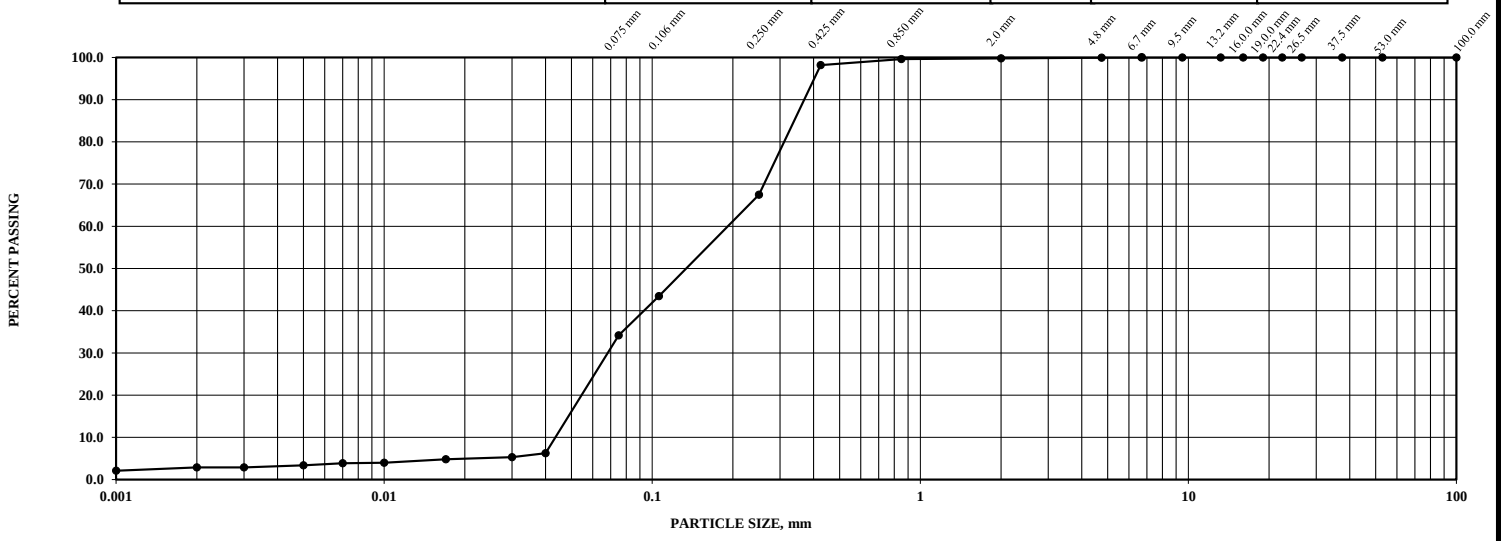
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL



COEFFICIENTS									
D60	0.205	**D30**	0.070	**D10**	0.045	**Cc**	0.531	**Cu**	4.59

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.040	6.2
37.5	100.0	0.030	5.3
26.5	100.0	0.017	4.8
22.4	100.0	0.010	4.0
19	100.0	0.007	3.8
16	100.0	0.005	3.4
13.2	100.0	0.002	2.9
9.5	100.0	0.001	2.1
6.7	100.0	**ATTERBERG LIMITS**	
4.75	99.9		
2.00	99.8		
0.850	99.6		
0.425	98.2		
0.250	67.5		
0.106	43.4		
0.075	34.2		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		0.1
% SAND (75 µm to 4.75 mm):		65.7
% SILT (2 µm to 75 µm):		31.3
% CLAY (<2 µm):		2.9
GROUP SYMBOL / SOIL DESCRIPTION:		Silty SAND, trace Clay

REMARKS

Figure: 5

TESTED BY: Diego Augusto De Arruda
Laboratory Technician

REVIEWED BY David McBay, CET.
Laboratory Supervisor

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

Appendix F
Qualifications of the Assessors

ENGLOBE

Kevin Bailey M.A.Sc., P.Eng, QP_{ESA}

Team Lead - Environmental

Mr. Kevin Bailey is an Environmental Engineer with seven (7) years of experience in contaminated site investigations and hydrogeological investigations. Mr. Bailey is an Environmental Engineer at Englobe and is responsible for conducting historical research to identify and evaluate potentially contaminating activities (PCAs), conducting data gap analysis and developing investigation work plans to assess environmental quality of soils, sediment, surface water, landfill leachate, and groundwater as per Ontario Regulation (O.Reg.) 153/04 (as amended) and Canadian Council of Ministers of the Environment (CCME) guidelines. Mr. Bailey also compiles and maintains QA/QC of field investigation data, assists in the remedial options analysis, remedial action plan development, remediation cost estimates development under the guidance of Senior Project Team Members, and supports the preparation of Environmental Site Assessment (ESA) and landfill contaminant management reports.

Mr. Bailey completes hydrogeological investigations to support property developments through the assessment of water taking quantity / quality, preparation, private drinking water assessments, assessment of side-wide water balance, assessment for low-impact development (LID) stormwater management, and preparation and submission of permitting applications.

Mr. Bailey is experienced in Phase I and Phase II ESAs, site remediation projects, and hydrogeological investigation projects for a variety of clients including municipalities, provincial and federal departments and crown corporations.

Mr. Bailey has extensive knowledge of both Canadian Standards Association (CSA) and Ministry of the Environment, Conservation and Parks (MECP) O.Reg. 153/04 as amended, Phase I and Phase II ESA reporting Standards. He is familiar with the CCME remediation standards for soil, groundwater, and sediments. He is experienced in applying CCME and Federal Interim Groundwater Quality Guidelines in evaluating analytical data representing the environmental quality of soil, groundwater, sediment, and surface water.

Professional experience

ENVIRONMENTAL AND HYDROGEOLOGICAL INVESTIGATIONS

City of Guelph – Alice Street and Stevenson Street South Hydrogeological Investigation and Construction Monitoring, Guelph, Ontario (2021)

Project manager for a hydrogeological investigation and construction monitoring supporting watermain repairs near the corner of Alice Street

Years of experience

7

Profession

Team Lead, Environment
Project Manager
Environmental Engineer

Education

2013 Master of Applied Science in Chemical Engineering, University of Waterloo

2011 Bachelor of Applied Science in Chemical Engineering, University of Waterloo

Professional associations

Member with Professional Engineers of Ontario, license 100224647 (since January, 2018)

Languages

English

and Stevenson Street South, Guelph, ON. Project completed on an emergency basis after unanticipated groundwater conditions were identified at the commencement of construction activities associated with watermain repairs. Included emergency site meeting to review current site conditions, review of historical environmental reports associated with several known contaminated sites immediately adjacent to construction works, completion of hydrogeological testing and groundwater sampling using available existing monitoring wells in proximity to the site, liaison with MECP and stakeholders from the adjacent properties with respect to limiting the migration of immediately adjacent contaminant plumes, and construction monitoring (groundwater levels and water quality) within existing and newly installed monitoring wells in close proximity to the construction works to monitor adjacent plume migration. Included the preparation of a Water Taking and Discharge Plan documenting the hydrogeological investigation, and obtaining an EASR application for construction water taking.

City of Guelph – Speedvale Avenue West Reconstruction Geotechnical / Environmental / Hydrogeological Investigation, Guelph, Ontario (2021 - 2022)

Project engineer for combined geotechnical, environmental, and hydrogeological investigation for road reconstruction (storm, sewer, watermain) for a 890 m span of Speedvale Avenue West, Guelph, ON (Phase 3) between Imperial Rd. N. and Elmira Rd. N. Included Assessment of Past Uses and Soil Analysis Plan, advancement of boreholes and installation of monitoring wells, chemical testing and analysis, groundwater sampling and hydrogeological testing. Preparation and submission of soil characterization report, hydrogeological report and technical study for road reconstruction recommendations. Included tender and construction support as well as documentation and submission on behalf of the city of for a PTTW Category 3 submission.

City of Hamilton – 55 Queenston Road Geotechnical / Environmental / Hydrogeological Investigation, Hamilton, Ontario (2018 – 2022)

Project manager for combined geotechnical, environmental (Phase One ESA, Phase Two ESA, Remedial Action Plan), and hydrogeological investigation to support the redevelopment of the former commercial development to a mid-rise low-income housing development. In 2018, Englobe completed a Phase One ESA, Phase Two ESA and geotechnical investigation at the site. The subsurface investigation included the advancement of seven (7) boreholes (with five (5) monitoring wells), with bedrock coring occurring in four (4) of the boreholes. In April 2020 and July 2021, supplemental Phase Two ESAs were completed to delineate contaminates of concern (COCs) identified at the site in soils and groundwater. The Supplemental Phase Two ESAs included the advancement of 27 additional boreholes and 15 monitoring wells. Englobe developed a Remedial Action Plan (RAP) which documented remedial requirements to address the identified COCs at the site.

In November 2021, Englobe completed a Hydrogeological Investigation to determine water taking and permitting requirements during forthcoming remedial activities. Englobe prepared a Water Taking and Discharge Plan based on the results of the Hydrogeological Investigation, which formed the basis of the procurement of a water taking EASR for remediation related water takings.

Region of Waterloo – South Boundary Road 2B and East Boundary Road Extensions, Cambridge / Township of North Dumfries, Ontario (2021-2022)

Project engineer for combined geotechnical and pavement, environmental (O. Reg 406/19 excess soils management), and hydrogeological investigations and groundwater monitoring program for South Boundary Road Phase 2 expansion (2300 m stretch between Franklin Blvd. to Dundas Street South [MTO Hwy 8]) and East Boundary Road Phase 1 expansion (600 m stretch between Hwy 8 to to Wesley Blvd.). Geo-investigations were characterization and recommendations expansion of new 4-lane Regional Road at the south end of Cambridge, ON. Project scope included Assessment of Past Use Report, advancement of boreholes and monitoring well installations through agricultural lands / cross-streets, environmental soil / water chemical testing and analysis, groundwater sampling and long-term monitoring and hydrogeological testing. Preparation and submission of geotechnical and pavement design report, environmental soil characterization report, and hydrogeological reports for road construction engineering recommendations.

Region of Waterloo – Ainslie Street South (Regional Road No. 24) Reconstruction, Cambridge, Ontario (2021)

Project manager and technical lead for combined geotechnical, environmental (O.Reg 406/19 excess soils management), and hydrogeological investigation for road reconstruction (storm, sewer, watermain) for a 1100 m span of Ainslie Street South (Regional Road No. 24) through downtown Galt in Cambridge, ON between Park Hill Rd. E. to Concession St. Included Assessment of Past Use Report, advancement of 22 x boreholes with bedrock coring and characterization, environmental chemical testing and analysis, groundwater sampling and hydrogeological testing. Preparation and submission of geotechnical and pavement design report, environmental soil characterization report, and hydrogeological report for road reconstruction recommendations.

City of Guelph - York Road Phase 3 Reconstruction Geotechnical / Environmental / Hydrogeological Investigation, Guelph, Ontario (2019 – 2021)

Project engineer for combined geotechnical, environmental, and hydrogeological investigation for road reconstruction (storm, sewer, watermain) for a 500 m span of York Road, Guelph, ON (Phase 3) between Stevenson St. S. to Victoria Rd. N. Included limited Phase I environmental screening, advancement of boreholes, chemical testing and analysis, groundwater sampling and hydrogeological testing. Preparation and submission of geotechnical and limited environmental report, hydrogeological report and technical study, environmental soil management plan of surplus impacted soils, dewatering and documentation for a PTTW Category 3 submission.

AECOM / Metrolinx - Aldershot GO Station Renovation and South Parking Lot Expansion – Stage 1 and Stage 2, Burlington, ON (2017 – 2020)

Project engineer for two stages of combined geotechnical, environmental, and hydrogeological investigation for the Metrolinx Aldershot GO station parking lot expansion and renovations of existing facilities. Stage 1 scope of work included advancing boreholes outside and inside the active CN Rail / GO train corridor to support design for grade raise and parking lot pavement, installation of new bus loops and canopies, generator/utility foundation pads, and two new elevator pits for accessibility options for active GO commuter platforms. Included preparation and submission of geotechnical / environmental (limited Phase II) / hydrogeological report. Stage 2 included supplementary geotechnical investigation for long-term settlement assessment of the south parking lot mass area filling, as well as an environmental soil management program and hydrogeological investigation (PTTW Category 3) for the earth works at the south site.

AECOM / Defense Construction Canada – Geotechnical and Hydrogeological Investigation for Boxcar Road Culvert at CFB Trenton, ON (2019 – 2020)

Project engineer for geotechnical investigation for box culvert / bridge replacements for Boxcar Road at CFB Trenton, Ontario for the Canadian Forces. Project scope included completing geotechnical / hydrogeological investigation with borehole drilling, monitoring well installations and hydrogeological field testing, site survey, laboratory testing, and geotechnical and hydrogeological assessment and analysis of site soils and groundwater. Geotechnical / Hydrogeological recommendations included; guidance on shallow and deep foundations, lateral earth pressures for structural design, excavation, surface water and ground water control, soil re-use, and pavement structure design for rehabilitated structures. Included a follow-up supplementary pavement investigation for additional roadway / driveway connections for CFB Trenton firetruck access.

City of Ottawa – Springfield Road Watermain Replacement Hydrogeological Investigation and Permit to Take Water Application, Ottawa, Ontario (2018-2019)

Project Engineer responsible for the completion of a hydrogeological investigation and Permit to Take Water (PTTW) application for a watermain replacement at Springfield Road and Beechwood Avenue in Ottawa, Ontario. The hydrogeological investigation included the completion of short duration recovery tests within groundwater monitoring wells using submersible pumps and electronic data loggers. Mr. Bailey estimated hydraulic conductivity using the recovery test data, and prepared a Hydrogeological Investigation Report which provided groundwater taking estimates during construction through the development of a groundwater flow model. Mr. Bailey was responsible for the preparation of the PTTW application for the proposed water taking.

City of Guelph - York Road Phase 2 Reconstruction Geotechnical / Environmental / Hydrogeological

Investigation, Guelph, Ontario (2017 – 2018)

Project engineer for combined geotechnical, environmental, and hydrogeological investigation for road reconstruction (storm, sewer, watermain) for a 500 m span of York Road, Guelph, ON between Ontario St. and Stevenson St. Included limited Phase I environmental screening, advancement of boreholes, chemical testing and analysis, groundwater sampling and hydrogeological testing. Preparation and submission of geotechnical / environmental / hydrogeological report for road reconstruction recommendations, including excavation/backfill, management and removal of surplus impacted soils, dewatering and documentation for an EASR permit, granular soil re-use and pavement design.

ENVIRONMENTAL SITE ASSESSMENT / CONTAMINATED SITE INVESTIGATIONS

City of Guelph - Sanitary Sewer Spill Response, York Road Construction Site, Guelph, Ontario (2019)

Project Engineer responsible for providing emergency spill response services for a sewage release at a watermain and trunk sewer installation construction site on York Road in Guelph, ON. Mr. Bailey was responsible for attending the initial response to the spill, liaising with the City of Guelph's environmental consultant, the collection of surface water samples at sewage outfall locations to the adjacent Eramosa River, the collection of groundwater and soil samples, date evaluation, and recommendations for continued monitoring of the Eramosa River

Willoughby Historical Museum - Underground Storage Tank (UST) Removal and Remediation, 9935 Niagara Parkway, Niagara Falls (2019)

Project Manager who provided environmental consulting services for the decommissioning and removal of a fuel oil UST, along with the remediation of hydrocarbon impacted soils. He oversaw the decommissioning and removal of the UST, directed the contractor in the removal of impacted soils, and collected soil samples from the final limits of the excavation.

Lakehead Psychiatric Hospital - Phase II ESA and Remediation Options Feasibility Study, 580 Algoma Street North, Thunder Bay, Ontario (2018-2019)

Project Engineer who assisted in the completion of a Phase II ESA for the former Lakehead Psychiatric Hospital, a 58-hectare parcel of land in Thunder Bay, ON. The Phase II ESA supported the planned divestment of the property. The Phase II ESA work program included drilling 39 boreholes and installation of 22 monitoring wells to investigate 20 areas of potential environmental concern (APECs) at the Site. The Phase II ESA identified 5 areas of environmental concern (AECs) which had contaminant concentrations greater than the applicable standards. Mr. Bailey evaluated the remedial options for each AEC and provided recommendations for remediation, additional contaminant delineation, or completion of a Risk Assessment, as appropriate.

National Research Council - Phase I and II ESAs, National Research Council Site Redevelopment, 455 Wanaki Road, Ottawa, Ontario (2018 – 2019)

Project Engineer who completed a Phase I ESA and Phase II ESA to support the redevelopment of former National Research Council (NRC) lands adjacent to the former Canadian Forces Base Rockcliffe in Ottawa, ON. After the completion of the ESAs, Mr. Bailey prepared a Conceptual Site Model (CSM) as well as the remaining supporting documents and successfully filed a Record of Site Condition with the Ministry of the Environment.

Former Ministry of Natural Resources Fire Base, Remedial Options Analysis, Kenogamisis Lake, Ontario (2018)

Environmental Engineer who evaluated the remedial options for soil and groundwater contamination at a Former Ministry of Natural Resources Fire Base. He screened in-situ and ex-situ remedial options, and risk management measures using Federal remediation screening tools and evaluated through assigned remediation criteria/factors, and completed the report summarizing the remedial options analysis and completed costing for four evaluated options.

Defence Construction Canada, Contaminated Groundwater Treatment Plant Design Brief, CFB Trenton, Ontario (2018)

Environmental Engineer who helped with the design brief for the treatment of chlorinated volatile organic compounds within sump water, completed a preliminary description and sizing of the treatment system, which included process steps including flow equalisation and pre-treatment, air stripping, and liquid and vapour phase granular activated carbon

adsorption and helped in the completion of a Class A cost-estimate for the treatment system.

Ontario Provincial Police, Ontario Police College, Underground Storage Tank Removal, Aylmer, Ontario (2018)

Environmental Engineer who completed field work for a preliminary soil and groundwater sampling program prior to the removal of an underground storage tank. He also completed a report summarizing the findings of the soil and groundwater sampling program and aided in the preparation of technical specifications and probable costing for the construction tender for the tank removal activities.

Defence Construction Canada (DCC), Experimental Proving Ground, Phase I ESA, Suffield, Alberta (2017 – 2018)

Environmental Engineer who completed a comprehensive Phase I ESA of the entire Experimental Proving Ground (EPG), occupying approximately 499 km2 at CFB Suffield. The Phase I ESA included over 50 contaminated sites used for the defensive testing, storage and disposal of chemical and biological warfare agents and munitions. He completed a report summarizing the current environmental condition of these sites as well as their level of advancement within the Federal Contaminated Sites Action Plan (FSCAP). He also completed the National Classification System for Contaminated Sites (NCSCS) scoring for eight (8) of these sites and a geo-environmental database linking pertinent site information to a geographic information system.

Career path

Since 2022	**Englobe Corp., Kitchener, ON** Team Lead, Environment, Southwestern Ontario (Current)
2018-2021	**DST, a Division of Englobe Corp., Waterloo, Ontario** Environmental Engineer, Project Manager
2017 - 2018	**DST Consulting Engineers Inc., Waterloo, Ontario** Environmental Engineer, Project Manager
2015-2017	**S2S Environmental Inc., Pickering, Ontario** Project Scientist, Environmental Site Assessments

Professional training and development

2017	Record of Site Condition: Getting it Right from Aerial to Zoning, APGO, Toronto

Taylor Akimov

Environmental Technician

Miss Taylor Akimov joined Englobe Corp. in June 2021 as an Environmental Technician in our Kitchener, Ontario office. Miss Akimov graduated Environmental Technology from Fleming College in 2017.

Taylor has 2 years of previous water treatment and sampling experience. Her responsibilities have included maintenance and sampling of the treatment systems as well as submitting the samples to ALS for analytical testing.

With Englobe her responsibilities have included completing and reporting on Phase I and II Environmental Site Assessments (ESA), Hydrogeological Investigations, Geotechnical Investigations, Long Term Groundwater Monitoring, Excess Soils, and Excavations. Taylor is also involved in project coordination including the preparation of Health and Safety Documents, and coordinating with field technicians, traffic control, drillers, private and public locators, and Clients.

Professional experience

PHASE I AND II ENVIRONMENTAL SITE ASSESSMENTS (ESA)

Private Client- Phase I & II, 226 Ingersoll Road, Woodstock, Ontario, (June to July 2021)

Field Technician responsible for field work. Fieldwork consisted of the initial Phase I site visit, advancement of environmental boreholes, installation of groundwater monitoring wells, development and sampling of groundwater, sampling of soil for analytical environmental testing, analyzing results and preparing reports. Analysis of the laboratory results identified contamination on site, which was recommended to be excavated. Excavation took place in August 2021.

Private Client- Phase II ESA, Arrowdale Park, Brantford, Ontario (July to August 2021)

Fieldwork consisted of the advancement of environmental boreholes, installation of groundwater monitoring wells, sampling of soil and groundwater for analytical environmental testing, and collection of GPS coordinates.

Private Retail Liquor Stores

- Phase II ESA, Blind River, Ontario, (July 2021)

Phase II Environmental Site Assessment in Blind River, Ontario. Responsible for carrying out field work. Fieldwork consisted of the advancement of environmental boreholes, installation of groundwater monitoring wells, development and sampling of groundwater, and collection of surface water for drilling activities.

Years of experience

4

Profession

Environmental Technician

Education

2017 – Environmental Technology, Fleming College, Lindsay, ON

2016 – Environmental Technician, Fleming College, Lindsay, ON

Languages

English

- Phase II ESA, Gananoque, Ontario, (September 2021)

Phase II Environmental Site Assessment in Gananoque, Ontario. Responsible for field work such as; sampling of groundwater, submission of laboratory samples for analysis.

Hydro One- Phase II ESA, Tiverton, Ontario, (September 2021)

Phase II Environmental Site Assessment at electricity distribution stations (DS) and transmission stations (TS) in Ontario, operated by the provincial distributor of electricity. Responsible for carrying out fieldwork, submission of lab samples, analyzing results. Fieldwork included the advancement of environmental boreholes, installation of groundwater monitoring wells, development and sampling of groundwater, sampling of soil for analytical environmental testing, collection of bedrock cores for geotechnical assessment, surveying of borehole locations and supervising well decommissioning.

Private Client- Four Phase I ESAs, Brantford, Paris, Woodstock, Ontario, (September 2021), One Phase II Environmental Site Assessment (January 2022)

Field Technician responsible for site investigations and inspections. Project is currently and historically commercial. This project was completed as part of due diligence requirements for the Site. Taylor completed the Phase I ESA which identified any potential environmental concerns in connection with current and/or historical activities at the site and surrounding areas. The Phase I ESAs identified a few areas of potential concern throughout the Paris location. Taylor completed the Phase II ESA in Paris in January 2022. The field work included advancement of environmental boreholes, installation of groundwater monitoring wells, and sampling of soil for analytical environmental testing.

Canadian Tire- Environmental Soil and Groundwater Assessment, Fergus and Georgetown, Ontario (October 2021)

Field Technician responsible for carrying out fieldwork, and submission of lab samples. Fieldwork included the advancement of environmental boreholes, installation of groundwater monitoring wells, development and sampling of groundwater, and sampling of soil for analytical environmental testing.

Haven Properties- Phase II ESA, and Supplemental Phase II ESA, Sheppard Avenue, Toronto, Ontario (February 2022, August 2022)

Taylor was responsible for supervising private locates, carrying out field work and submission of lab samples. The advancement of environmental boreholes, installation of groundwater monitoring wells, development and sampling of groundwater, and sampling soil for analytical environmental testing was completed during the field work. Taylor returned to the site for a supplemental Phase II in August. Taylor was in charge of supervising the field work, groundwater development and sampling, soil sampling and submitting samples for analytical environmental testing.

Private Client- Phase II ESA, Mill and Charles Street, Baden, Ontario (March 2022)

Field Technician responsible for supervising private locates, field work, and submission of lab samples. Field work involved the advancement of environmental boreholes, installation of groundwater monitoring wells, sampling soil, developing and sampling groundwater for analytical testing, collecting GPS coordinates, and surveying the borehole locations with a laser level. Taylor was also responsible for analyzing the analytical results, and preparing the report.

Private Client – Phase I ESA and Groundwater Sampling, Trenton, Ontario (August 2022)

Field Technician responsible for the initial Phase I Site visit, and groundwater sampling of 3 monitoring wells, installed during a previous Englobe investigation in 2017. Taylor was responsible for submitting the groundwater samples for laboratory analysis.

Red Lobster – Phase I ESA, Barrie, Brampton, and Kitchener, Ontario (August, and October 2022)

Taylor was responsible for the Phase I ESA site visit which identified any potential environmental concerns in connection with current and/or historical activities at the site and surrounding areas.

Private Client- Phase II ESA, King Street, St. Jacobs, Ontario (October 2022)
Field Technician responsible for supervising private locates, field work, and submission of lab samples. Field work involved the advancement of environmental boreholes, installation of groundwater monitoring wells, sampling soil, developing and sampling groundwater for analytical testing. Taylor was also responsible for analyzing the analytical results, and preparing the report.

Various Phase I and Phase One ESAs, Hamilton, Toronto, Wingham, Paris, Brantford, Goderich, Maryhill, and Kettle Point, Ontario (Throughout 2021, 2022, and 2023)
Taylor completed the Phase I ESAs which identified any potential environmental concerns in connection with current and/or historical activities at the site and surrounding areas.

Private Client- Phase II ESA, Otonabee Drive, Kitchener, Ontario (October and November 2022)
Taylor was the field technician responsible for supervising the advancement of 25 environmental boreholes, developing and sampling the groundwater, analyzing the results and preparing the report.

Private Client – Phase II ESA, Guelph Street, Kitchener, Ontario (March 2023)
Ms. Akimov was the field technician responsible for supervising private locates, and the advancement of 4 boreholes.

LONG TERM GROUNDWATER MONITORING

Activa Trussler, Kitchener, Ontario (Multiple events throughout 2021, 2022 and 2023)
One of the Field Technicians responsible for completing quarterly groundwater monitoring. Field activities include manually measuring water levels in all 23 monitoring wells, and 5 mini piezometers, collection of groundwater samples for environmental analytical testing, and collection of water level data from electric pressure transducers installed within select monitoring wells.

Hardy Road, Brantford, Ontario (Multiple events throughout 2021, 2022 and 2023)
One of the Field Technicians responsible for completing quarterly groundwater monitoring. Groundwater monitoring includes manually measuring water levels in all 25 monitoring wells/mini-piezometers located on-Site, as well as downloading water level data from electronic pressure transducers installed within six of the monitoring wells.

Barrel Yards, Waterloo, Ontario (Multiple events throughout 2021, 2022 and 2023)
One of the Field Technicians responsible for completing monthly groundwater monitoring. Field activities include manually measuring water levels in all 6 monitoring wells, and collection of groundwater samples for environmental analytical testing.

Hidden Valley, Kitchener, Ontario (Multiple events throughout 2021, 2022 and 2023
One of the Field Technicians responsible for completing monthly groundwater monitoring including manually measuring water levels in all 10 monitoring wells/mini-piezometers

Bishopsgate, Brantford, Ontario (March, June 2022, March 2023)
One of the Field Technicians responsible for completing quarterly groundwater monitoring events. Monitoring events include manually measuring water levels in all 4 monitoring wells.

EXCESS SOILS (O.REG. 406/19)

County of Brant, Ontario (Multiple events throughout 2022 and 2023)
Taylor was the Field Technician responsible for collecting in-situ and ex-situ soil samples on various days, and coordinating with the operator on site. Taylor also submitted the soil samples to the laboratory for analysis.

City of Brantford, Dogford Park and Charing Cross, Brantford, Ontario (August, and September 2022)
Taylor was responsible for instructing the mobilization of 3 test pits at Dogford Park, and 3 test pits at Charing Cross, for

reconstruction for the City of Brantford. Soil was submitted for laboratory analysis by Taylor.

Woolwich Township – Barnswallow Drive, Elmira, Ontario (October, November 2022)
Taylor was the field technician responsible for supervising the drilling of 19 boreholes on Barnswallow Drive, from Church Street to First Street. Taylor collected soil samples and submitted them for laboratory analysis.

Region of Waterloo – Fischer-Hallman Road/Bearinger Road, Waterloo, Ontario (November 2022)
Taylor was responsible for supervising the drilling of 25 boreholes on Fischer-Hallman/Bearinger Road from Columbia to Pineridge Road, and submitting the soil samples for analysis.

Woolwich Township – Arthur Street, Elmira, Ontario (December 2022)
Field Technician in charge of supervising the drilling of 11 boreholes on Arthur Street from South Street to Kenning Place, and submitting the soil samples for analysis.

City of Cambridge c/o IBI Group – Blenheim Road, Cambridge, Ontario (May 2023)
Ms. Akimov was in charge of supervising the drilling of 8 boreholes on Blenheim Road, and submitting the soil for analysis.

Municipality of Kincardine – Concession 5 Road, Kincardine, Ontario (May 2023)
Taylor was in charge of supervising the drilling of 5 boreholes on Concession 5 Road, between Sideroad 10 and Sideroad 15 North, and submitting the soil samples for analysis.

EXCAVATION

Private Client, Woodlawn Road West, Guelph, Ontario (November 2021)
Field Technician in charge of overseeing three test pit locations, while collecting representative soil samples from each test pit location. Other tasks include supervising Underground Storage Tank pulls, collecting sidewall and floor samples to be analyzed, documenting locations of samples collected, and preparing report.

Haven Properties, Beachwood Road, Wasaga Beach, Ontario (February 2022)
Field Technician in charge of extending the excavation in support of pump and treat activities. Taylor collected soil samples to be analyzed, and documented the size and location of the excavation.

Private Client – Talbot Line, Wallacetown, Ontario (March 2023)
Taylor was in charge of supervising the excavation, screening soil samples, and submitting samples for laboratory analysis.

HYDROGEOLOGICAL INVESTIGATIONS

Private Client – Various Hydrogeology Tests, John Street, Otterville, Ontario (March 2022)
Field Technician assisting with a hydrogeological investigation. Fieldwork included solid slug testing, pump testing, and hydraulic slug testing. Taylor was responsible for assisting in conducting falling and rising head K-tests with the above mentioned materials, and collecting data using Solonist Leveloggers. Taylor returned to the Site at a later date to complete groundwater sampling within all of the monitoring well locations, and again to collect samples from the discharge point of the dewatering system.

Aquafor Beech Limited – Short Duration Recovery Tests, Victoria Green Stormwater Management Pond, Innisfil, Ontario (May 2022)
Field Technician responsible for conducting two short duration rising head hydraulic conductivity tests (K-tests) within the monitoring wells on Site in support of the proposed stormwater pond cleanout/retrofit. Tests were completed using a submersible pump, while collecting water levels during recovery manually and using Solonist Leveloggers. Taylor also completed a laser level survey of the monitoring well, and borehole locations on Site.

Private Client – Infiltration Testing, 111 Sherwood Drive, Brantford, Ontario (May 2022)
Field Technician responsible for conducting three infiltration tests for a proposed infiltration system at 111 Sherwood Drive. Field work included directing the drill crew to advance boreholes to the bottom of the proposed infiltration system, and conducting constant head permeameter testing with an Aardvark Permeameter, in three borehole locations. Field

borehole logs were completed to determine if further investigation was required in the deeper elevations of the boreholes (If less permeable soils was encountered).

Mobilinx – Hydraulic Conductivity Testing, Hurontario-407, Mississauga, Ontario (June 2022)
Field Technician responsible for conducting falling head hydrogeological tests to determine the hydraulic conductivity with solid slugs and solnist leveloggers. Water levels were monitored manually as well as with the solnist levelogger. This hydrogeological investigation was in support of the proposed LRT development.

Aquafor Beech Limited – Infiltration Testing, 1111 Davis Drive, Newmarket, Ontario (June, July 2022)
Field Technician responsible for conducting 8 infiltration tests for a proposed infiltration system. The Field work included directing the drill crew to advance boreholes to the bottom of the proposed infiltration system, and conducting constant head permeameter testing with an Aardvark Permeameter, in four borehole locations, at various depths.

Private Client – Hydraulic Conductivity Testing, Industrial Drive, Elmira, Ontario (August 2022)
Taylor was the field technician responsible for conducting 2 hydraulic slug tests, and one short duration recovery test on various wellpoints within the dewatering system. Field work was completed in support of the dewatering during road construction activities on Industrial Drive. Taylor also completed two rounds of groundwater sampling, collected from the discharge point of the dewatering set up.

Aquafor Beech Limited – Hydraulic Conductivity Testing and Groundwater sampling at 5 Proposed SWMPs (Idlewood Greenway, Millwood Park, Countryside Park, Countryhill Park, and Sandrock Hydro Corridor), Kitchener, Ontario (August, September 2022)
Taylor and Jessica completed hydraulic conductivity testing and groundwater sampling at 5 locations throughout Kitchener in support of the proposed Storm Water Management Ponds. Fieldwork included solid slug testing, pump testing and groundwater sampling. Taylor was responsible for conducting falling and rising head K-tests with the above mentioned materials, collecting data using Solonist Leveloggers, and submitting groundwater samples for analysis.

Private Client – Hydraulic Conductivity Testing, Butler Pit, Cambridge, Ontario (December 2022, January 2023)
Field Technician responsible for supervising private locates, well development, conducting 6 hydraulic conductivity tests, and groundwater sampling on 4 of the 10 monitoring wells.

WalterFedy – Hydraulic Conductivity Testing, Foundry Street, Baden, Ontario (February 2023)
Field Technician responsible for well development, conducting 4 hydraulic conductivity tests, groundwater sampling on 2 of the 4 monitoring wells. Taylor was also responsible for assisting with the hydrogeological assessment report.

AECOM Canada Ltd. c/o Metrolinx (April and May 2023)
Ms. Akimov was in charge of completing hydraulic conductivity testing in all 7 monitoring wells, and groundwater sampling 4 of the 7 monitoring wells. The work included conducting falling and rising head K-tests, submitting groundwater samples for analysis, and assisting with the Hydrogeological Assessment Report.

OTHER

Laurier Brantford YMCA – Indoor Air Quality & Sump Water Sampling, and Vapour Mitigation System Inspections, Brantford, ON (Various events in 2022 and 2023)
Taylor completed environmental sampling to fulfill the requirements of the selected Risk Management Measures listed within the Certificate of Property Use (CPU) at the Laurier Brantford YMCA. Taylor assisted Field Technician Maxine in completing quarterly indoor air quality (IAQ) sampling, semi-annual sump water sampling, and semi-annual inspections of the Soil Vapour Intrusion Mitigation System (SVIMS) and related components.

City of Brantford – Sediment Thickness Evaluation & Sampling, Holmedale Canal, Brantford, Ontario (June and July 2022)
Taylor completed environmental sediment sampling to support the dredging of the Holmedale Canal. Taylor and Russell measured the center, west and east sides of the canal throughout 23 cross sections to determine the sediment thickness in the canal, before the removal of sediment. Thirteen sediment samples (including field duplicates) were submitted for laboratory analysis.

Region of Waterloo International Airport – Fish Rescue and Relocation, Randall Drain, Breslau, Ontario (August 2022)
Taylor assisted Matt in successfully relocating the fish species located within the dammed area of Randall Drain, during dewatering activities. The work was completed in support of a culvert installation, and road reconstruction.

Canadian Tire – Phase I ESA in support of Domestic Water Threat Report, Fergus, Ontario (October 2022)
Taylor was responsible for the Phase I ESA site visit which identified any potential threats to the drinking water in connection with current and/or historical activities at the site and surrounding areas.

Career path

Since 2021	**Englobe Corp., Kitchener, Ontario** Environmental Technician
2017-2020	**Loch Island Lodge, Dubreuilville, Ontario** Water Technician

Professional training and development

2021	Emergency First Aid CPR C + AED
2021	WHMIS 2015
2021	Hydro One Station Safety Awareness Training
2021	Utility Infrastructure Awareness Training
2017	MOECC Operator-In-Training in Water Treatment, Water Distribution, Wastewater Treatment and Wastewater Collection
2016	Ontario Benthos Biomonitoring Network (OBBN)
2016	Wetland Evaluation Certification
2016	Pleasure Craft Operator Card

Jessica Godin M.E.Sc., EIT

Engineering Intern - Environment

Ms. Jessica Godin joined Englobe Corp as an Engineering Intern on the Environmental team in Englobe's Kitchener office. She graduated Chemical Engineering in 2015, and completed her Masters in Environmental/Green Engineering at the University of Western Ontario in 2022. She has two years of previous experience in a manufacturing environment for the development of a quality management system and coordinating new product launches with production staff, as well as one year of previous experience in an asphalt and materials testing laboratory.

With Englobe, Jessica has conducted geotechnical, environmental and hydrogeological investigations along with multidisciplinary investigations combining all three disciplines. Her responsibilities have included completing Environmental Site Assessments, collection of groundwater, indoor air and soil samples, and technical report writing along with the preparation of reports and deliverables. Finally, Jessica is involved in project coordinating including the preparation of Health and Safety Documents and coordinating with field technicians, traffic control, drillers, and public and private locators.

Professional experience

PHASE I AND II ENVIRONMENTAL SITE ASSESSMENTS (ESA)

House of Friendship – Supplemental Phase II Environmental Site Assessment – 40/42 Eby Street South, Kitchener, Ontario (2022)

Project Coordinator and Field Technician responsible for supervising private locates and GPR scan, field work, and submission of lab samples. Field work involved the advancement of environmental boreholes, installation of a groundwater monitoring well, sampling soil, developing and sampling groundwater for analytical testing, collecting GPS coordinates, and surveying the borehole locations with an RTK unit. Project Coordinator tasks included coordinating sub-contractors; preparing Health and Safety Plan; and communicating with the Client.

Private Client - Phase I, 1673 Huron Rd, Kitchener, Ontario, (2022)

Responsible for a Phase I Environmental Site Assessment (Phase I ESA) report for the request of due diligence purposes prior to the potential purchase of residential land. Tasks included a site visit; interview with the Site contact; and a review of the ERIS report, Fire Insurance Plans, other insurance products, past reports, aerial photos, environmental databases and on-site and off-site activities to evaluate potential on-and off-Site environmental concerns.

Years of experience

3

Profession

Engineering Intern - Environment

Education

2015 – Bachelor of Engineering Science in Chemical Engineering. University of Western Ontario, London, Ontario

2022 – Masters of Engineering Science in Chemical Engineering - Environmental/Green Engineering, University of Western Ontario, London, Ontario

Languages

English

Private Client - Phase I ESA, 131 Gage Ave, Kitchener, Ontario (2022)

Responsible for a Phase I Environmental Site Assessment (Phase I ESA) report for the request of due diligence purposes prior to the potential sale of industrial land. Tasks included a site visit; interview with the Site contact; and a review of the ERIS report, Fire Insurance Plans, other insurance products, past reports, aerial photos, environmental databases and on-site and off-site activities to evaluate potential on-and off-Site environmental concerns.

McCowan & Associates Ltd. – Phase II Environmental Site Assessment – 2380 Walker Rd, Windsor, Ontario (2022)

Responsible for a Phase II Environmental Site Assessment (Phase II ESA) report for the request of due diligence purposes prior to the potential sale of the commercial property. Tasks included reviewing field notes for the drilling and groundwater sampling, reviewing laboratory analytical results for both soil and groundwater; preparing tables of the analytical result; comparing analytical results to applicable standards; and preparing the Phase II ESA report.

EXCESS SOIL UNDER ONTARION REGULATION 406/19 (AS AMENDED)

Regional Municipality of Waterloo – Arthur Street Reconstruction, Elmira, Ontario (2022)

Responsible for the Assessment of Past Uses (APU) and Hydrogeological reports prior to the proposed Arthur Street Reconstruction project. Tasks included review of field notes and photos of the property, a review of the ERIS report, aerial photos, environmental databases and on-site and off-site activities to evaluate potential on- and off-Site environmental concerns. Jessica coordinated with project managers and field staff to complete hydrogeological monitoring and testing to determine dewatering requirements in support of required permitting.

Township of Woolwich – Barnswallow Drive, Elmira, Ontario (2022)

Assisted Field Technician Taylor in the collection of soil samples from 19 boreholes and submitted for analysis.

Hydro One Networks Inc. – Assessment of Past Uses, Eugenia TS, Eugenia, Ontario (2022)

Responsible for the Assessment of Past Uses (APU) report prior to the proposed upgrades at the Eugenia Transmission Station. Tasks included review of field notes and photos of the property, a review of the ERIS report, aerial photos, environmental databases and on-site and off-site activities to evaluate potential on- and off-Site environmental concerns.

Hydro One Networks Inc. – Assessment of Past Uses, Next Star TS, Windsor, Ontario (2022)

Responsible for the Assessment of Past Uses (APU) report prior to the proposed upgrades at the Next Transmission Station. Tasks included review of field notes and photos of the property, a review of the ERIS report, aerial photos, and environmental databases to evaluate potential on- and off-Site environmental concerns.

Hydro One Networks Inc. – Assessment of Past Uses, Mississagi TS, Mississagi, Ontario (2022)

Responsible for the Assessment of Past Uses (APU) report prior to the proposed upgrades at the Mississagi Transmission Station. Tasks included review of field notes and photos of the property, a review of the ERIS report, aerial photos, environmental databases and on-site and off-site activities to evaluate potential on-and off-Site environmental concerns.

Private Client – Assessment of Past Uses, Blenheim Rd. Cambridge, Ontario (June 2022)

Responsible for the Assessment of Past Uses (APU) Site Visit. Jessica assisted Field Technician Maxine to take photos and notes of the properties located along Blenheim Road in support of the Blenheim Road Reconstruction.

HYDROGEOLOGICAL INVESTIGATIONS

Aquafor Beech Ltd. – Geotechnical and Hydrogeological Investigation for 5 Stormwater Management Facilities, Kitchener, Ontario (2022)

Project Coordinator and Field Technician for a geotechnical and limited environmental investigation in support of the proposed 5 stormwater management facilities in the City of Kitchener. Project Coordinator tasks included coordinating sub-contractors; preparing Traffic Control Plan; and preparing Health and Safety Plan. Field tasks included assisting

Environmental Professional Maxine in supervising a drill crew to advance 3-6 boreholes across five sites; collecting soil samples; logging soil descriptions; supervising the installation of monitoring wells. Responsibilities for hydrogeological investigation involved sampling soil and groundwater; monitoring groundwater level; completing in-situ hydraulic conductivity testing using a short-duration recovery method (Slug Test); and preparation of reports summarizing analytical results.

Hydro One Networks Inc. – Hydrogeological Testing at Hanover TS, Hanover, Ontario (2022)

Responsible for a hydrogeological investigation in support of construction dewatering and Environmental Activity and Sector Registry (EASR) application associated with the proposed improvements to the Hanover Transmission Station. Tasks included assisting with conducting short duration falling and raising head hydraulic conductivity test (K-test) for 3 monitoring wells using solid slugs while collecting data using Solonist Leveloggers; monitoring groundwater level; surveying using a Spectra Laser Level; reviewing field notes for the drilling and groundwater sampling, reviewing laboratory analytical results for groundwater; and preparation of a report summarizing analytical results.

Private Client – Infiltration Testing at 111 Sherwood Dr., Brantford, Ontario (2022)

Responsible for a hydrogeological investigation in support of the design of a Low Impact Development (LID) stormwater management features at 111 Sherwood Drive in Brantford, Ontario. Tasks included reviewing infiltration data; reviewing field borehole logs; and preparing a report summarizing the results.

LONG TERM MONITORING

Activa Trussler, Kitchener, Ontario (June 2022)

One of the Field Technicians responsible for completing quarterly groundwater monitoring. Field activities include manually measuring water levels in all 23 monitoring wells, and 5 mini piezometers, collection of groundwater samples for environmental analytical testing, and collection of water level data from electric pressure transducers installed within select monitoring wells.

Barrel Yards, Waterloo, Ontario (June, July 2022)

One of the Field Technicians responsible for completing monthly groundwater monitoring. Field activities include manually measuring water levels in all 6 monitoring wells, and collection of groundwater samples for environmental analytical testing.

Hidden Valley, Kitchener, Ontario (June, July 2022)

One of the Field Technicians responsible for completing monthly groundwater monitoring including manually measuring water levels in all 10 monitoring wells/mini-piezometers

Bishopsgate, Brantford, Ontario (June, September 2022)

One of the Field Technicians responsible for completing quarterly groundwater monitoring events. Monitoring events include manually measuring water levels in all 4 monitoring wells.

Laurier Brantford YMCA – Indoor Air Quality & Sump Water Sampling, and Vapour Mitigation System Inspections, Brantford, ON (June, September, December 2022)

Jessica completed environmental sampling to fulfill the requirements of the selected Risk Management Measures listed within the Certificate of Property Use (CPU) at the Laurier Brantford YMCA. Tasks included completing quarterly indoor air quality (IAQ) sampling using evacuated canisters equipped with 24-hour regulator, semi-annual sump water sampling, and semi-annual inspections of the Soil Vapour Intrusion Mitigation System (SVIMS) and related components.

Career path

Since 2022	**Englobe Corp, Kitchener, Ontario** Engineering Intern – Environment
2021	**The University of Western Ontario** Teaching Assistant
2017-2019	**Theta TTS, Barrie, Ontario** Quality Coordinator
2015-2017	**Miller Paving, Markham, Ontario** Laboratory Technician

Professional training and development

2022	Workplace Hazardous Materials Information Systems (WHMIS), 2015
2022	Hydro One Station Safety Awareness Training

Prizes and scholarships

2015	1st Place, Capstone Design Project, Environmental and Waste Treatment Category, The University of Western Ontario

Computer skills

Microsoft Office (Word, Excel, PowerPoint, Access, Project and Outlook), Deltek Vantagepoint, Google Earth Pro.

Appendix G
Statement of Limitations

ENGLOBE

STATEMENT OF LIMITATIONS

This report (hereinafter, the "**Report"**) was prepared by Englobe Corp. (hereinafter the "**Company**") and is provided for the sole and exclusive use and benefit of Habitat for Humanity Wellington Dufferin Guelph. (the "**Client**"). Ownership in and copyright for the contents of the Report belong to the Company.

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The Company makes no representation concerning the legal significance of its findings, nor as to the present or future value of the property, or its fitness for a particular purpose and hereby disclaims any responsibility or liability for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

Since the passage of time, natural occurrences, and direct or indirect human intervention may affect the views, conclusions and recommendations (if any) provided in this Report, it is intended for immediate use.

This Statement of Limitations forms an integral part of the Report.

In preparing this Report, the Company has relied in good faith on information provided by others and has assumed that such information is factual, accurate and complete. The Company accepts no responsibility or liability for any deficiency, misstatement or inaccuracy in this Report resulting from the information provided, concealed or not fully disclosed by those individuals.

Any description of the site and its physical setting documented in this Report is presented for informational purposes only, to provide the reader a better understanding of the site and scope of work. Any topographic benchmarks and elevations are primarily to establish relative elevation differences between sampling locations and should not be used for other purposes such as grading, excavation, planning, development, or similar purposes.

Any results from laboratory or other subcontractors reported herein have been carried out by others, and the Company cannot warrant their accuracy.