# Phase Two Environmental Site Assessment

1299-1315 Richmond Road Ottawa, Ontario

Prepared for: 13008916 Canada Inc.



November 8, 2024 LOP23-029B

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## 1. Executive Summary

Lopers & Associates (Lopers) was retained by 13008916 Canada Inc. (Brigil) to complete a Phase Two Environmental Site Assessment (Phase Two ESA) of the commercial property with Civic address Nos. 1299-1315 Richmond Road, Ottawa, Ontario ("Phase Two Property", "Property" or "Site").

This Phase Two ESA is being completed as part of due diligence requirements associated with the submission and filing of a record of site condition (RSC) for the Property, required as part of a change to a more sensitive land use. This Phase Two ESA can also be used to support the submission of a Development Application to the City of Ottawa Municipal Planning Department.

Lopers has previously completed a Phase One Environmental Site Assessment (Phase One ESA) (Reference No. LOP23-029A, dated Revised February 2024) for Brigil at the Property. The Phase One ESA identified the presence of three potentially contaminating activities (PCAs) at the Property which were interpreted to represent areas of potential environmental concern (APECs).

Table 1: Potentially Contaminating Activities and Areas of Potential Environmental Concern

PCA / APEC Report Reference No.	Potentially Contaminating Activity	Location	Potential Contaminants of Concern
PCA #1 APEC #1	Operational Dry Cleaner  (O.Reg. 153/04 PCA Item 37: Operation of Dry Cleaning Equipment (where chemicals are used))	the Phase One Property	
PCA #2 APEC #2	Pad mounted electrical transformer  (O.Reg. 153/04 PCA Item 55: Transformer Manufacturing, Processing and Use)  (O.Reg. 153/04 PCA Item 18: and Electricity Generation, Transformation and Power Stations)	North portion of the Phase One Property	PHCs/BTEXs, PCBs
PCA #3 APEC #3	Hydraulic elevator, hydraulic oil reservoir, storage and sump pit  (O.Reg. 153/04 PCA Item 28: Gasoline and Associated Products Storage in Fixed Tanks)	North portion of the Phase One Property	PHCs/BTEXs, PAHs

Previous environmental reports were provided, which document the presence of contaminant concentrations that exceed the Site Condition Standards at the Phase One Property; the contaminants are associated with the aforementioned APEC #1.

Based on the identification of APECs at the Phase One Property and the requirement for documentation associated with an RSC, it was recommended that a Phase Two Environmental

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Site Assessment Report be completed to provide documentation that the Property meets the soil and groundwater quality standards applicable to its future use.

The scope of work for the Phase Two ESA included drilling seven boreholes at the Phase Two Property. Five of the boreholes were instrumented with groundwater monitoring wells with screens installed in the overburden. Additional excess soil characterization sampling and analysis was completed concurrently with this Phase Two ESA, for future planning purposes.

Seventeen soil samples, including one duplicate sample, were submitted for laboratory analysis for a combination of VOCs, PHCs, BTEXs, PCBs, PAHs, metals and inorganics. One sample was also submitted for toxicity leaching characteristic procedure (TCLP) for waste characterization purposes.

Groundwater sampling was completed of the newly installed monitoring wells and two existing shallow groundwater monitoring wells and 5 existing deep geotechnical monitoring wells at the Phase Two Property. A total of 17 groundwater samples, including duplicate samples and a trip blank, were submitted for laboratory analysis for a combination of VOCs, PHCs, BTEXs, PCBs, PAHs, metals and inorganics.

The applicable sites standard was determined to be the full depth generic site condition standard, in a non-potable groundwater condition, with fine-medium textured soil, for residential property use, as specified in Table 3 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

All analyzed soil samples as part of this Phase Two ESA were in compliance with the site condition standards.

The following groundwater samples had parameter concentrations in exceedance compared to ('vs.') their respective site condition standards.

- BH2-24-GW1 and BH12-24-GW1 (Duplicate of BH2-24), collected from a screen depth of approximately 2.5-5.5 m BGS, had reported concentrations of chloride (2,500 μg/g and 2,550 μg/g vs. 2,300 μg/g).
  - This sample was collected in a location that may have been subject to de-icing activities /influence with the application of salts applied to ground surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both and is suspected to exceed the site condition standard solely as a result of these activities. Based on this application and the exemption set forth in Section 49.1 of O.Reg. 153/04, the applicable site condition standard is deemed not to be exceeded for the purpose of Part XV.1 of the Act. Based on additional groundwater analysis in other locations at the Phase Two Property, the presence of Chloride appears to have been influenced by de-icing across paved areas.

All of the other groundwater samples were in compliance with the site condition standards as of the certification date of March 6, 2024.

Given the Phase Two Property will continue to be occupied by an operational dry cleaner, using chlorinated solvents as cleaning agents, re-sampling of the existing groundwater monitoring wells is recommended prior to redevelopment of the Site. An updated Phase Two ESA report will be required to support the RSC application after the Phase Two Property is no longer occupied by the existing commercial use.

Preparation of a soil management plan in accordance with O.Reg. 406/19 will be required as part of management of excess soil generated as part of construction activities.

## 2. Introduction

Lopers & Associates (Lopers) was retained by 13008916 Canada Inc. (Brigil) to complete a Phase Two Environmental Site Assessment (Phase Two ESA) of the commercial property with Civic address Nos. 1299-1315 Richmond Road, Ottawa, Ontario ("Phase Two Property", "Property" or "Site"). The location of the Phase Two Property within the City of Ottawa is presented on Figure 1: Key Plan.

#### i. Site Description

The Phase Two Property is legally described as Part of Lots 1 & 2 on Registered Plan 408456 in the City of Ottawa and has a property identifier number of 04282-0660. The boundaries of the Phase Two Property are presented on Figure 2: Site Plan.

Based on approximate dimensions obtained from the City of Ottawa's GIS mapping tool, the Phase Two Property has an approximate area of 4,142 m<sup>2</sup> (0.41 Hectares). The Phase Two Property is immediately surrounded by four municipal Right-of-Ways, then residential properties to the north, south and east, and commercial properties to the west and southwest.

#### ii. Property Ownership

The Phase Two Property is currently owned by 13008916 Canada Inc., a subsidiary company of Brigil Construction ("Brigil"). This Phase Two ESA was commissioned by Mr. Anthony Johnston, Project Manager - Land Development and Architecture for Brigil Construction (Brigil), operating as 13008916 Canada Inc. Brigil has a business address of 98 Rue Lois, Gatineau, Quebec, J8Y 3R7 and a business telephone number of 819-243-7392.

## iii. Current and Proposed Future Use

The Property is currently used for commercial purposes and is zoned for mixed use. 13008916 Canada Inc. (Brigil) purchased the Phase One Property in 2021, and it is understood that the intended future use is for mixed use (commercial and residential purposes), including the current concept for construction of one multi-storey building, with multiple levels of subgrade parking, commercial ground floor and residential units above. Given that the proposed redevelopment will involve a more stringent land use, a record of site condition (RSC) will be required to be filed with the Ministry of Environment, Conservation and Parks (MECP) for the Phase Two Property. This Phase Two ESA report will be used as supporting documentation as part of filing of an RSC.

#### iv. Applicable Site Condition Standard

Through Ontario Regulation 153/04 (O.Reg. 153/04), the Ministry of Environment, Conservation and Parks (MECP) prescribes the conditions to determine the applicable site condition standard for a property.

The proposed future use of the Phase Two Property is for mixed ground floor commercial and residential use, however residential land use standards have been applied for the purposes of this report as they represent the more environmentally sensitive land use conditions.

The Phase Two Property and all other properties within 250 m of the property boundaries are supplied by the municipal drinking water system. The Phase Two is within the urban boundaries of the City of Ottawa, is supplied with municipally treated drinking water and there are no wells within 250 m of the property boundaries that are intended for use as a source of water for human consumption or agriculture. As such, the designation of non-potable groundwater setting is determined to be applicable [O.Reg. 153/04, section 35].

The soil and groundwater quality over the full depth of overburden was considered for this Phase Two ESA. The full depth generic site condition standards were selected for comparison for the Phase Two Property [O.Reg. 153/04, sections 36, 37, 38, 39 and 40].

The Phase Two Property is not situated within or adjacent to an area of natural significance and does not include any land within 30 m of an area of natural significance. The pH of the soil was analyzed and was found to range from 7.15 to 7.83. As such, the Phase Two Property is not considered to be an environmentally sensitive area [O.Reg. 153/04, section 41].

Based on stratigraphic records, the general stratigraphy of the Phase Two Property and general area consists of sand and gravel fill, underlain by silty clay or clayey silt, underlain by sand and gravel followed by Bedrock. Two particle size distribution analyses were completed as part of this Phase Two ESA. Based on physical observations and the laboratory results the soil conditions are considered to be fine grained soils [O.Reg. 153/04, section 42].

Review of the borehole/monitoring well logs completed as part of previous investigations was completed. It was determined that greater than 2/3 of the Phase Two Property has greater than 2 m of overburden soil. The Phase Two Property is not considered a shallow soil property [O.Reg. 153/04, section 43.1].

The Phase Two Property does not include and does not have any land located within 30 m of a water body. The MECP site condition standards for use within 30 m of a water body do not apply [O.Reg. 153/04, section 43.1].

The full depth generic site condition standards, with non-potable groundwater, fine textured soil, for residential/parkland/institutional property use, as specified in Table 3 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 were determined to be the applicable site condition standards for the Phase Two Property as part of this Phase Two ESA.

## 3. Background Information

## i. Physical Setting

No areas of natural significance are located at the Phase Two Property or in the Phase One Study Area. No drinking water wells are located at the Phase Two Property and the Phase One Study Area is serviced by municipally treated non-potable water. The Phase Two Property and Study Area are not located in the vicinity of any well-head protection areas or other designation identified by the City of Ottawa in its official plan for the protection of ground water. No private or agricultural water supply wells are located within the Phase One Study Area.

The regional topography in the Phase One Study Area generally slopes downward to the north and northwest. The Phase One Property is generally at grade with the neighbouring properties. The nearest surface water body identified on mapping is a tributary to the Ottawa River, located approximately 440 m north of the Phase One Property. The Ottawa River, flowing east, is located approximately 630 m north of the Phase One Property.

Surface water drainage at the Phase Two Property is by sheet drainage to catch basins located on the paved surfaces, which drain into the municipal stormwater sewer system or by infiltration in the unimproved ground surfaces.

## ii. Past Investigations

Brigil provided the following three previous environmental reports for review:

- "Revised Phase I Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario", dated January 31, 2017, completed by Pinchin Ltd. for Look Property Management Inc.
- "Groundwater Monitoring and Sampling Program, 1299-1315 Richmond Road, Ottawa, Ontario", dated March 10, 2017, completed by Pinchin Ltd. for Look Property Management Inc.
- 3. "Phase I Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario", dated December 16, 2022, completed by Pinchin Ltd. for 11034936 Canada Inc.

No reports have been provided to Brigil documenting the 2007 investigations, however, some of their findings are summarized in 2017 Phase I ESA, 2017 Groundwater Monitoring and Sampling Program and 2022 Phase I ESA.

#### 2017 Revised - Phase I Environmental Site Assessment by Pinchin (2017 Phase I ESA)

The 2017 Phase I ESA stated that the Phase One Property was originally developed in the early 1960s and was used for commercial purposes since that time until present. The 2017 Phase I ESA stated that the plaza addition to the Site building was constructed in the late 1960s.

• Lopers notes that the actual date of construction of the building addition was in the early 1980s, as only the original portion of the building was present in the 1976 aerial photograph.

The 2017 Phase I ESA also states that the Phase One Property was developed with 3 residential buildings in 1946 and 1958.

• Lopers notes that the Phase One Property was shown to be undeveloped during a review of the 1958 aerial photograph and no FIPs existed for the Site in 1956. Lopers interpretation is that the Site was first developed in the 1960's and the reference to the former residential buildings may be erroneous.

The presence of an operational Dry Cleaner was identified in the central portion of the Site building since at least 1982. A summary of the on-Site dry cleaner operations, as observed and reported by Pinchin, were as follows:

"Spic n' Span 2000 operates a dry cleaning business in the central portion of the Site Building. Clothes dropped off by customers are either dry cleaned or put through a standard laundering process. The dry cleaning process generally involves spot-treating heavily stained clothes with perchloroethylene (PCE).

The clothes are then placed in a "fourth generation", wet-to-dry cleaning plant. The clothes are washed in one compartment containing PCE, and then manually transferred to a second compartment where they are dried. The waste PCE is stored in metal drums and disposed of off-Site on an as-needed basis by Recyclex. Secondary spill containment was in-place for the metal drums.

During the drying process, air emissions from the dry cleaning plant are vented through a double-carbon filtering system. The carbon is used to "capture" PCE from the warm air emitted by the dryer. The adsorbed PCE is recovered by passing low-pressure steam through the carbon bed. The mixed steam and solvent vapours are then passed through a water-cooled condenser and collected in a phase separator. The carbon is dried and reused, and the recovered PCE is returned to the dry cleaning system.

The water generated in the phase separator is discharged into the sanitary sewer system. Wash water is discharged into the sanitary sewer system."

Pinchin summarized a 2007 Phase II ESA (report not available for review as part of this Phase One ESA) completed at the Site. The summary stated that soil and groundwater samples collected from 3 boreholes/monitoring wells were in compliance with the MECP Table 3 Standards, "with the exception of a groundwater sample (MW-2), which reported a concentration of tetrachloroethylene that exceeded the 2011 Table 3 Standard (2.4 micrograms per litre ( $\mu$ g/L) versus (vs) the standard of 0.5  $\mu$ g/L)."

- Lopers interpretation is that the presence of PCE in the groundwater at the Phase One
  Property is a result of discharge from the on-Site dry cleaner. As noted above, the
  presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA
  #1 associated with the O.Reg. 153/04 PCA: Operation of Dry Cleaning Equipment (where
  chemicals are used) and represents APEC #1 for the Property.
- Lopers also notes that very little information regarding the subsurface conditions were provided as part of the summary of the 2007 Phase II ESA, including no borehole/monitoring/geological record, no reference to grain size testing to determine coarse vs. fine grain soil condition standards (which also applies to groundwater quality). Pinchin has assumed fine grain size soil standards were appropriate, which are less stringent than coarse grain soil condition standards.

Pinchin identified the presence of a pad-mounted transformer on the north portion of the Phase One Property. This was not identified as a PCA by Pinchin.

Lopers notes that this transformer is interpreted as PCA #2 associated with the O.Reg.
 153/04 PCAs: Transformer Manufacturing, Processing and Use and Electricity Generation,
 Transformation and Power Stations, which represents APEC #2 for the Property.

Pinchin identified the presence of an "elevator pit" and a steel reservoir that stores hydraulic oil in the northeast portion of the Site building at Phase One Property. This was not identified as a PCA by Pinchin.

• Lopers noted the presence of the steel reservoir and elevator pit at the time of the Site Inspection (detailed further in Section 6). This equipment is interpreted as PCA #3 associated with the O.Reg. 153/04 PCA: Gasoline and Associated Products Storage in Fixed Tanks and Use represents APEC #3 for the Property.

A historical retail fuel outlet was identified approximately 30 m west of the Phase One Property; based on the distance of this operation and its hydraulically cross-gradient orientation with respect to the property, Pinchin did not interpret this operation to result in an APEC at the Phase One Property. This historic retail fuel outlet and automotive service garage has been interpreted as PCA #2, associated with the O.Reg. 153/04 PCAs: Gasoline and Associated Products Storage in Fixed Tanks and Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material used to Maintain Transportation Systems.

• Because of its distance and interpreted cross-gradient orientation, this PCA #4 does not represent an APEC for the Phase One Property.

Pinchin recommended completing a groundwater sampling program of the existing (2007) groundwater monitoring wells.

#### 2017 Groundwater Monitoring and Sampling Program by Pinchin (2017 GWMSP)

Pinchin redeveloped and re-sampled the monitoring well MW-2 in February 2017. The analytical results from MW-2 were in compliance with the MECP Table 3 standards for the water sample collected in 2017, with PCE not detected above the laboratory method detection limit. Pinchin concluded that: "Based on the findings of this Groundwater Monitoring and Sampling Program, it is Pinchin's opinion that no further subsurface investigation is required for the Site in relation to the findings of the Phase I ESA. However, the Client may wish to undertake additional groundwater monitoring and sampling in the future to assess whether groundwater conditions at the Site have changed."

The following statement was included in the limitations of the 2017 GWMSP report: "The scope of work completed by Pinchin, as part of this Groundwater Monitoring and Sampling Program, is not sufficient (in and of itself) to meet the requirements for the submission of a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04 (as amended). If an RSC is an intended end product of work conducted at the Site, further consultation and/or work will be required."

Lopers' interpretation is that PCE is present in the subsurface groundwater and possibly
also soil at the Phase One Property. Lopers' opinion is that inadequate sampling and
delineation was completed as part of the 2017 GWMSP (and 2007 Phase II ESA) to
conclude that further investigation and assessment of PCE at the Phase One Property
was not required.

## 2022 Phase I Environmental Site Assessment by Pinchin (2022 Phase I ESA)

The 2022 Phase I ESA was essentially an update of the 2017 Phase I ESA; the majority of the findings were identical to the report from 2017, including the observations and statements regarding the operational dry cleaner, PCE use and waste storage at the Phase One Property. Pinchin completed supplemental groundwater monitoring and sampling of MW-2 in August 2022, which was discussed in the 2022 Phase I ESA; there were no detectable VOC concentrations in the groundwater sample.

The 2022 Phase I ESA concluded that "Based on the results of the Phase I ESA completed by Pinchin, nothing was identified that is likely to result in potential subsurface impacts at the Site. As such, no subsurface investigation work (Phase II ESA) is recommended at this time."

### 2024 Phase One Environmental Site Assessment by Lopers (2024 Phase I ESA)

Brigil also commissioned the following study:

• "Phase One Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario" dated March 21, 2022 (Revised February 2024) prepared for 13008916 Canada Inc. by Lopers & Associates.

The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 associated with the O.Reg. 153/04 PCA: Operation of Dry Cleaning Equipment (where chemicals are used) and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are volatile organic compounds (VOCs).

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property. The pad mounted electrical transformer is interpreted as PCA #2 associated with the O.Reg. 153/04 PCAs: Transformer Manufacturing, Processing and Use and Electricity Generation, Transformation and Power Stations, which represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are polychlorinated biphenyls (PCBs), petroleum hydrocarbons (PHCs) and benzene, toluene, ethylbenzene and xylenes (BTEXs).

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) are associated with the O.Reg. 153/04 PCAs "Gasoline and Associated Products Storage in Fixed Tanks" and "Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material used to Maintain Transportation Systems" and have been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and polycyclic aromatic hydrocarbons (PAHs).

Previous environmental reports were provided, which document the presence of contaminant concentrations that exceed the Site Condition Standards at the Phase One Property; the contaminants are associated with the aforementioned APEC #1.

Based on the identification of APECs at the Phase One Property, it is recommended that a Phase Two Environmental Site Assessment be completed to assess the soil and/or groundwater quality in the vicinity of the APECs.

## 4. Scope of Investigation

## i. Overview of Site Investigation

This Phase Two ESA was designed to meet the general requirements of O.Reg. 153/04 as amended, with details of scope presented in Lopers' Letter entitled "Proposal for Phase Two Environmental Site Assessment & Supplemental Excess Soil Management Sampling, Proposed Residential Re-development, 1299-1315 Richmond Road, Ottawa, ON", dated November 28, 2023, reference No. PRO-029B-23-BRIGIL.

The scope of work for investigation was discussed with Brigil and sampling and analysis plan (SAP) was prepared to achieve the objectives of the Phase Two ESA and gathering preliminary environmental excess soil quality information for future excavation management; the SAP is provided in Appendix A. For documentation purposes for an RSC for the Phase Two Property,

additional effort, including delineation, remediation and reporting will be required. These activities and confirmatory results are expected to be included as an Appendix to a revised version of this November 2024 Phase Two ESA.

Underground utility locates were completed through Ontario 1-Call to identify any active public services on the Phase Two Property. Following the completion of the public locates, Ottawa Locates underground service locators completed scanning of the Phase Two Property proposed drilling locations to locate privately owned underground services prior to initiating the field program. Various underground utility services, including natural gas, electricity, water and sewers were identified at the Phase Two Property. The water and sewer services are present in underground trenches which enter the Site building at the approximate centre of the Property from Richmond Road to the south. The natural gas connection is on the east side of the building, with a trench leading to Richmond Road to the south. Electricity enters the property through an underground service trench to north of the building. Copies of the underground locates are provided in Appendix B.

Two interior boreholes (BH1-24 and BH2-24) were drilled using a portable tripod drill on January 7 and February 5, 2024. On February 21 and 22, five boreholes (BH3-24 through BH7-24) were drilled at the Phase Two Property using a truck mounted CME 55 drill rig. The drilling equipment was operated by OGS Inc. Soil samples were collected using stainless steel split spoons. Soil samples recovered during the sampling program were screened in the field for volatile vapour concentrations, as well as visual and olfactory observations.

A total of five groundwater monitoring wells (BH1-24 through BH5-24) were installed on the at the Property as part of this Phase Two ESA. The boreholes which were instrumented with groundwater monitoring wells were drilled to the localized depths of between approximately 5.5 to 6.1 m below ground surface (m BGS) and were screened to straddle the shallow groundwater table. When possible, these groundwater monitoring wells were developed on the day of drilling by removing at least three well volumes or by purging the wells dry three times.

A total of seven existing groundwater monitoring wells were present at the Phase Two Property prior to undertaking the field program for this Phase Two ESA. The existing monitoring wells were installed as part of past investigations by others. Based on the depths of these wells and the depth to bedrock in boreholes in the vicinity of these wells which were drilled as part of this Phase Two ESA, only 2 of the 5 existing monitoring wells are suspected to have their screens set within the overburden and may also straddle the shallow groundwater table. The other five existing monitoring wells were drilled as part of a geotechnical investigation and had their screens set in the deep glacial till (approximately 13 m BGS) or bedrock (approximately 15 m BGS). All of the existing groundwater monitoring wells were developed on November 22, 2023 by removing at least three well volumes.

The locations of the boreholes/monitoring wells drilled/installed as part of this Phase Two ESA as well as existing monitoring wells at the Phase Two Property are presented on Figure 2: Site Plan. The rationale for the placement of the boreholes/monitoring wells is provided below:

- BH1-24 was drilled in the interior of the active dry cleaner in the north-central portion of the Site building. This borehole was placed in a location to assess the dry cleaning operations (APEC #1) in the vicinity of the interior sanitary drain. This borehole was instrumented with groundwater monitoring well BH1-24. Two historical boreholes were drilled to assess APEC #1, MW-2 and MW-3 were drilled to the northeast and south exterior of the existing dry cleaner as part of previous environmental investigations; these boreholes were also instrumented with groundwater monitoring wells.
- BH2-24 was drilled in the vicinity of an active elevator hydraulic reservoir and sump pit in the northeast portion of the Site building. This borehole was placed in a location to assess soil and groundwater quality in the vicinity of this petroleum product storage area (APEC #3). This borehole was instrumented with groundwater monitoring well BH2-24.
- BH3-24 was drilled in the northeast portion of the Phase Two Property in the vicinity of a pad mounted transformer. This borehole was placed in a location to assess soil and groundwater quality in the vicinity of this transformer (APEC #2). This borehole was instrumented with groundwater monitoring well BH3-24.
- BH4-24 was drilled adjacent to the north-central portion of the Phase Two Property, in the Starflower Lane Right-of-Way, near a stormwater catch basin to the northwest of the dry cleaner unit. This borehole was placed in a location to assess soil and groundwater contamination from a potential receptor (APEC #1). This borehole was instrumented with groundwater monitoring well BH4-24.
- BH5-24 was drilled approximately 5 m north of the north-central portion of the Phase Two Property, in the Starflower Lane Right-of-Way, near a downstream stormwater catch basin to the northwest of the dry cleaner unit. This borehole was placed in a location to assess soil and groundwater contamination from a potential receptor (APEC #1). This borehole was instrumented with groundwater monitoring well BH5-24.
- BH6-24 was drilled to the southwest of the existing commercial building in the southeast portion of the Phase Two Property. This borehole was placed in a location to assess anticipated excess soil quality in the footprint of the proposed future Site building.
- BH7-24 was drilled to the south of the existing commercial building in the southwest portion of the Phase Two Property. This borehole was placed in a location to assess anticipated excess soil quality in the footprint of the proposed future Site building.

Soil samples were selected for laboratory analysis of the contaminants of potential concern (CPCs) based on APECs and CPCs identified in the Phase One ESA, as described in Section 3.ii. above as well as field screening observations.

An initial groundwater monitoring and monitoring well development event of the existing groundwater monitoring wells at the Phase Two Property was completed on November 22,

2023. Groundwater level monitoring and well development of the monitoring wells MW-2, MW-3 and BH1-23 through BH5-23 were completed as part of the initial monitoring event. It was determined that MW-1 (on the northwest portion of the Phase Two Property) had been destroyed at the time of the initial monitoring event. The historical off-site operations to the west (1325 Richmond Road) were interpreted to be the rationale for the original drilling location of MW-1, however, following an interpretation of orientation/groundwater flow direction as well as historical reported analytical data, further assessment of potential off-Site impacts from 1325 Richmond Road were not considered warranted.

Static groundwater levels were measured prior to disturbance of the water column. During purging, water quality parameters were measured at regular intervals to monitor groundwater quality stabilization; once groundwater quality parameters stabilized (were within approximately 10% on successive readings), groundwater samples were collected. Groundwater samples were selected for laboratory analysis of select CPCs based on APECs and CPCs identified in the Phase One ESA.

An elevation survey was completed of the boreholes/monitoring wells drilled as part of the Phase Two ESA as well as both existing monitoring wells at the Phase Two Property. The boreholes/monitoring wells were surveyed relative to a temporary benchmark of the top spindle of the City of Ottawa fire hydrant located at the northeast corner of the Richmond Road and Assaly Road intersection; this benchmark was provided with a geodetic elevation of 71.02 m above mean sea level ("AMSL") and is considered "Site Datum" for the purposes of this Phase Two ESA.

## ii. Media Investigation

Based on the finding of the Phase One ESA, the following media were investigated:

Soil quality at the Phase Two Property was investigated through the collection of soil samples at varying depths facilitated by drilling using a potable tripod mounted drill and truck mounted CME drill rig with stainless steel split spoon sampling.

Groundwater quality at the Phase Two Property was investigated through the installation of new monitoring wells and sampling of the new and existing groundwater monitoring wells. Five new monitoring wells installed as part of the Phase Two ESA were drilled to the localized depths between approximately of 5.5 and 6.1 m below ground surface (m BGS) and were screened to straddle the shallow groundwater table. The six existing monitoring wells at the Phase Two Property were suspected to have monitoring well screens installed within the overburden, deep glacial till and/or bedrock. Groundwater monitoring wells were sampled using a peristaltic pump.

There were no natural surface water bodies at the Phase Two Property, and as such no sediment sampling was completed as part of the Phase Two ESA.

#### iii. Phase One Conceptual Site Model

The Phase One Property, which has the same location orientation and property boundaries as the Phase Two Property, is located at Civic Nos. 1299-1315 Richmond Road, Ottawa, Ontario and has an approximate area of approximate area of 4,142 m<sup>2</sup> (0.41 Hectares).

The Phase One Property was undeveloped prior to the early 1960's when the 2-storey office portion of the present-day Site building was constructed on the east portion of the Property. The 1-storey plaza portion of the Site building was constructed in the early 1980's.

The office portion of the building is generally leased to Professionals (Doctors, Dentists, etc.) while the plaza building is leased to commercial businesses, who generally use the units for retail sales. 13008916 Canada Inc. (Brigil) purchased the Phase One Property in 2021, and it is understood that the intended future use is for residential purposes, with potential for commercial use on the ground floor and two to three levels of underground parking.

The Phase One Property is immediately surrounded by four municipal Right-of-Ways, then residential properties to the north, south and east, commercial properties to the west and southwest.

The Phase One Study Area includes the Phase One Property and properties with the boundaries within 250 m of the Phase One Property limits. Based on a review of the Phase One Property and properties in the Phase One Study Area, their associated historical and/or current uses and operations and physical characteristics of the Phase One Study Area, it was determined that an assessment of properties within 250 m of the Phase One property was sufficient to meet the objectives of the scope of this investigation for a Phase One ESA.

No areas of natural significance are located at the Phase One Property or in the Phase One Study Area. No drinking water wells are located at the Phase One Property and the Phase One Study Area is serviced by municipally treated non-potable water. All previously existing groundwater monitoring wells were removed from the Phase One Property; the former locations of these wells are presented on Figure 2.

The regional topography in the Phase One Study Area generally slopes downward to the north and northwest. The Phase One Property is generally at grade with the neighbouring properties. The nearest surface water body identified on the mapping is a tributary to the Ottawa River, located approximately 440 m north of the Phase One Property. The Ottawa River, flowing east, is located approximately 630 m north of the Phase One Property.

Based on historical research, the general stratigraphy of the Phase One Property and Phase One Study Area consists of sand and gravel fill, underlain by silty sand, followed by silty clay. The overburden soil is underlain by limestone and/or shale bedrock, which was encountered at approximately 14 m below ground surface, with a groundwater table at approximately 3 to 5 m BGS. Local shallow groundwater is expected to flow in a predominantly north direction.

The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 associated with the O.Reg. 153/04 PCA: Operation of Dry Cleaning Equipment (where chemicals are used) and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are volatile organic compounds (VOCs).

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property. The pad mounted electrical transformer is interpreted as PCA #2 associated with the O.Reg. 153/04 PCAs: Transformer Manufacturing, Processing and Use and Electricity Generation, Transformation and Power Stations, which represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are polychlorinated biphenyls (PCBs), petroleum hydrocarbons (PHCs) and benzene, toluene, ethylbenzene and xylenes (BTEXs).

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) are associated with the O.Reg. 153/04 PCAs "Gasoline and Associated Products Storage in Fixed Tanks" and "Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material used to Maintain Transportation Systems" and have been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and polycyclic aromatic hydrocarbons (PAHs).

Seven additional PCAs were identified at neighbouring properties in the Phase One Study Area; however, these PCAs are located significant distances and/or at down- or cross-gradient orientations with respect to the Phase One Property and are not considered to represent APECs for the Phase One Property.

Previous environmental reports were provided which document the presence of contaminant concentrations that exceed the Site Condition Standards at the Phase One Property; the contaminants are associated with the aforementioned APEC #1.

Underground utility corridors for sanitary and storm sewers, potable water, private electricity and natural gas lines lead to the building, generally from Richmond Road to the south or from Starflower Lane to the north. The underground utility corridors have the potential to affect contaminant distribution and transport, as they would create preferential pathways for lateral migration. APEC #1 includes the underground storm and sanitary sewer corridors at the Phase Two Property.

## iv. Deviations from Sampling and Analysis Plan

There were no deviations to the Sampling and Analysis Plan (SAP) as part of this Phase Two ESA.

## v. Impediments

The boreholes/monitoring wells were located in a manner suitable to adequately assess the PCAs and APECs identified at the Phase Two Property. Due to active underground services, some borehole locations were located up to 3 m from the PCA location, however, it has been

interpreted that this Phase Two ESA drilling locations provide an adequate assessment of the overall environmental soil and groundwater quality at the APECs and overall Phase Two Property.

## 5. Investigation Method

#### i. General

The investigation method for this Phase Two ESA involved an assessment of the soil and/or groundwater quality for the associated CPCs in the vicinity of the APECs identified during the Phase One ESA.

Investigation of soil was completed using a truck mounted CME drill rig for exterior drilling and a tripod mounted portable drill for interior boreholes, with stainless steel split spoons used to recover soil samples. Soil samples were screened in the field for volatile vapour concentrations, as well as visual and olfactory observations. Select soil samples were submitted for laboratory analysis of the CPCs, based on all the indications mentioned above, as well as to capture representative soil and fill layers, for laboratory analysis for the CPCs.

Groundwater was assessed using the groundwater monitoring wells which were installed as part of this Phase Two ESA drilling program and those which had been installed at the Phase Two Property as part of historical previous investigations. The wells selected for monitoring/sampling were purged during the drilling program. Static groundwater levels were measured in the monitoring wells prior to disturbance of the water column on the day of sampling. Groundwater samples were collected using a peristaltic pump using low-flow procedures and were submitted for laboratory analysis for the CPCs.

The new (2024 Phase Two ESA) and existing boreholes/monitoring wells were surveyed relative to the benchmark of the top spindle of the City of Ottawa fire hydrant located at the northeast corner of the Richmond Road and Assaly Road intersection; this benchmark was provided with a geodetic elevation of 71.02 m above mean sea level ("AMSL") and is considered "Site Datum" for the purposes of this Phase Two ESA.

The following sections provide further detailed information regarding the investigation methodology completed to produce this Phase Two ESA.

## ii. Drilling

The drilling field program for this Phase Two ESA was completed on January 7, February 5, 21 & 22, 2024 under full-time supervision by Lopers & Associates personnel. Seven boreholes were drilled for the Phase Two ESA by the drilling subcontractor OGS Inc., located at 5518 Appleton Side Road, Almonte, Ontario, K0A 1A0. Interior drilling (January 7 & February 5, 2024) was completed using a tripod mounted portable drill, with steel casings. The drill rig used for the

exterior drilling (February 21 & 22, 2024) for this Phase Two ESA was a truck mounted CME 55 drill, equipped with hollow stem augers and stainless-steel split spoons.

Samples were collected using stainless steel split spoons from the near surface to the full depth of drilling. Split spoon samples, collected in 0.6 m segments, were recovered continuously at 0.6 m intervals and/or with 0.15 m spacing between samples.

The split spoons, which were the only media to come into contact with the soil samples, were washed using soap and water and a scrub brush between samples to minimize the potential for cross-contamination among samples. The field technician used sterile nitrile gloves, which were changed prior to the handling of each soil sample to further reduce the potential of cross-contamination. The flights of the hollow stem augers were cleaned manually following each borehole.

#### iii. Soil Sampling

As described above, soil samples were recovered using stainless steel split spoons.

Soil samples were initially collected in Ziploc bags for initial screening as part of sample selection. Soil samples selected for laboratory analysis were collected in dedicated clear glass jars prepared and provided by the analytical laboratory. Soil samples collected for BTEXs/VOCs and the F1 range of PHCs analysis were collected using a dedicated graduated syringe provided by the laboratory and placed directly into a glass vial with a known quantity of methanol preservative. Analytes and associated preservatives were specified on each jar/vial by the laboratory. Each jar/vial sample set was provided with a unique sample identifier, project number and date of sampling in the field.

Detailed soil descriptions of the stratigraphy for each borehole/monitoring are included on the borehole logs provided in Appendix C. Available borehole logs from previous investigations by others at the Phase Two Property have also been included in Appendix C.

Based on the observations of soil samples collected during the Phase Two ESA field program and previous investigations by others, there were six stratigraphic units identified at the Phase Two Property, which include:

- Asphalt
- Silty Sand and Gravel (Fill)
- Sand (Fill)
- Silty Clay
- Silty Sand and Gravel (Till)

The stratigraphy is discussed in greater detail in Section 6.1 of this report.

#### iv. Field Screening Measurements

Initial field screening of the soil samples consisted of visual and olfactory observations made at the time of sample collection during the drilling program.

Additional field screening of the soil samples was completed using an RKI Instruments Model Eagle-2 combustible gas detector ("RKI Eagle"). The RKI Eagle(s) used for soil sample screening as part of this Phase Two ESA was obtained from Maxim Environmental and Safety Inc. and were calibrated by Maxim on January 5, January 31 and February 15, 2024. The RKI Eagle is capable of measuring combustible vapours at concentrations ranging from 0 parts per million (PPM) to 50% of the lower explosive limit (LEL). The RKI Eagle is also capable of measuring VOC vapours at concentrations ranging from 0 ppm to 1000 ppm. The readings of the RKI Eagle are shown on the Borehole Logs in Appendix C. Additional equipment and calibration information for the RKI Eagle is provided on the certificate of calibration included in Appendix D.

Where soil samples were selected in a borehole within an APEC and the SAP identified proposed soil analysis in that borehole, the field screening was used as follows to select the appropriate sample for laboratory analysis.

- 1. Select sample with evidence of visual and/or olfactory indications of suspected contamination, such as staining, PHC odours or deleterious fill material.
- 2. Select sample with most significant elevated soil vapour concentration.
- Select sample based on stratigraphy and/or moisture content, as certain CPCs are generally expected to be found in these defined conditions (i.e. fill material at shallow depths or PHC impacts near the groundwater table interface).
- v. Groundwater: Monitoring Well Installation

Installation of monitoring wells in BH1-24 through BH5-24 were completed by OGS Inc. The wells were installed using slotted PVC No. 10 monitoring well screens, which were 32 or 51 mm in diameter; these screens were installed at depths intended to straddle the shallow groundwater table in each of the aforementioned boreholes. Well screens were between 1.5 mand 3.0 m in length in both of the monitoring wells installed as part of this Phase Two ESA. The monitoring wells were extended to approximately 0.1 m below the surface grade with PVC riser, also 32 or 51 mm in diameter. A threaded PVC end cap was installed at the base of the screen to prevent sediment infiltration, while a J-Plug was installed at the top of the riser to present surface influence.

The annular space in each monitoring well was backfilled with clean silica sand up to approximately 0.3 m above the monitoring well screens. A layer of bentonite chips was then used to make a hydraulic seal above the sand pack to near the ground surface. The monitoring wells were completed with aluminum flushmount protective casings, which were backfilled with sand to allow drainage of any surface water which may infiltrate into the casings.

Development of each of the monitoring wells was completed using dedicated Waterra low density polyethylene (LDPE) tubing and a Waterra footvalve. The existing monitoring wells were developed on November 22, 2023 and the new monitoring wells were developed on February 22, 2024 by purging the wells dry at least three times. The wells were left to stabilize for a period of 2 weeks prior to groundwater sampling.

#### vi. Groundwater: Field Measurement of Water Quality Parameters

Measurements of the groundwater quality field parameters were completed to determine stabilization of these parameters prior to sampling. These measurements were completed using a Horiba U-52 groundwater quality measurement device ("Horiba"). The Horiba used for groundwater quality parameter stabilization measurements as part of this Phase Two ESA was obtained from Maxim Environmental and Safety Inc. and was calibrated on March 5, 2024. The Horiba is capable of measuring temperature, pH, conductivity, turbidity, dissolved oxygen and oxidation reduction potential. Additional equipment and calibration information for the Horiba is provided on the certificate of calibration included in Appendix D.

Field measurement of water quality parameters were collected at regular intervals (0 L, 0.5 well volumes, 1 well volume, 2 well volumes, etc.) during purging of the monitoring wells prior to sampling. The Horiba was placed in a flow-through cell and water quality parameters were measured until they were found to stabilize to within approximately 10% of the previous measurements prior to sample collection.

## vii. Groundwater: Sampling

Groundwater sampling for this Phase Two ESA was completed on March 6, 2024 (at least seven days after well installation). Groundwater samples were collected from new monitoring wells (BH1-24 through BH5-24) and existing monitoring wells (MW-2, MW-3, BH1-23 though BH5-23).

Stabilized groundwater levels were measured in each of the groundwater monitoring wells prior to disturbance of the water column prior to sampling. The dedicated Waterra LDPE tubing and footvalve was removed from each of the monitoring wells and 6 m Waterra LDPE tubing was placed in each of the monitoring wells. The LDPE tubing was connected to a dedicated length of silicon tubing, run through a peristaltic pump set to low flow (approximately 0.2-0.5 L/minute) during purging and sampling while monitoring groundwater level to minimize the drop in head. The monitoring wells were purged on the day of sampling while water quality parameters were measured as noted above.

Groundwater samples were collected in dedicated amber glass bottles and vials or plastic bottles prepared and provided by the analytical laboratory. Analytes and associated preservatives were specified on each bottle by the laboratory. Each bottle sample set was provided with a unique sample identifier, project number and date of sampling in the field. Samples for PHCs, BTEXs, VOCs, PAHs and general chemistry were unfiltered, while metals samples were field filtered using a dedicated 0.45 µm Waterra filter for each sample.

The field technician changed dedicated sterile nitrile gloves prior to initiating work at each monitoring well and changed gloves prior to sample collection to minimize the potential for cross-contamination.

## viii. Sediment: Sampling

There were no natural surface water bodies at the Phase Two Property, and as such no sediment sampling was completed as part of the Phase Two ESA.

#### ix. Analytical Testing

Soil and groundwater analytical testing was conducted by ALS Canada Ltd. (ALS). All laboratories conducting analysis as part of this Phase Two ESA are accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) and the National Institute of Standards and Technology (NIST), Standard Services Division, National Voluntary Laboratory Accreditation Program (NVLAP) for specific environmental and IAQ tests listed in the Scopes of Accreditation registered with each association. For the scope of accreditation under CALA Membership Number 1262, the laboratories are accredited for analysis including, but not limited to, metals, organics, conventionals, bacteria, mold, and asbestos in various matrices.

#### x. Residue Management Procedures

Excess soil cuttings from drilling and monitoring well installations were containerized in steel 205 L drums, which were stored in a designated area at the Property. These drums were marked with a wax crayon indicating the origin location(s) of the cuttings containerized within each. The contents of the drums were disposed of by Veolia Environmental Services on April 12, 2024.

Groundwater from well development and purging was initially placed in a graduated plastic bucket for volume measurements and then was transferred to a dedicated plastic 205 L drum, which was stored in a designated area of the Property. This drum was marked with a wax crayon indicating the origin location(s) of the water containerized within.

Fluids from equipment cleaning and decontamination were containerized within the purge water drum.

#### xi. Elevation Surveying

The new (2024 Phase Two ESA) and existing boreholes/monitoring wells were surveyed relative to the benchmark of the top spindle of the City of Ottawa fire hydrant located at the northeast corner of the Richmond Road and Assaly Road intersection; this benchmark was provided with a geodetic elevation of 71.02 m above mean sea level ("AMSL") and is considered "Site Datum" for the purposes of this Phase Two ESA referenced as "Site Datum" for the purposes of this Phase Two ESA. The reference elevations of each borehole/monitoring well are provided on the borehole logs in Appendix C.

## xii. Quality Assurance and Quality Control Measures

Soil samples were collected in dedicated clear glass jars prepared and provided by the analytical laboratory. Soil samples collected for BTEXs/VOCs and the F1 range of PHCs analysis were collected using dedicated graduated syringes provided by the laboratory and placed directly into a glass vial with methanol preservative. Analytes and associated preservatives were specified on each jar/vial by the laboratory. Each jar/vial sample set was provided with a unique sample identifier, project number and date of sampling in the field.

Groundwater samples were collected in dedicated amber glass bottles and vials or plastic bottles prepared and provided by the analytical laboratory. Analytes and associated preservatives were specified on each bottle by the laboratory. Each bottle sample set was provided with a unique sample identifier, project number and date of sampling in the field.

Following sample collection, the soil and groundwater samples were stored in an ice pack chilled cooler to minimize volatilization and begin the cooling process on the day of sampling. On each day of sample collection, following completion of the fieldwork, samples were delivered directly to the analytical laboratory. Standard chain of custody procedures were used to maintain a custody record of soil and groundwater samples between the field technician and the analytical laboratory.

The split spoons, which were the only media to come into contact with the soil samples, were washed using soap and water and a scrub brush between samples to minimize the potential for cross contamination among samples. The field technician used sterile nitrile gloves, which were changed prior to the handling of each soil sample to prevent cross-contamination. The field technician changed dedicated sterile nitrile gloves prior to initiating work at each monitoring well and changed gloves prior to groundwater sample collection to minimize the potential for cross-contamination.

A trip blank water sample for VOCs was submitted for laboratory analysis from the groundwater sampling event completed on March 6, 2014. No detectable VOC concentrations were reported in the trip blank water sample.

The soil sample (DUP-01/07) was submitted to the laboratory as a blind field duplicate sample of BH1-24-SS9) for VOCs. No duplicate soil sampling was submitted for other contaminants of concern, as the drilling program generated insufficient sample volumes for duplicate sample requirements from the laboratory. The laboratory completed and reported duplicate sample analysis for all groundwater CPC parameters analyzed as part of this Phase Two ESA as part of their internal quality assurance procedures.

The groundwater samples (MW-12-GW1, BH13-GW1 and BH15-GW1) were submitted to the laboratory as blind field duplicate samples of MW-2-GW1, BH3-GW1 and BH5-GW1, respectively. The ratio of groundwater duplicate results to original sample results was generally less than 20% which meets the required ratio. Given that no exceedances of the site condition

standards were detected for any analyzed parameters in both samples, the variability of these sample results does not affect the validity of the conclusions with respect to these results. These samples were analyzed for PHCs, VOCs (including BTEXs, which provide a blind quality assurance and quality control QA/QC validation for all groundwater CPC parameters analyzed as part of this Phase Two ESA.

No equipment blank of groundwater was required since the groundwater samples were collected using dedicated tubing.

## 6. Review and Evaluation

## i. Geology

Based on the observations of soil samples collected during the 2024 Phase Two ESA field program and review of the findings from a recent geotechnical investigation, there were six stratigraphic units identified at the Phase Two Property, which include:

#### **Asphalt**

A layer of asphalt, approximately 0.10 m in thickness, was encountered at the ground surface in BH3-24 through BH7-24.

#### Concrete

A layer of asphalt, approximately 0.10 to 0.13 m in thickness, was encountered at the ground surface in BH1-24 and BH2-24.

#### Silty Sand and Gravel (Fill)

A layer of silty sand and gravel fill material, generally ranging from approximately 0.4 to 0.7 m in thickness (2.2 m thick in BH6-24), was encountered from ground surface, immediately below the asphalt or concrete layer in all boreholes (BH1-24 through BH7-24) drilled as part of the Phase Two ESA. This material was identified to consist of silty sand and gravel, was loose to compact and generally brown to grey. This layer was encountered at varying moisture conditions, generally dry to moist.

#### Silt with Clay and Sand

A layer of silt with clay and sand and some gravel, ranging from approximately 0.8 to 4.6 m in thickness, was encountered immediately below the silty sand and gravel fill layer in boreholes BH1-24 through BH5-24. This material was identified to consist of clayey silt, firm and was grey or brown-grey. This layer was encountered at varying moisture conditions, generally moist at shallow depths becoming wet at approximately 4 m BGS.

#### Silty Clay

A layer of silty clay with some sand was encountered immediately below the clayey silt with sand layer in all of the boreholes drilled as part of this Phase Two ESA, with the exception of BH6-24, which had a thick layer of silty sand. The clay was observed up to 4.5 m in thickness as part of the Phase Two ESA, however, geotechnical borehole logs indicate that up to 6 m of clay is present across the Site. This material was identified to consist of silty clay with some fine sand, was firm becoming soft at greater depths and was grey or brown-grey. This layer was encountered at varying moisture conditions, generally moist at shallow depths becoming wet at depths ranging from 3.5 to 4.2 m BGS.

#### Silty Sand and Gravel (Till)

A layer of silty sand and gravel with occasional cobbles, approximately 4 to 6 m in thickness, was encountered below the silty clay layer and above the bedrock. This material was not encountered as part of the Phase Two ESA, and was only observed during deeper drilling as part of a geotechnical investigation at the Site. This material consisted of grey silty sand and gravel with some clay was compact and wet. Where present, this material was found to be underlain by bedrock at depths ranging from approximately 13 to 15 m BGS.

#### Aquifer

The shallow (unconfined) aquifer is the principal aquifer of interest based on the nature of APECs and PCAs identified for the Phase Two Property. It is present in several geological units, including the native silty clay and clayey silt layers, as well as in the sand and/or silty sand and gravel fill layers (where present at shallow depths).

The deeper (confined) aquifer was a secondary aquifer of interest based on the nature of one of the contaminants of concern (VOCs). This aquifer was investigated by monitoring and sampling existing (geotechnical) monitoring wells installed in the deep (13 to 15 m BGS) glacial till and/or underlying bedrock.

Based on moisture contents observed in the soil samples collected as part of this Phase Two ESA it is expected that seasonal and annual variability affect the groundwater table elevation in the shallow aquifer.

#### ii. Groundwater and Elevations and Flow Direction

Based on the nature of the primary CPCs identified for groundwater at the Phase Two Property (including light non-aqueous phase liquids (LNAPLs)), the screened intervals for the groundwater monitoring wells installed as part of this Phase Two ESA were selected to straddle the shallow groundwater table within the silty clay overburden. Based on previous investigations, it was suspected that existing monitoring wells located within the APEC #1 at the Phase Two Property had monitoring well screens that are also installed within the overburden and would be expected to straddle the shallow groundwater table and were situated in the silty

clay, and are thus in same aquifer as the 2024 monitoring wells and could be used for supplemental sampling as part of this Phase Two ESA.

The boreholes/monitoring wells were surveyed relative to a temporary benchmark of the top spindle of the City of Ottawa fire hydrant located at the northeast corner of the Richmond Road and Assaly Road intersection; this benchmark was provided with a geodetic elevation of 71.02 m above mean sea level ("AMSL") and is considered "Site Datum" for the purposes of this Phase Two ESA.

The shallow groundwater aquifer was present within the overburden soil (generally silty clay) the Phase Two Property. Given the general consistency in depth of the groundwater table in the shallow overburden at the Phase Two Property, it is suspected that the same shallow aquifer can be used for a determination of groundwater flow direction and hydraulic gradient. Monitoring well construction details of the shallow aquifer monitoring wells are presented in Table 2 below.

**Table 2: Monitoring Well Construction Details** 

Monitoring Well	Ground Surface Elevation (m AMSL)	Top of Piezometer Elevation (m AMSL)	Screen Elevation (m AMSL)	Sand Pack Elevation (m AMSL)	Bentonite Seal (m AMSL)
BH1-24	69.42	69.32	64.05 – 65.57	64.05 – 65.57	65.57 – 68.81
BH2-24	69.43	69.37	63.84 – 65.97	63.84 – 66.27	66.27 – 69.13
BH3-24	69.08	69.01	63.04 - 66.09	63.04 - 66.39	66.39 – 66.95
BH4-24	69.05	68.98	62.99 – 66.04	62.99 - 66.34	66.34 – 66.92
BH5-24	69.17	69.13	63.10 – 66.14	63.10 - 66.44	66.44 – 67.04
MW-2	69.20	69.14	63.30 - unknown	unknown	unknown
MW-3	69.11	69.01	64.10 - unknown	unknown	unknown

m AMSL - metres Above Mean Sea Level

On March 6, 2024, following a period of 12 days for stabilization after drilling and developing the monitoring wells, the groundwater levels were measured and are presented in Table 3 below. The shallow aquifer groundwater table was measured at depths ranging between 2.76 and 3.99 m BGS and the deep aquifer groundwater table was measured at depths ranging between 4.4 and 5.4 m BGS on March 6, 2024.

Table 3: Groundwater Table Elevations Measured on March 6, 2024

Monitoring Well	Ground Surface Elevation (m AMSL)	Top of Piezometer Elevation (m AMSL)	Depth to Groundwater (m below TOP)	Groundwater Table Elevation (m AMSL)	Depth to Groundwater (m BGS)	
	Sh	allow Aquifer: Silt	y Clay Monitoring	Wells		
BH1-24	69.42	69.32	3.71	65.61	3.81	
BH2-24	69.43	69.37	3.93	65.44	3.99	
BH3-24	69.08	69.01	3.46	65.55	3.53	
BH4-24	69.05	68.98	3.56	65.42	3.63	
BH5-24	69.17	69.13	3.30	65.83	3.34	
MW-2	69.20	69.14	3.67	65.47	3.73	
MW-3	69.11	69.01	2.65	66.36	2.76	
	Deeper Aquifer: Glacial Till and/or Bedrock Monitoring Wells					
BH1-23	69.30	69.20	4.41	64.79	4.51	
BH2-23	69.00	68.96	5.27	63.69	5.32	
BH3-23	69.27	69.20	5.32	63.88	5.40	
BH4-23	69.19	69.12	5.20	63.92	5.27	
BH5-23	69.55	69.49	4.36	65.13	4.42	

m AMSL - metres Above Mean Sea Level

Three groundwater monitoring well water table elevations are required to triangulate groundwater elevations and determine an approximate groundwater flow direction.

#### **Shallow Aquifer Groundwater Flow Direction**

The groundwater table elevations in BH2-24, BH3-24, BH4-24 and MW-1 were used for a determination of shallow aquifer groundwater flow direction, while BH5-24 was used to verify the accuracy of the model. Based on the measured groundwater table elevations in these monitoring wells, the local shallow aquifer groundwater flow direction on the central portion of the Phase Two Property is towards the north. This interpreted local groundwater flow direction is reasonable based on the regional topography and location of the Ottawa River, which is 630 m to the north of the Phase Two Property.

#### **Deeper Aquifer Groundwater Flow Direction**

The groundwater table elevations in BH1-23, BH2-23, BH3-23, BH4-23 and BH5-23 were used for a determination of deeper aquifer groundwater flow direction. Based on the measured

m BGS - metres below Ground Surface.

groundwater table elevations in these monitoring wells, the local deeper aquifer groundwater flow direction on the central portion of the Phase Two Property is towards the south.

No observations or indications of free product were observed in any of the monitoring wells accessed as part of this Phase Two ESA, as measured with an interface probe during water level measurements, and through observations of the purge water during development and sampling of the monitoring wells.

The underground utility corridors associated with the storm and sanitary sewers have the potential to affect contaminant distribution and transport, as they would create preferential pathways for lateral migration. Based on the depth to groundwater observed in the monitoring wells as part of this investigation, observed between 2.78 to 3.99 m BGS, the potential exists for migration of contaminants through underground utility service trenches (generally approximately 2 to 3 m BGS) during periods of seasonally high groundwater table elevations.

#### iii. Groundwater: Hydraulic Gradients

The horizontal hydraulic gradient was determined by plotting groundwater contours interpreted from groundwater elevations presented in Table 3 and then by dividing the difference in hydraulic head by the lateral separation distance in the groundwater contours. Based on the measured groundwater elevations in BH2-24, BH3-24, BH4-24 and MW-1 the horizontal hydraulic gradient of the shallow aquifer at the Phase Two Property is approximately 0.03 m/m. Based on the measured groundwater elevations in BH1-23, BH2-23, BH3-23, BH4-23 and BH5-23 the horizontal hydraulic gradient of the shallow aquifer at the Phase Two Property is approximately 0.04 m/m.

#### iv. Fine-Medium Grained Soil Texture

A substantial layer (approximate 5 m thick) clayey silt to silty clay was present at the Phase Two Property, beneath the shallow (< 1 m BGS) fill materials. Two particle size distribution analyses were conducted as part of this Phase Two ESA. Samples were submitted to ALS from BH1-24 at depths of 1.5-2.1 m BGS and 4.6-5.3 m BGS, respectively. The laboratory analytical results indicate that the percentages of soil particles which were smaller than 0.075 mm were 84 % and 73.5%, respectively. These results indicate fine grained soil texture in the analyzed samples. The Particle Size Distribution analysis is provided in Appendix E.

Based on the proposed development concept for the Phase Two Property, exposure pathways could exist for 2 underground storeys. The maximum investigation depth for this Phase Two ESA was determined to be 6 m BGS, of which greater than 2/3 of the media investigated / depths of interest of Phase Two Property has medium-fine grained soil. For the purposes of this Phase Two ESA, the soil conditions are considered to be fine-medium grained.

## v. Soil Field Screening

Initial field screening of the soil samples consisted of visual and olfactory observations made at the time of sample collection during the drilling program. There were no olfactory observations of PHC contamination encountered in any of the samples recovered as part of this Phase Two ESA.

Additional field screening of the soil samples was completed using an RKI Eagle gas detector. Combustible soil vapour screening concentrations were found to range from 0 to 35 ppm, which is low and generally not considered indicative of significant VOC or PHC contamination.

## vi. Soil Quality

#### **Location and Depth of Soil Samples**

The following soil samples, which were collected from the boreholes drilled as part of this Phase Two ESA, were submitted for laboratory analysis.

**Table 4: Soil Samples Selected for Laboratory Analysis** 

Sample Location	Sample ID	Sample Depth (m BGS)	Analytical Parameters
BH1-24	BH1-24-SS1	0.2 - 0.6	PHCs, VOCs, PAHs, Metals &
			Inorganics
	BH1-24-SS3	1.2 - 1.8	Grain Size Distribution
	BH1-24-SS7	3.6 - 4.2	VOCs, Grain Size Distribution
	BH1-24-SS9	4.9 - 5.5	PHCs, VOCs, Metals & Inorganics
	DUP-01/07	Duplicate of BH1-	VOCs
		24-SS9	
BH2-24	BH2-24-SS1	0.2 - 0.8	PHCs, BTEXs, PAHs, Metals &
			Inorganics
	BH2-24-SS7	4.2 – 4.8	PHCs, VOCs
BH3-24	BH3-24-SS1	0.0 - 0.6	VOCs, Metals & Inorganics
	BH3-24-SS6	3.8 – 4.4	VOCs, Metals & Inorganics
BH4-24	BH4-24-SS2	0.8 – 1.4	VOCs
	BH4-24-SS8	5.3 – 5.9	VOCs
BH5-24	BH5-24-SS1	0.0 - 0.6	PCBs, PHCs, BTEXs, PAHs, Metals &
			Inorganics
	BH5-24-SS7	4.6 – 5.2	PCBs, PHCs, VOCs, Metals & Inorganics
BH6-24	BH6-24-SS1	0.0 - 0.6	PHCs, BTEXs, PAHs, Metals &
			Inorganics
	BH6-24-SS4	2.3 – 2.9	PHCs, BTEXs, Metals & Inorganics
BH7-24	BH7-24-SS1	0.0 - 0.6	PHCs, BTEXs, PAHs, Metals &
			Inorganics
	BH7-24-SS5	3.1 – 3.7	PHCs, BTEXs, Metals & Inorganics

## Comparison of Soil Analytical Results to Applicable Site Conditions Standards

The analytical soil results were compared to the full depth generic site condition standards, with non-potable groundwater, fine-medium textured soil, for residential property use, as specified in Table 3 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

The aforementioned soil samples selected for laboratory analysis were submitted to ALS under chain of custody on January 8, February 5 and February 22, 2024. The laboratory certificates of analysis (ALS Report #s WT2400552, WT2402708, WT2403940) are provided in Appendix E. The following samples had exceedance concentrations reported compared to ('vs.') their respective site condition standards.

All analyzed soil samples were in compliance with the site condition standards. A full summary of the soil analytical results and comparison to the applicable site condition standards are presented in Table 6: Soil Analytical Results following the text of this report.

#### Comparison of TCLP Analytical Results to O.Reg. 558/00

A waste characterization sample was selected for laboratory analysis of toxicity characteristic leaching procedure (TCLP) analysis for flashpoint, leachate metals & inorganics, leachate VOCs and leachate organics (PAHs) and polychlorinated biphenyls (PCBs)). This sample was comprised of a composite of worst-case samples, as determined by field screening parameters and analytical soil results.

The aforementioned composite soil sample selected for TCLP laboratory analysis was submitted to ALS under chain of custody on March 13, 2024. The laboratory certificate of analysis (Paracel Report # WT2405697) is provided in Appendix E.

This composite sample was compared to the criteria specified in schedule IV of O.Reg. 558/00 and no measured parameter exceeded the toxicity criteria. Based on the analytical results and field screening, if excess soil generated from redevelopment of the Site cannot be reused as clean fill at an appropriate receiving site, it can be treated as solid non-hazardous waste.

#### **Contaminants of Concern**

The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are VOCs.

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property, is interpreted as PCA #2 and represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are PCBs, petroleum hydrocarbons PHCs and BTEXs.

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) has been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and PAHs.

The contaminants of concern for a particular sample were based on the relative location and depth of the sample, visual and/or olfactory observations and combustible vapour screening concentrations.

#### **Contaminants Related to Chemical and Biological Transformations**

Contaminants related to chemical and biological transformations were not suspected to be present at the Phase Two Property and were not identified as part of the Phase Two ESA soil analysis.

#### Soil Serving as a Source of Contaminant Mass Contributing to Groundwater

Based on the analytical results, there may be soil that serves as a source of contaminant mass contributing to groundwater at the Phase Two Property. Soil contamination, namely VOCs were encountered at north-central portion of the Phase Two Property (APEC #1 – operational dry cleaner). There are detectable concentrations of VOCs in these areas of the Phase Two Property and it is suspected that soil serving as a source of contaminant mass is contributing to groundwater quality.

#### Light or Dense Non-Aqueous Phase Liquids

The analytical soil results indicate the potential presence of dense non-aqueous phase liquids (DNAPLs) at the Phase Two Property, given that low levels of VOCs were detected in the shallow (0.2-0.6 m BGS) in BH1-24; the detectable Tetrachloroethylene was in compliance with the site condition standards. It should be noted that the concentrations of VOCs in the soil are not themselves indicative of the suspected presence of DNAPL free product at the Phase Two Property.

The analytical soil results do not indicate the suspected presence of light non-aqueous phase liquids at the Phase to Property.

vii. Groundwater Quality

#### **Locations and Sample Depth Interval of Groundwater Samples**

The groundwater samples were collected using a peristaltic pump with tubing lowered to between the top and approximate (vertical) center of the water column within each monitoring well and withdrawing the water at low flow rates. The groundwater sample locations, screen depths and parameters analyzed are presented in Table 5 below.

**Table 5: Groundwater Samples Selected for Laboratory Analysis** 

Sample Location	Groundwater Level (m AMSL)	Screen Depth (m AMSL)	Analytical Parameters
	Shallow Ac	quifer: Silty Clay Mon	itoring Wells
BH1-24	65.61	64.05 - 65.57	VOCs
BH2-24	65.44	63.84 – 65.97	PHCs, VOCs, PAHs, Metals & Inorganics
BH3-24	65.55	63.04 - 66.09	PHCs, VOCs
BH4-24	65.42	62.99 - 66.04	VOCs
BH5-24	65.83	63.10 - 66.14	PCBs, PHCs, VOCs, PAHs, Metals &
			Inorganics
MW-2	65.47	63.30 - unknown	VOCs
MW-3	66.36	64.10 - unknown	VOCs, PAHs, Metals & Inorganics
Deeper Aquifer: Gla		acial Till and/or Bedro	ock Monitoring Wells
BH1-23	64.79	56.1 – 57.6	VOCs
BH2-23	63.69	56.2 – 57.7	VOCs
BH3-23	63.88	52.8 – 54.3	VOCs
BH4-23	63.92	54.1 – 55.6	VOCs
BH5-23	65.13	54.6 – 56.1	VOCs

m AMSL - metres Above Mean Sea Level

#### Field Filtering

Samples for PHCs, BTEXs, VOCs, PAHs and general chemistry were unfiltered, while metals samples were field filtered using a dedicated 0.45 µm Waterra filter for each sample.

#### Comparison of Groundwater Analytical Results to Applicable Site Conditions Standards

The analytical groundwater results were compared to the full depth generic site condition standards, with non-potable groundwater, fine-medium textured soil, as specified in Table 3 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

The groundwater samples selected for laboratory analysis were submitted to ALS under chain of custody on March 7, 2024. The laboratory certificate of analysis (ALS Report # WT2405173) is provided in Appendix E. The following groundwater samples had exceedance concentrations reported compared to ('vs.') their respective site condition standards.

 BH2-24-GW1 and BH12-24-GW1 (Duplicate of BH2-24), collected from a screen depth of approximately 2.5-5.5 m BGS, had reported concentrations of chloride (2,500 μg/g and 2,550 μg/g vs. 2,300 μg/g).

All of the other groundwater samples were in compliance with the site condition standards. A full summary of the groundwater analytical results and comparison to the applicable site condition standards are presented in Table 7: Groundwater Analytical Results following the text of this report.

#### **Contaminants of Concern**

The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are VOCs.

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property, is interpreted as PCA #2 and represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are PCBs, petroleum hydrocarbons PHCs and BTEXs.

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) has been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and PAHs.

The contaminants of concern for a particular sample were based on the relative location and depth of the sample, visual and/or olfactory observations of soil samples collected which could have come into contact with the groundwater table.

## **Contaminants Related to Chemical and Biological Transformations**

Contaminants related to chemical and biological transformations were not suspected to be present at the Phase Two Property and were not identified as part of the Phase Two ESA groundwater analysis.

#### Soil Serving as a Source of Contaminant Mass Contributing to Groundwater

Based on the analytical results, low levels of VOCs were detected in the shallow (0.2-0.6 m BGS) in BH1-24; the detectable Tetrachloroethylene was in compliance with the site condition standards. There were detectable concentrations of VOCs in the groundwater sample BH1-24-GW1 collected from the monitoring well installed at BH1-24. It is suspected that soil serving as a source of contaminant mass is contributing to groundwater quality; although it should be noted that the groundwater analytical results from samples collected as part of this Phase Two ESA were in compliance with the site condition standards.

#### **Light or Dense Non-Aqueous Phase Liquids**

The analytical groundwater results indicate the potential presence of dense non-aqueous phase liquids (DNAPLs) at the Phase Two Property, given VOCs were identified at low concentrations in BH1-24, and historically MW-2. It should be noted that the presence of measurable levels DNAPL free product were not observed at the Phase Two Property, as measured with an interface probe and with observations of the purge water recovered from the monitoring wells.

The analytical groundwater results do not indicate the suspected presence of light non-aqueous phase liquids at the Phase to Property.

## viii. Sediment Quality

There were no natural surface water bodies at the Phase Two Property, and as such no sediment sampling was completed as part of the Phase Two ESA.

## ix. Quality Assurance and Quality Control Results

The soil sample (DUP-01/07) was submitted to the laboratory as a blind field duplicate sample of BH1-24-SS9) for VOCs; there were no detectable VOC concentrations in either sample. No duplicate soil sampling was submitted for other contaminants of concern, as the drilling program generated insufficient sample volumes for duplicate sample requirements from the laboratory. The laboratory completed and reported duplicate sample analysis for all groundwater CPC parameters analyzed as part of this Phase Two ESA as part of their internal quality assurance procedures.

The groundwater samples (MW-12-GW1, BH13-GW1 and BH15-GW1) were submitted to the laboratory as blind field duplicate samples of MW-2-GW1, BH3-GW1 and BH5-GW1, respectively. The ratio of groundwater duplicate results to original sample results was generally less than 20% which meets the required ratio. Given that no exceedances of the site condition standards were detected for any analyzed parameters in both samples, the variability of these sample results does not affect the validity of the conclusions with respect to these results. These samples were analyzed for PHCs, VOCs (including BTEXs, which provide a blind quality assurance and quality control QA/QC validation for all groundwater CPC parameters analyzed as part of this Phase Two ESA.

The laboratory made qualifying statements for analytical procedures related to low sample volume provided, higher detection limits and the presence of sediment in select groundwater samples. The qualifying remarks in certificates of analysis are not expected to impact the validity of any results qualified.

All certificates of analysis were received pursuant to clause 47 (2) (b) of O.Reg. 153/04 and comply with subsection 47 (3) of O.Reg. 153/04.

The overall quality of the field data from the investigation with respect to the data quality objectives, demonstrate that decision-making was not affected, and the overall objectives of the investigation and the assessment were met.

## x. Phase Two Conceptual Site Model

The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 associated with the O.Reg. 153/04 PCA: Operation of Dry Cleaning Equipment (where chemicals are used) and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are VOCs.

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property. The pad mounted electrical transformer is interpreted as PCA #2 associated with

the O.Reg. 153/04 PCAs: Transformer Manufacturing, Processing and Use and Electricity Generation, Transformation and Power Stations, which represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are PCBs, PHCs and BTEXs.

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) are associated with the O.Reg. 153/04 PCAs "Gasoline and Associated Products Storage in Fixed Tanks" and "Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material used to Maintain Transportation Systems" and have been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and PAHs.

Underground utility corridors for sanitary and storm sewers, potable water, private electricity and natural gas lines lead to the building, generally from Richmond Road to the south or from Starflower Lane to the north. The underground utility corridors have the potential to affect contaminant distribution and transport, as they would create preferential pathways for lateral migration. APEC #1 includes the underground storm and sanitary sewer corridors at the Phase Two Property.

The overburden stratigraphy of the Phase Two Property is present in six geological units, including an asphalt layer at ground surface or concrete floor slab on the interior of the building, silty sand and gravel (fill) layer, clayey silt, silty clay and a native silty sand and gravel layer, found below the silty clay across the Property.

The shallow (unconfined) aquifer is the principal aquifer of interest based on the nature of APECs and PCAs identified for the Phase Two Property. It is present in several geological units, including the native silty clay and clayey silt layers, as well as in the sand and/or silty sand and gravel fill layers (where present at shallow depths). The deeper (confined) aquifer was a secondary aquifer of interest based on the nature of one of the contaminants of concern (VOCs). This aquifer was investigated by monitoring and sampling existing (geotechnical) monitoring wells installed in the deep (13 to 15 m BGS) glacial till and/or underlying bedrock.

The overburden soil is underlain by interbedded quartz sandstone bedrock at depths ranging from approximately 12.4 to 14.1 m BGS.

The shallow aquifer groundwater table was measured at depths ranging between 2.76 and 3.99 m BGS and the deep aquifer groundwater table was measured at depths ranging between 4.4 and 5.4 m BGS on March 6, 2024. Based on the measured groundwater table elevations in the shallow monitoring wells, the local shallow aquifer groundwater flow direction on the central portion of the Phase Two Property is towards the north with an approximate horizontal hydraulic gradient of 0.03 m/m. Based on the measured groundwater table elevations in the deeper monitoring wells, the local deeper aquifer groundwater flow direction on the central portion of the Phase Two Property is towards the south with an approximate horizontal hydraulic gradient of 0.04 m/m.

#### LOPERS & ASSOCIATES

The proposed redevelopment of the Phase Two Property includes construction of one multistorey building, with multiple levels of subgrade parking, commercial ground floor and residential units above.

The Phase Two Property and all other properties within 250 m of the property boundaries are supplied by Ottawa's municipal potable water supply system. The Phase Two is within the urban boundaries of the City of Ottawa, is supplied with municipally treated drinking water and there are no wells within 250 m of the property boundaries that are intended for use as a source of water for human consumption or agriculture. As such, the designation of non-potable groundwater setting is determined to be applicable [O.Reg. 153/04, section 35].

The Phase Two Property is not situated within or adjacent to an area of natural significance and does not include any land within 30 m of an area of natural significance. The pH of the soil was analyzed as part of this Phase Two ESA and was found to range from 7.15 to 7.83. As such, the Phase Two Property is not considered to be an environmentally sensitive area [O.Reg. 153/04, section 41].

Based on the proposed development concept for the Phase Two Property, exposure pathways could exist for 2 underground storeys. The maximum investigation depth for this Phase Two ESA was determined to be 6 m BGS, of which greater than 2/3 of the media investigated / depths of interest of Phase Two Property has medium-fine grained soil. For the purposes of this Phase Two ESA, the soil conditions are considered to be fine-medium grained. The Phase Two Property is not considered a shallow soil property [O.Reg. 153/04, section 43.1].

The Phase Two Property does not include and does not have any land located within 30 m of a water body. The MECP site condition standards for use within 30 m of a water body do not apply [O.Reg. 153/04, section 43.1].

The full depth generic site condition standards, with non-potable groundwater, fine-medium textured soil, for residential property use, as specified in Table 3 of the MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 were determined to be the applicable site condition standards for the Phase Two Property as part of this Phase Two ESA.

All analyzed soil samples as part of this Phase Two ESA were in compliance with the site condition standards.

The following samples had exceedance concentrations reported compared to ('vs.') their respective site condition standards.

 BH2-24-GW1 and BH12-24-GW1 (Duplicate of BH2-24), collected from a screen depth of approximately 2.5-5.5 m BGS, had reported concentrations of chloride (2,500 μg/g and 2,550 μg/g vs. 2,300 μg/g).

All of the other groundwater samples were in compliance with the site condition standards as of the certification date of March 6, 2024.

### 7. Conclusions

All analyzed soil samples as part of this Phase Two ESA were in compliance with the site condition standards.

The following samples had exceedance concentrations reported compared to ('vs.') their respective site condition standards.

- BH2-24-GW1 and BH12-24-GW1 (Duplicate of BH2-24), collected from a screen depth of approximately 2.5-5.5 m BGS, had reported concentrations of chloride (2,500 μg/g and 2,550 μg/g vs. 2,300 μg/g).
  - This sample was collected in a location that may have been subject to de-icing activities /influence with the application of salts applied to ground surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both and is suspected to exceed the site condition standard solely as a result of these activities. Based on this application and the exemption set forth in Section 49.1 of O.Reg. 153/04, the applicable site condition standard is deemed not to be exceeded for the purpose of Part XV.1 of the Act. Based on additional groundwater analysis in other locations at the Phase Two Property, the presence of Chloride appears to have been influenced by de-icing across paved areas.

All of the other groundwater samples were in compliance with the site condition standards as of the certification date of March 6, 2024.

Given the Phase Two Property will continue to be occupied by an operational dry cleaner, using chlorinated solvents as cleaning agents, re-sampling of the existing groundwater monitoring wells is recommended prior to redevelopment of the Site. An updated Phase Two ESA report will be required to support the RSC application after the Phase Two Property is no longer occupied by the existing commercial use.

Preparation of a soil management plan in accordance with O.Reg. 406/19 will be required as part of management of excess soil generated as part of construction activities.

#### LOPERS & ASSOCIATES

#### i. Signatures

The Qualified Person for this study is Mr. Luke Lopers, P. Eng. Mr. Lopers has been a Professional Engineer, registered in Ontario since 2012 and has been working on environmental site assessments since 2006. Mr. Lopers has been an author, project manager and/or peer reviewer for hundreds of Phase One ESAs and Phase Two ESAs as well as previously filed RSCs.

The reviewer for this study is Mr. Don Plenderleith, P.Eng. Mr. Plenderleith is a Professional Engineer registered in Ontario since 1994 and has authored and/or reviewed hundreds of Phase One and Two ESAs in Ontario and the rest of Canada. The qualifications of the assessor/Qualified Person and reviewer are included in Appendix F.

PROFESSIONAL

Sincerely,

Luke Lopers, P.Eng., QPESA

Don Plenderleith, P.Eng., QPESA

Don Plenderlette

### 8. Limitations

The findings and conclusions of this Phase Two ESA are based on the information provided and/or reviewed as part of this study.

This Phase Two ESA has been completed with the standard of care generally expected in the industry for a study of this nature.

This Phase Two ESA has been prepared for the sole use of 13008916 Canada Inc. for the purposes of a due diligence assessment of the potential liabilities which may exist at the Phase Two Property. No other party is permitted to rely on the conclusions or findings of this report without the written consent of Lopers & Associates and 13008916 Canada Inc.

Changes to the physical setting of the Phase Two Property, Phase One Study Area and applicable regulations governing Phase One and Two Environmental Site Assessments have the potential to influence the validity of the conclusions and opinions presented in this Phase Two ESA.

### 9. References

Legal Survey Plan, Annis, O'Sullivan, Vollebekk Ltd., on May 30, 2022.

City of Ottawa, geoOttawa mapping website, Visited November 2023 through November 2024. <a href="http://maps.ottawa.ca/geoottawa/">http://maps.ottawa.ca/geoottawa/</a>

Google Earth, Visited November 2023 through November 2024.

"Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", produced by the Ontario Ministry of the Environment, dated April 15, 2011.

"Phase One Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario" dated March 21, 2022 (Revised February 2024) prepared for 13008916 Canada Inc. by Lopers & Associates.

"Revised - Phase I Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario", dated January 31, 2017, completed by Pinchin Ltd. for Look Property Management Inc.

"Groundwater Monitoring and Sampling Program, 1299-1315 Richmond Road, Ottawa, Ontario", dated March 10, 2017, completed by Pinchin Ltd. for Look Property Management Inc.

"Phase I Environmental Site Assessment, 1299-1315 Richmond Road, Ottawa, Ontario", dated December 16, 2022, completed by Pinchin Ltd. for 11034936 Canada Inc.

ALS Certificate of Analysis – Report # WT2400552 - Soil Sample Submission January 8, 2024

ALS Certificate of Analysis – Report # WT2402708 - Soil Sample Submission February 5, 2024

ALS Certificate of Analysis - Report # WT2403940 - Soil Sample Submission February 22, 2024

ALS Certificate of Analysis – Report # WT2405697 - TCLP Sample Submission March 13, 2024

ALS Certificate of Analysis – Report # WT2405173 - Groundwater Sample Submission March 7, 2024

# 10. Appendices

Appendix A – Sampling and Analysis Plan

Appendix B – Underground Utility Locates

Appendix C – Borehole Logs

Appendix D – Certificates of Equipment Calibration

Appendix E – Laboratory Certificates of Analysis

Appendix F – Qualifications of Assessors

# Figures

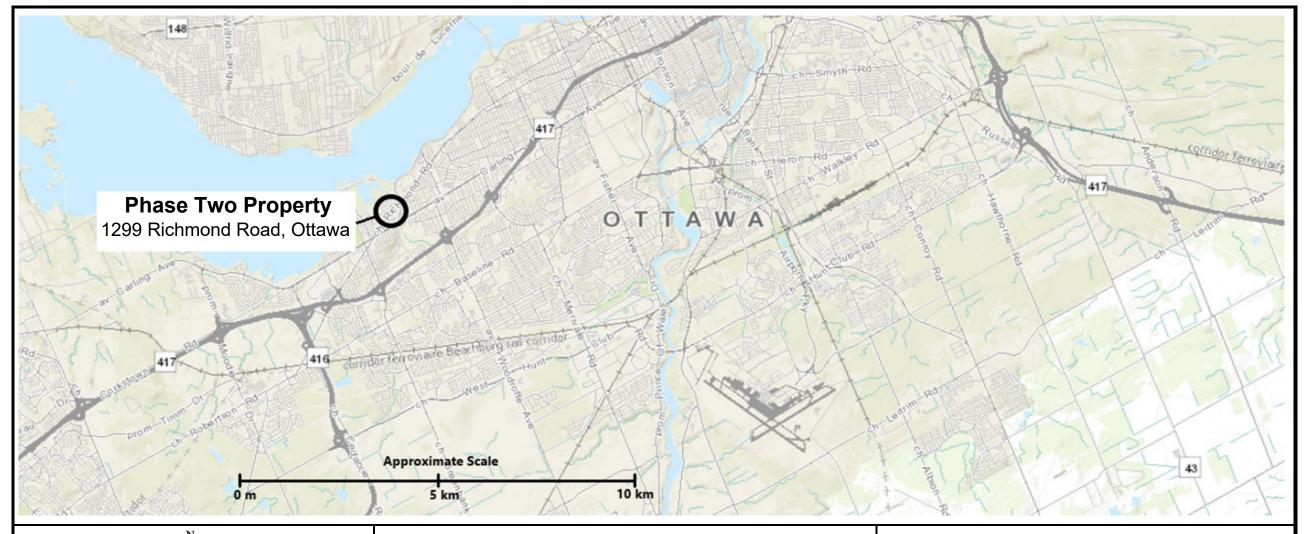




Figure 1: Key Plan

Phase Two Environmental Site Assessment 1299-1315 Richmond Road, Ottawa, Ontario 13008916 Canada Inc. Project Reference No: LOP23-029B

Drawing No.: LOP23-029B-1

Date: November 7, 2024

Author: L. Lopers

Source: geoOttawa, Base Mapping

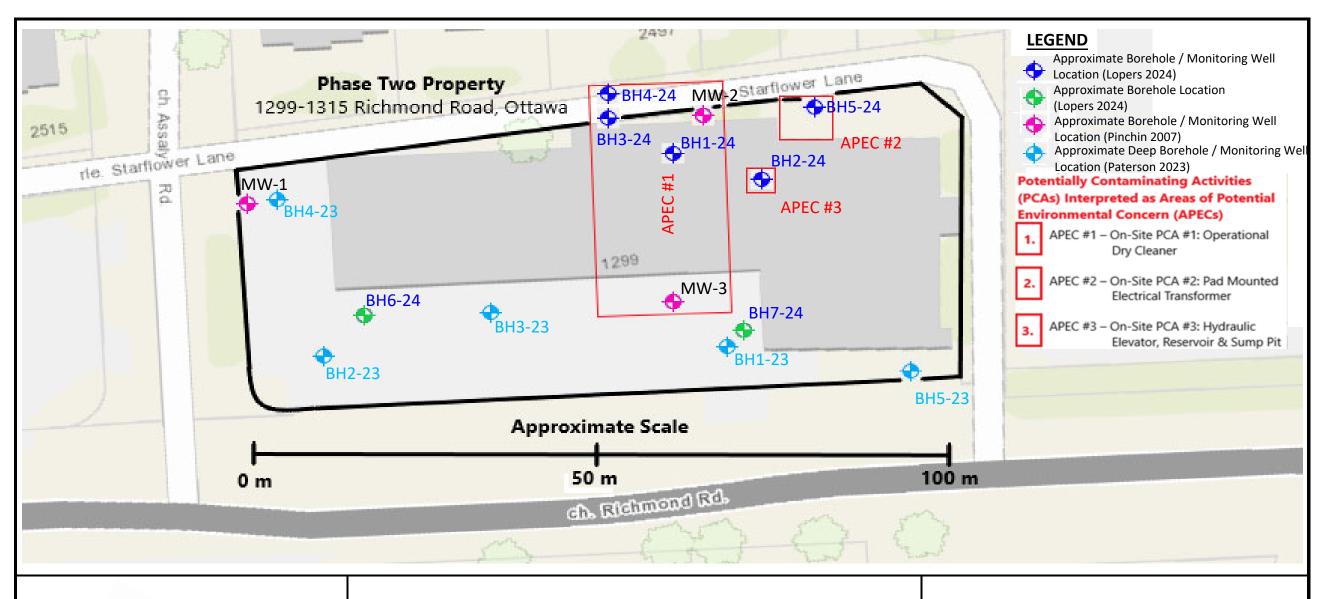




Figure 2: Site Plan

Phase Two Environmental Site Assessment 1299-1315 Richmond Road, Ottawa, Ontario 13008916 Canada Inc. Project Reference No: LOP23-029B

Drawing No.: LOP23-029B-2

Date: November 7, 2024

Author: L. Lopers
Source: geoOttawa

### **Tables**

### **Table 6: Excess Soil Analytical Results**

			Sample ID:	BH1-24-SS1	BH1-24-SS3	BH1-24-SS7	BH1-24-SS9	DUP-01/07 Duplicate of BH1-24-	BH2-24-SS1	BH2-24-SS7	BH3-24-SS1	BH3-24-SS6
			Sample Depth:	0.2 - 0.6 m BGS	1.2 - 1.8 m BGS	3.6 - 4.2 m BGS	4.9 - 5.5 m BGS	SS9	0.2 - 0.8 m BGS	4.2 - 4.8 m BGS	0.0 - 0.6 m BGS	3.8 - 4.4 m BGS
			Sample Date: Laborartory Sample ID:	07-Jan-2024 WT2400552-001	07-Jan-2024 WT2400552-005	07-Jan-2024 WT2400552-002	07-Jan-2024 WT2400552-003	07-Jan-2024 WT2400552-004	05-Feb-2024 WT2402708-001	05-Feb-2024 WT2402708-002	21-Feb-2024 WT2403940-001	21-Feb-2024 WT2403940-002
		Method	O.Reg. 153/04 Table 3:									
		Detection Limit	Residential Property Use									
Parameter Petroluem Hydrocarbons (PHCs)	Units	(MDL)	Standards, Fine Grained Soil									
F1 PHCs (C6-C10)	ug/g	5	65	-	-	-	<5.0	-	<5.0	<5.0	-	-
F2 PHCs (C10-C16) F3 PHCs (C16-C34)	ug/g ug/g	10 50	150 1300	-	-	-	<10 <50	-	<10 <50	<10 <50	-	-
F4 PHCs (C34-C50)	ug/g	50	5600	-	-	-	<50	-	<50	<50	-	-
F4G PHCs (gravimetric)  Volatile Organic Compounds (VOCs) inclu	ug/g uding Benzei	50 ne, Toluene, Ethylk	5600 penzene and Xylenes (BTEXs)	-	-	-	-	-	-	-	-	-
Acetone	ug/g	0.50	28	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Benzene	ug/g	0.0050	0.17 13	<0.0050	-	<0.0050	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	<0.0050
Bromodichloromethane Bromoform	ug/g ug/g	0.050 0.050	0.26	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
Bromomethane	ug/g	0.050	0.05	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.050	0.12	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Chlorobenzene Chloroform	ug/g ug/g	0.050 0.050	2.7 0.18	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
Dibromochloromethane	ug/g	0.050	9.4	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dibromoethane, 1,2-	ug/g	0.050	0.05	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichlorobenzene, 1,2- Dichlorobenzene, 1,3-	ug/g ug/g	0.050 0.050	4.3 6	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
Dichlorobenzene, 1,4-	ug/g	0.050	0.097	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	0.050	25	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichloroethane, 1,1- Dichloroethane, 1,2-	ug/g ug/g	0.050 0.050	11 0.05	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
Dichloroethylene, 1,1-	ug/g	0.050	0.05	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichloroethylene, cis-1,2-	ug/g	0.050	30	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichloroethylene, trans-1,2- Dichloromethane	ug/g ug/g	0.050 0.045	0.75 0.96	<0.050 <0.045	-	<0.050 <0.045	<0.050 <0.045	<0.050 <0.045	-	<0.050 <0.045	<0.050 <0.045	<0.050 <0.045
Dichloropropane, 1,2-	ug/g ug/g	0.045	0.085	<0.045	-	<0.045	<0.045	<0.045	-	<0.045	<0.045	<0.045
Dichloropropylene, cis+trans-1,3-	ug/g	0.075	0.083	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Dichloropropylene, cis-1,3-	ug/g	0.050	NV NV	<0.050	-	<0.050 <0.050	<0.030	<0.050	-	<0.030	<0.030	<0.030
Dichloropropylene, trans-1,3- Ethylbenzene	ug/g ug/g	0.050 0.015	NV 15	<0.050 <0.015	-	<0.050 <0.015	<0.030 <0.015	<0.050 <0.015	<0.015	<0.030 <0.015	<0.030 <0.015	<0.030 <0.015
Hexane, n-	ug/g	0.050	34	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Methyl ethyl ketone [MEK]	ug/g	0.50	44	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Methyl isobutyl ketone [MIBK] Methyl-tert-butyl ether [MTBE]	ug/g ug/g	0.50 0.040	4.3 1.4	<0.50 <0.040	-	<0.50 <0.040	<0.50 <0.040	<0.50 <0.040	-	<0.50 <0.040	<0.50 <0.040	<0.50 <0.040
Styrene	ug/g	0.050	2.2	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Tetrachloroethane, 1,1,1,2-	ug/g	0.050	0.05	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Tetrachloroethane, 1,1,2,2- Tetrachloroethylene	ug/g ug/g	0.050 0.050	0.05 2.3	<0.050 0.832	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
Toluene	ug/g ug/g	0.050	6	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,1-	ug/g	0.050	3.4	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Trichloroethane, 1,1,2- Trichloroethylene	ug/g	0.050 0.010	0.05 0.52	<0.050 <0.010	-	<0.050 <0.010	<0.050 <0.010	<0.050 <0.010	-	<0.050 <0.010	<0.050 <0.010	<0.050 <0.010
Trichlorofluoromethane	ug/g ug/g	0.010	5.8	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.020	0.022	<0.020	-	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020
Xylene, m+p-	ug/g	0.030 0.030	NV NV	<0.030 <0.030	-	<0.030 <0.030	<0.030 <0.030	<0.030 <0.030	<0.030 <0.030	<0.030 <0.030	<0.030 <0.030	<0.030 <0.030
Xylene, o- Xylenes, total	ug/g ug/g	0.050	25	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	ug/g	0.050 0.050	58 0.17	-	-	-	-	-	<0.050 <0.050	-	-	-
Acenaphthylene Anthracene	ug/g ug/g	0.050	0.74	-	-	-	-	-	<0.050	-	-	-
Benzo[a]anthracene	ug/g	0.050	0.63	-	-	-	-	-	<0.050	-	-	-
Benzo[a]pyrene	ug/g	0.050	0.3	-	-	-	-	-	<0.050	-	-	-
Benzo[b]fluoranthene Benzo[g,h,i]perylene	ug/g ug/g	0.050 0.050	0.78 7.8	-	-	-	-	-	<0.050 <0.050	-	-	-
Benzo[k]fluoranthene	ug/g	0.050	0.78	-	-	-	-	-	<0.050	-	-	-
Chrysene	ug/g	0.050	7.8	-	-	-	-	-	<0.050	-	-	-
Dibenzo[a,h]anthracene Fluoranthene	ug/g ug/g	0.050 0.050	0.1 0.69	-	-	-	-	-	<0.050 <0.050	-	-	-
Fluorene	ug/g	0.050	69	-	-	-	-	-	<0.050	-	-	-
Indeno[1,2,3-cd]pyrene	ug/g	0.050	0.48	-	-	-	-	-	<0.050	-	-	-
1-Methylnaphthalene 2-Methylnaphthalene	ug/g ug/g	0.050 0.030	3.4 3.4	-	-	-	-	-	<0.050 <0.030	-	-	-
Methylnaphthalene (1&2)	ug/g	0.030	3.4	-	-	-	-	-	<0.030	-	-	-
Naphthalene	ug/g	0.010	0.75	-	-	-	-	-	<0.010	-	-	-
Phenanthrene Pyrene	ug/g ug/g	0.050 0.050	7.8 78	-	-	-	-	-	<0.050 <0.050	-	-	-
Metals	-b/ ö				<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>	<u> </u>	<u> </u>
Antimony	ug/g	1.0	7.5	<0.10	=	-	<0.10	-	<0.10	-	<0.10	<0.10
Arsenic Barium	ug/g ug/g	1.0 1.0	18 390	2.13 104	-	- -	1.66 215	-	1.90 124	-	3.94 172	1.64 262
Beryllium	ug/g	0.5	5	0.28	-	-	0.51	-	0.42	-	0.78	0.64
Boron, available	ug/g	0.1	120	6.1	-	-	5.0	-	7.0	-	12.1	<5.0
Boron Cadmium	ug/g ug/g	5.0 0.5	1.2 160	0.18 0.049	-	- -	<0.10 0.076	-	0.27 0.067	-	0.19 0.168	<0.10 0.096
Chromium (VI)	ug/g	0.2	10	0.16	-	-	0.14	-	0.21	-	0.28	0.18
Chromium Cobalt	ug/g	1.0 1.0	160 22	16.8 5.82	-	<u>-</u>	44.8 12.2	-	32.4 8.33	-	46.8 12.2	48.0 13.9
Copper	ug/g ug/g	1.0	180	5.82 12.4	-	-	12.2 24.3		8.33 19.2	-	12.2 24.1	13.9 26.7
Lead	ug/g	1.0	120	5.77	-	-	4.59	-	4.91	-	12.6	5.12
Mercury	ug/g	0.005	1.8	0.0096	-	-	<0.0050	-	0.0130	-	0.0471	<0.0050
Molybdenum Nickel	ug/g ug/g	1.0 1.0	6.9 130	0.86 11.2	-	-	0.66 25.9	-	1.62 16.9	-	0.71 29.2	0.29 28.3
Selenium	ug/g	1.0	2.4	<0.20	-	-	0.28	-	<0.20	-	<0.20	<0.20
Silver	ug/g	0.2	25	<0.10	-	-	<0.10	-	<0.10	-	0.16	<0.10
Thallium Uranium	ug/g ug/g	0.5 1.0	1 23	0.109 0.444	-	-	0.242 1.15	-	0.152 0.573	-	0.246 0.730	0.253 0.630
Vanadium	ug/g	1.0	86	24.0	-	-	69.3	-	41.2	-	68.6	72.6
Zinc	ug/g	5.0	340	22.0	-	-	66.4	-	39.2	-	67.2	78.1
General Inorganics SAR	N/A	0.01	5	1.15	-	-	2.78	-	7.56	-	3.70	21.4
Conductivity	uS/cm	5	700	0.190	-	-	1.08	-	0.433	-	0.575	0.969
Cyanide, free	ug/g	0.03	0.051	<0.050	-	-	<0.050	-	<0.050	-	<0.050	<0.050
pH Grain Size	pH Units	0.05	5-11	7.78	-	-	7.78	-	7.75	-	7.83	7.33
Percent Passing (i.e. smaller than)	mm	0.075	50%	-	84.0	73.5	-	-				
Polychlorinated Biphenyls										Ι		
Aroclor 1016 Aroclor 1221	ug/g ug/g	0.010 0.010		-	-	-	-	-	-	-	-	-
Aroclor 1221 Aroclor 1232	ug/g ug/g	0.010		-	-	-	-	-	-	-	-	-
Aroclor 1242	ug/g	0.010		-	-	-	-	-	-	-	-	-
Aroclor 1248 Aroclor 1254	ug/g ug/g	0.010 0.010		-	-	-	-	-	-	-	-	-
Aroclor 1254 Aroclor 1260	ug/g ug/g	0.010		-	-	-	-	-	-	-	-	-
Aroclor 1262	ug/g	0.010		-	-	-	-	-	-	-	-	-
Aroclor 1268 Polychlorinated biphenyls [PCBs], total	ug/g	0.010		-	-	-	-	-	-	-	-	-
• coverno mareo pionenvis (PCBS), fofal	ug/g	0.030		-	-	-	-	-	-	-	-	-

NV - No value listed in MECP site condition standards

ND - Not detected above laboratory method detection limits Exceeds MECP site condition standards

### **Table 6: Excess Soil Analytical Results**

						a Road, Ottawa, C					
			Sample ID: Sample Depth: Sample Date: Laborartory Sample ID:	BH4-24-SS2 0.8 - 1.4 m BGS 21-Feb-2024 WT2403940-003	BH4-24-SS8 5.3 - 5.9 m BGS 21-Feb-2024 WT2403940-004	BH5-24-SS1 0.0 - 0.6 m BGS 21-Feb-2024 WT2403940-005	BH5-24-SS7 4.6 - 5.2 m BGS 21-Feb-2024 WT2403940-006	BH6-24-SS1 0.0 - 0.6 m BGS 22-Feb-2024 WT2403940-007	BH6-24-SS4  2.3 - 2.9 m BGS  22-Feb-2024  WT2403940-008	BH7-24-SS1 0.0 - 0.6 m BGS 22-Feb-2024 WT2403940-009	BH7-24-SS5 3.1 - 3.7 m BGS 22-Feb-2024 WT2403940-010
Parameter	Units	Method Detection Limit (MDL)	O.Reg. 153/04 Table 3: Residential Property Use Standards, Fine Grained Soil	W12403340-003	W12403340-004	W12403940-003	W12403940-000	W12403940-007	W12403340-008	W12403340-003	W12403540-010
Petroluem Hydrocarbons (PHCs) F1 PHCs (C6-C10)	ug/g	5	65	-	_	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 PHCs (C10-C16)	ug/g	10	150	-	-	<10	<10	<10	<10	<10	<10
F3 PHCs (C16-C34) F4 PHCs (C34-C50)	ug/g ug/g	50 50	1300 5600	-	-	<50 <50	<50 <50	<50 72	<50 <50	<50 <50	<50 <50
F4G PHCs (gravimetric)  Volatile Organic Compounds (VOCs) includ	ug/g ing Benzer	50 ne, Toluene, Ethylk	5600 penzene and Xylenes (BTEXs)	-	-	-	-	-	-	-	-
Acetone	ug/g	0.50	28	<0.50	<0.50	-	<0.50	-	-	-	-
Benzene Bromodichloromethane	ug/g ug/g	0.0050 0.050	0.17 13	<0.0050 <0.050	<0.0050 <0.050	<0.0050	<0.0050 <0.050	<0.0050 -	<0.0050	<0.0050	<0.0050 -
Bromoform	ug/g	0.050	0.26	<0.050	<0.050	-	<0.050	-	-	-	-
Bromomethane Carbon tetrachloride	ug/g ug/g	0.050 0.050	0.05 0.12	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Chlorobenzene	ug/g	0.050	2.7	<0.050	<0.050	-	<0.050	-	-	-	-
Chloroform  Dibromochloromethane	ug/g ug/g	0.050 0.050	0.18 9.4	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Dibromoethane, 1,2-	ug/g	0.050	0.05	<0.050	<0.050	-	<0.050	-	-	-	-
Dichlorobenzene, 1,2- Dichlorobenzene, 1,3-	ug/g ug/g	0.050 0.050	4.3 6	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Dichlorobenzene, 1,4-	ug/g	0.050	0.097	<0.050	<0.050	-	<0.050	-	-	-	-
Dichlorodifluoromethane Dichloroethane, 1,1-	ug/g ug/g	0.050 0.050	25 11	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Dichloroethane, 1,2-	ug/g	0.050	0.05	<0.050	<0.050	-	<0.050	-	-	-	-
Dichloroethylene, 1,1- Dichloroethylene, cis-1,2-	ug/g ug/g	0.050 0.050	0.05 30	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Dichloroethylene, trans-1,2-	ug/g	0.050	0.75	<0.050	<0.050	-	<0.050	-	-	-	-
Dichloromethane Dichloropropane, 1,2-	ug/g ug/g	0.045 0.050	0.96 0.085	<0.045 <0.050	<0.045 <0.050	-	<0.045 <0.050	-	-	-	-
Dichloropropylene, cis+trans-1,3-	ug/g	0.075	0.083	<0.050	<0.050	-	<0.050	-	-	-	-
Dichloropropylene, cis-1,3- Dichloropropylene, trans-1,3-	ug/g ug/g	0.050 0.050	NV NV	<0.030 <0.030	<0.030 <0.030	-	<0.030 <0.030	-	-	-	-
Ethylbenzene	ug/g	0.015	15	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Hexane, n- Methyl ethyl ketone [MEK]	ug/g ug/g	0.050 0.50	34 44	<0.050 <0.50	<0.050 <0.50	-	<0.050 <0.50	-	-	-	-
Methyl isobutyl ketone [MIBK]	ug/g	0.50	4.3	<0.50	<0.50	-	<0.50	-	-	-	-
Methyl-tert-butyl ether [MTBE] Styrene	ug/g ug/g	0.040 0.050	1.4 2.2	<0.040 <0.050	<0.040 <0.050	-	<0.040 <0.050	-	-	-	-
Tetrachloroethane, 1,1,1,2-	ug/g	0.050	0.05	<0.050	<0.050	-	<0.050	-	-	-	-
Tetrachloroethane, 1,1,2,2- Tetrachloroethylene	ug/g ug/g	0.050 0.050	0.05 2.3	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Toluene	ug/g	0.050	6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethane, 1,1,1- Trichloroethane, 1,1,2-	ug/g ug/g	0.050 0.050	3.4 0.05	<0.050 <0.050	<0.050 <0.050	-	<0.050 <0.050	-	-	-	-
Trichloroethylene	ug/g	0.010	0.52	<0.010	<0.010	-	<0.010	-	-	-	-
Trichlorofluoromethane Vinyl chloride	ug/g ug/g	0.050 0.020	5.8 0.022	<0.050 <0.020	<0.050 <0.020	-	<0.050 <0.020	-	-	-	-
Xylene, m+p-	ug/g	0.030	NV	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylene, o- Xylenes, total	ug/g ug/g	0.030 0.050	NV 25	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050	<0.030 <0.050
Polycyclic Aromatic Hydrocarbons	,				I						
Acenaphthene Acenaphthylene	ug/g ug/g	0.050 0.050	58 0.17	-	-	<0.050 <0.050	-	<0.050 <0.050	-	<0.050 <0.050	-
Anthracene	ug/g	0.050	0.74	-	-	<0.050	-	<0.050	-	<0.050	-
Benzo[a]anthracene Benzo[a]pyrene	ug/g ug/g	0.050 0.050	0.63 0.3	-	-	<0.050 <0.050	-	<0.050 <0.050	-	<0.050 <0.050	-
Benzo[b]fluoranthene	ug/g	0.050	0.78	-	-	<0.050	-	<0.050	-	<0.050	-
Benzo[g,h,i]perylene Benzo[k]fluoranthene	ug/g ug/g	0.050 0.050	7.8 0.78	-	-	<0.050 <0.050	-	<0.050 <0.050	-	<0.050 <0.050	-
Chrysene	ug/g	0.050	7.8	-	-	<0.050	-	<0.050	-	<0.050	-
Dibenzo[a,h]anthracene Fluoranthene	ug/g ug/g	0.050 0.050	0.1 0.69	-	-	<0.050 <0.050	-	<0.050 <0.050	-	<0.050 <0.050	-
Fluorene	ug/g	0.050	69	-	-	<0.050	-	<0.050	-	<0.050	-
Indeno[1,2,3-cd]pyrene 1-Methylnaphthalene	ug/g ug/g	0.050 0.050	0.48 3.4	-	-	<0.050 <0.050	-	<0.050 <0.050	-	<0.050 <0.050	-
2-Methylnaphthalene	ug/g	0.030	3.4	-	-	<0.030	-	<0.030	-	<0.030	-
Methylnaphthalene (1&2) Naphthalene	ug/g ug/g	0.030 0.010	3.4 0.75	-	-	<0.030 <0.010	-	<0.030 <0.010	-	<0.030 <0.010	-
Phenanthrene	ug/g	0.050	7.8	-	-	<0.050	-	<0.050	-	<0.050	-
Pyrene Metals	ug/g	0.050	78	-	-	<0.050	-	<0.050	-	<0.050	-
Antimony	ug/g	1.0	7.5	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic Barium	ug/g ug/g	1.0 1.0	18 390	-	-	3.48 119	1.36 188	1.82 280	1.64 235	1.91 301	1.72 302
Beryllium	ug/g	0.5	5	-	-	0.52	0.46	0.66	0.59	0.82	0.72
Boron, available Boron	ug/g ug/g	0.1 5.0	120 1.2	-	-	12.2 0.19	<5.0 <0.10	5.4 0.16	<5.0 0.12	6.1 0.27	<5.0 <0.10
Cadmium Chromium (VI)	ug/g	0.5 0.2	160 10	<u>-</u> -	-	0.124 0.30	0.067 <0.10	0.091 0.13	0.075 0.25	0.127 0.50	0.092 0.33
Chromium (VI) Chromium	ug/g ug/g	1.0	10 160	-	-	0.30 25.7	<0.10 39.9	0.13 51.1	0.25 49.4	62.1	0.33 58.8
Copper	ug/g	1.0	22	-	-	8.94 15.5	10.8	14.8	13.9	16.2	16.2
Copper Lead	ug/g ug/g	1.0 1.0	180 120	-	-	15.5 9.03	21.3 3.98	29.1 6.28	27.5 4.93	24.4 7.50	31.8 5.73
Mercury Molyhdenum	ug/g	0.005	1.8	-	-	0.0407	<0.0050	<0.0050	<0.0050	0.0163	0.0052
Molybdenum Nickel	ug/g ug/g	1.0 1.0	6.9 130	-	-	0.72 21.3	0.27 22.9	0.35 29.8	0.28 28.1	0.27 33.4	0.30 33.8
Selenium	ug/g	1.0	2.4	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver Thallium	ug/g ug/g	0.2 0.5	25 1	-	-	0.14 0.215	0.14 0.213	<0.10 0.287	<0.10 0.256	<0.10 0.312	<0.10 0.302
Uranium		1.0	23 86	-	-	0.614	0.558 58.0	0.655	0.658	0.579	0.637
	ug/g		86	-	-	48.0 37.2	58.0 58.2	72.4 78.5	66.3 70.6	77.2 85.4	78.4 86.7
Vanadium Zinc	ug/g ug/g ug/g	1.0 5.0	340			_		32.4	31.8		
Vanadium Zinc General Inorganics	ug/g ug/g	5.0			1			22.4	. 31.8	4	15.4
Vanadium Zinc	ug/g		340 5 700		-	4.56 0.332	15.5 1.39	1.29	1.43	15.7 3.37	1.82
Vanadium Zinc  General Inorganics SAR Conductivity Cyanide, free	ug/g ug/g N/A uS/cm ug/g	5.0 0.01 5 0.03	5 700 0.051	- - -	- - -	0.332 <0.050	1.39 <0.050	1.29 <0.050	1.43 <0.050	3.37 <0.050	1.82 <0.050
Vanadium Zinc General Inorganics SAR Conductivity	ug/g ug/g N/A uS/cm	0.01 5	5 700	- - - -	- - -	0.332	1.39	1.29	1.43	3.37	1.82
Vanadium Zinc  General Inorganics  SAR Conductivity Cyanide, free pH  Grain Size Percent Passing (i.e. smaller than)	ug/g ug/g N/A uS/cm ug/g	5.0 0.01 5 0.03	5 700 0.051	- - - - -		0.332 <0.050	1.39 <0.050	1.29 <0.050	1.43 <0.050	3.37 <0.050	1.82 <0.050
Vanadium Zinc  General Inorganics SAR Conductivity Cyanide, free pH Grain Size Percent Passing (i.e. smaller than) Polychlorinated Biphenyls Aroclor 1016	ug/g ug/g N/A uS/cm ug/g pH Units	0.01 5 0.03 0.05 0.075	5 700 0.051 5-11	-		0.332 <0.050 7.43	1.39 <0.050 7.45	1.29 <0.050	1.43 <0.050	3.37 <0.050	1.82 <0.050
Vanadium Zinc  General Inorganics SAR Conductivity Cyanide, free pH Grain Size Percent Passing (i.e. smaller than) Polychlorinated Biphenyls Aroclor 1016 Aroclor 1221	ug/g ug/g  N/A uS/cm ug/g pH Units  mm  ug/g ug/g	0.01 5 0.03 0.05 0.075	5 700 0.051 5-11	-		0.332 <0.050 7.43 <0.010 <0.010	1.39 <0.050 7.45 <0.010 <0.010	1.29 <0.050 7.72	1.43 <0.050 7.15	3.37 <0.050	1.82 <0.050 7.39
Vanadium Zinc  General Inorganics SAR Conductivity Cyanide, free pH Grain Size Percent Passing (i.e. smaller than) Polychlorinated Biphenyls Aroclor 1016	ug/g ug/g  N/A uS/cm ug/g pH Units  mm	0.01 5 0.03 0.05 0.075	5 700 0.051 5-11	-	- - - - - -	0.332 <0.050 7.43	1.39 <0.050 7.45	1.29 <0.050 7.72	1.43 <0.050 7.15	3.37 <0.050	1.82 <0.050 7.39
Vanadium Zinc  General Inorganics  SAR Conductivity Cyanide, free pH  Grain Size Percent Passing (i.e. smaller than)  Polychlorinated Biphenyls  Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248	ug/g ug/g  N/A uS/cm ug/g pH Units  mm  ug/g ug/g ug/g ug/g ug/g ug/g	0.01 5 0.03 0.05 0.075 0.010 0.010 0.010 0.010 0.010	5 700 0.051 5-11	-	- - - - - - - -	0.332 <0.050 7.43 -0.010 <0.010 <0.010 <0.010 <0.010	1.39 <0.050 7.45	1.29 <0.050 7.72	1.43 <0.050 7.15	3.37 <0.050	1.82 <0.050 7.39
Vanadium Zinc  General Inorganics  SAR Conductivity Cyanide, free pH  Grain Size Percent Passing (i.e. smaller than)  Polychlorinated Biphenyls  Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242	ug/g ug/g  N/A uS/cm ug/g pH Units  mm  ug/g ug/g ug/g ug/g	0.01 5 0.03 0.05 0.075 0.010 0.010 0.010 0.010	5 700 0.051 5-11	-	- - - - - - - - - - -	0.332 <0.050 7.43	1.39 <0.050 7.45 -0.010 <0.010 <0.010 <0.010	1.29 <0.050 7.72	1.43 <0.050 7.15	3.37 <0.050	1.82 <0.050 7.39
Vanadium Zinc  General Inorganics  SAR Conductivity Cyanide, free pH  Grain Size Percent Passing (i.e. smaller than) Polychlorinated Biphenyls  Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254	ug/g ug/g  N/A uS/cm ug/g pH Units  mm  ug/g ug/g ug/g ug/g ug/g ug/g ug/g	0.01 5 0.03 0.05 0.075 0.010 0.010 0.010 0.010 0.010 0.010	5 700 0.051 5-11	-	- - - - - - - - - - - - -	0.332 <0.050 7.43 	1.39 <0.050 7.45 	1.29 <0.050 7.72	1.43 <0.050 7.15	3.37 <0.050	1.82 <0.050 7.39

NV - No value listed in MECP site condition standards

ND - Not datected above laboratory method detection limits Exceeds MECP site condition standards

#### **Table 7: Excess Groundwater Analytical Results**

			Sample ID:	BH1-24-GW1	BH2-24-GW1	BH12-24-GW1 Duplicate of BH2-24-	BH3-24-GW1	BH13-24-GW1 Duplicate of BH3-24-	BH4-24-GW1	BH5-24-GW1	BH15-24-GW1 Duplicate of BH5-24-
			Well Screen Depth: Sample Date:	3.8 - 5.4 m BGS March 6, 2024	3.4 - 4.6 m BGS March 6, 2024	GW1	3.1 - 6.1 m BGS	GW1	3.1 - 6.1 m BGS	3.1 - 6.1 m BGS	GW1
			Laborartory Sample ID:	WT2405173-001	WT2405173-002	March 6, 2024 WT2405173-006	March 6, 2024 WT2405173-003	March 6, 2024 WT2405173-007	March 6, 2024 WT2405173-004	March 6, 2024 WT2405173-005	March 6, 2024 WT2405173-008
		Mathad	O Dog 153/04 Table 3:								
		Method Detection Limit	O.Reg. 153/04 Table 3: Residential Property Use								
Parameter	Units	(MDL)	Standards, Fine Grained Soil								
Petroluem Hydrocarbons (PHCs) F1 PHCs (C6-C10)	μg/L	25	750	-	<25	<25	<25	-	-	<25	-
F2 PHCs (C10-C16)	μg/L	100	150	-	<100	<100	<100	-	=	<100	-
F3 PHCs (C16-C34) F4 PHCs (C34-C50)	μg/L μg/L	250 250	500 500	-	<250 <250	<250 <250	<250 <250	-	-	<250 <250	-
F4G PHCs (gravimetric)	μg/L	250	500	-	-	-	-	-		-	-
Volatile Organic Compounds (VOCs) inclu Acetone	ding Benze μg/L	ne, Toluene, Ethylk 20	penzene and Xylenes (BTEXs) 130000	<20	<20	<20	<20	<20	<20	<20	Ī -
Benzene	μg/L	0.50	430	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Bromodichloromethane Bromoform	μg/L μg/L	0.50 0.50	85000 770	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	-
Bromomethane	μg/L	0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Carbon tetrachloride	μg/L	0.20	8.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-
Chlorobenzene Chloroform	μg/L μg/L	0.50 0.50	630 22	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	-
Dibromochloromethane	μg/L	0.50	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dibromoethane, 1,2- Dichlorobenzene, 1,2-	μg/L μg/L	0.20 0.50	0.83 9600	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	-
Dichlorobenzene, 1,3-	μg/L	0.50	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichlorobenzene, 1,4- Dichlorodifluoromethane	μg/L μg/L	0.50 0.50	67 4400	<0.50 5.01	<0.50 4.40	<0.50 4.07	<0.50 2.06	<0.50 2.76	<0.50 0.57	<0.50 <0.50	-
Dichloroethane, 1,1-	μg/L μg/L	0.50	3100	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethane, 1,2-	μg/L	0.50	12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloroethylene, 1,1- Dichloroethylene, cis-1,2-	μg/L μg/L	0.50 0.50	17 17	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	-
Dichloroethylene, trans-1,2-	μg/L	0.50	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloromethane Dichloropropane, 1,2-	μg/L μg/L	1.0 0.50	5500 140	<1.0 <0.50	<1.0 <0.50	<1.0 <0.50	<1.0 <0.50	<1.0 <0.50	<1.0 <0.50	<1.0 <0.50	-
Dichloropropylene, cis+trans-1,3-	μg/L μg/L	0.50	45	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Dichloropropylene, cis-1,3-	μg/L	0.30	NV NV	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30 <0.30	-
Dichloropropylene, trans-1,3- Ethylbenzene	μg/L μg/L	0.30 0.50	NV 2300	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	-
Hexane, n-	μg/L	0.50	520	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Methyl ethyl ketone [MEK] Methyl isobutyl ketone [MIBK]	μg/L μg/L	20 20	1.50E+06 580000	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	-
Methyl-tert-butyl ether [MTBE]	μg/L	0.50	1400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Styrene Tetrachloroethane, 1,1,1,2-	μg/L μg/L	0.50 0.50	9100 28	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	
Tetrachloroethane, 1,1,1,2- Tetrachloroethane, 1,1,2,2-	μg/L μg/L	0.50	28 15	<0.50	<0.50	<0.50 <0.50	<0.50	<0.50 <0.50	<0.50 <0.50	<0.50	-
Tetrachloroethylene	μg/L	0.50	17	1.77	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	-
Toluene Trichloroethane, 1,1,1-	μg/L μg/L	0.50 0.50	18000 6700	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	-
Trichloroethane, 1,1,2-	μg/L	0.50	30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Trichloroethylene Trichlorofluoromethane	μg/L μg/L	0.50 0.50	17 2500	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	-
Vinyl chloride	μg/L	0.50	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-
Xylene, m+p-	μg/L	0.40	NV NV	<0.40	<0.40	<0.40	<0.40	<0.40	0.97	<0.40	-
Xylene, o- Xylenes, total	μg/L μg/L	0.30 0.50	4200	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	0.63 1.60	<0.30 <0.50	-
Polycyclic Aromatic Hydrocarbons		0.040	1700					T		0.010	1
Acenaphthene Acenaphthylene	μg/L μg/L	0.010 0.010	1700 1.8	-	<0.010 <0.010	<0.010 <0.010	-	-	-	<0.010 <0.010	-
Anthracene	μg/L	0.010	2.4	-	<0.010	<0.010	-	-	-	<0.010	-
Benz(a)anthracene Benzo(a)pyrene	μg/L μg/L	0.010 0.0050	4.7 0.81	<del>-</del> -	<0.010 <0.0050	<0.010 <0.0050	- -	-	<del>-</del> -	<0.010 <0.0050	-
Benzo(b+j)fluoranthene	μg/L	0.010	0.75	-	<0.010	<0.010	-	-	=	<0.010	-
Benzo(g,h,i)perylene Benzo(k)fluoranthene	μg/L μg/L	0.010 0.010	0.2 0.4	-	<0.010 <0.010	<0.010 <0.010	-	-	-	<0.010 <0.010	-
Chrysene	μg/L	0.010	1	-	<0.010	<0.010	-	-	-	<0.010	-
Dibenz(a,h)anthracene Fluoranthene	μg/L	0.0050 0.010	0.52 130	-	<0.0050	<0.0050 <0.010	-	-	-	<0.0050 0.012	-
Fluorene	μg/L μg/L	0.010	400	- -	<0.010 <0.010	<0.010	-	-	=	<0.012	-
Indeno(1,2,3-c,d)pyrene	μg/L	0.010	0.2	-	<0.010	<0.010	-	-	-	<0.010	-
Methylnaphthalene, 1+2- Methylnaphthalene, 1-	μg/L μg/L	0.015 0.010	1800 1800	<del>-</del> -	0.050 0.019	0.060 0.020	- -	-	<del>-</del> -	<0.015 <0.010	-
Methylnaphthalene, 2-	μg/L	0.010	1800	-	0.031	0.040	-	-	-	<0.010	-
Naphthalene Phenanthrene	μg/L μg/L	0.050 0.020	6400 580	-	0.050 <0.020	0.068 <0.020	-	-	-	<0.050 <0.020	-
Pyrene	μg/L μg/L	0.020	68	-	<0.010	<0.010	-	-	-	0.039	-
Metals Antimony	μg/L	0.10	20000		<1.00	<1.00				<1.00	<del></del>
Arsenic	μg/L μg/L	0.10	1900	-	<1.00 <1.00		-	1	-	<1.00 <1.00	-
Barium	110/1	I 040		=	VI.00	<1.00	-	- 1		<1.00	
Beryllium	μg/L	0.10	29000	-	459	482	-	-	-	471	-
Boron	μg/L μg/L μg/L	0.10 0.020 10		- - -			- - -	- - -	- - -		- - -
Cadmium	μg/L μg/L μg/L	0.020 10 0.0050	29000 67 45000 2.7	- - - -	459 <0.200 <100 0.106	482 <0.200 <100 0.113	- - - -	- - - -	- - -	471 <0.200 <100 0.0826	- - -
Cadmium Chromium	μg/L μg/L μg/L μg/L	0.020 10 0.0050 0.50	29000 67 45000	- - - - -	459 <0.200 <100 0.106 <5.00	482 <0.200 <100 0.113 <5.00	- - - - -	-	- - - - -	471 <0.200 <100 0.0826 <5.00	- - - - -
Cadmium	μg/L μg/L μg/L	0.020 10 0.0050 0.50 0.5 0.10	29000 67 45000 2.7 810 140 66	-	459 <0.200 <100 0.106 <5.00 3.38 <1.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00	- - - - - -	-	- - - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper	µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10	29000 67 45000 2.7 810 140 66	-	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00		-	-	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <2.00	-
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt	µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10	29000 67 45000 2.7 810 140 66		459 <0.200 <100 0.106 <5.00 3.38 <1.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00		-	-	471 <0.200 <100 0.0826 <5.00 2.56 <1.00	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.0050	29000 67 45000 2.7 810 140 66 87 25 2.8		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.500 1.85	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60		-	-	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <2.00 <0.500 <0.604	- - - - - - - - - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050	29000 67 45000 2.7 810 140 66 87 25 2.8		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050		-		471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <2.00 <0.500 <0.0500	- - - - - - - - - - - - - - - - - - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.0050 0.050 0.50 0.050	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0500 1.85 <5.00 0.216	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.500 0.578				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.0500 <0.0500 <0.0500 <0.0500 <0.500 <0.500 <0.500	-
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Niickel Selenium	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.0050 0.050 0.050	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.600 1.60 <5.00 <0.500				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000	-
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium	HE/L HE/L HE/L HE/L HE/L HE/L HE/L HE/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 1.60 <5.00 <0.500 <0.578 1210000 <0.100 6.20				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium	ル度/し 中 ( 中 ( 中 ( 中 ( 中 ( 中 ( 中 ( 中 (	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.010	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30€+06 510 420 250		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <0.500 <0.500 <0.0500 <0.0500 0.216 1140000 <0.100 6.07 <5.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.500 0.578 1210000 <0.100 6.20 5.12				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0500 <0.0500 <0.0500 <0.100 1010000 <0.100 3.93 <5.00	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium	HE/L HE/L HE/L HE/L HE/L HE/L HE/L HE/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 1.60 <5.00 <0.500 <0.578 1210000 <0.100 6.20				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride	HE/L HE/L HE/L HE/L HE/L HE/L HE/L HE/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93 <5.00 <10.00	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics	HE/L HE/L HE/L HE/L HE/L HE/L HE/L HE/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 <0.100 6.07 <5.00 <10.00	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.500 0.578 1210000 <0.100 6.20 5.12 <10.0				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93 <5.00 <10.0	1
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH	нв/L нв/L нв/L нв/L нв/L нв/L нв/L нв/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30¢+06 510 420 250 1100		459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0500 <0.0500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.500 0.578 1210000 <0.100 6.20 5.12 <10.0				471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <2.00 <0.500 <0.0050 0.604 <5.00 <0.100 1010000 <0.100 3.93 <5.00 <10.0	
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Niickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity	HE/L HE/L HE/L HE/L HE/L HE/L HE/L HE/L	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.0050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100	- - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0500 1.85 <5.00 0.216 1140000 <0.100 6.07 <5.00 <10.0	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.00 <0.500 <0.0050 1.60 <5.00 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93 <5.00 <10.0	- - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1016 Aroclor 1021		0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0500 <0.0500 <0.100 1010000 <0.100 3.93 <5.00 <10.0  2060 7.26 <2.0 8.17	- - - - - - - - - - - - - - - - - - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1221 Aroclor 1232		0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.0500 <0.0500 <0.0500 <0.0500 <0.100 1010000 <0.100 3.93 <5.00 <10.0  2060 7.26 <2.0 8.17	- - - - - - - - - - - - - - - - - - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1016 Aroclor 1021		0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0500 <0.0500 <0.100 1010000 <0.100 3.93 <5.00 <10.0  2060 7.26 <2.0 8.17	- - - - - - - - - - - - - - - - - - -
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Niickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254	ル度/し ・	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0  0.50 1.0  0.50 0.020 0.020 0.020 0.020 0.020 0.020	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.500 <0.0500 <0.0500 <0.100 1010000 <0.100 3.93 <5.00 <10.0  2060 7.26 <2.0 8.17  <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1242 Aroclor 1242 Aroclor 1242 Aroclor 1244	ル度/し ・	0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0  0.50 1.0  0.020 0.020 0.020 0.020 0.020	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <2.00 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 1010000 <0.100 3.93 <5.00 <10.0  2060 7.26 <2.0 8.17  <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010
Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1221 Aroclor 1221 Aroclor 1242 Aroclor 1244 Aroclor 1254		0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 0.010 0.50 1.0  0.50 1.0  0.50 0.020 0.020 0.020 0.020 0.020 0.020 0.020	29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100  2300 - 66 5-11	; - -	459 <0.200 <100 0.106 <5.00 3.38 <1.00 <2.00 <0.500 <0.0050 1.85 <5.00 <0.500 0.216 1140000 <0.100 6.07 <5.00 <10.00  2500 8.52 <2.0 8.22	482 <0.200 <100 0.113 <5.00 3.98 <1.00 <2.200 <0.500 <0.600 0.500 <0.500 <0.500 <0.500 <0.578 1210000 <0.100 6.20 5.12 <10.0	- - -		- - - -	471 <0.200 <100 0.0826 <5.00 2.56 <1.00 <0.500 <0.0050 0.604 <5.00 <0.500 <0.100 10100000 <0.100 3.93 <5.00 <10.00  2060 7.26 <2.0 8.17	

NV - No value listed in MECP site condition standards
- · Not Analyzed
ND - Not detected above laboratory method detection limits
Exceeds MECP site condition standards

#### **Table 7: Excess Groundwater Analytical Results**

			Sample ID:	MW-2-GW1	MW-12-GW1 Duplicate of MW-2-	MW-3-GW1	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1	BH5-23-GW1	TRIP BLANK
			Well Screen Depth: Sample Date:	Unknow to 5.9 m BGS March 6, 2024	GW1 March 6, 2024	Unknow to 5.0 m BGS March 6, 2024	11.5 - 13 m BGS March 6, 2024	11.2 - 12.7 m BGS March 6, 2024	15.0 - 16.5 m BGS March 6, 2024	13.6 - 15.1 m BGS March 6, 2024	13.5 - 15.0 m BGS March 6, 2024	N/A March 6, 2024
			Laborartory Sample ID:	WT2405173-009	WT2405173-011	WT2405173-010	WT2405173-012	WT2405173-013	WT2405173-014	WT2405173-015	WT2405173-016	WT2405173-017
		Method	O.Reg. 153/04 Table 3:									
		Detection Limit	Residential Property Use									
Parameter Petroluem Hydrocarbons (PHCs)	Units	(MDL)	Standards, Fine Grained Soil									
F1 PHCs (C6-C10)	μg/L	25	750	-	-	-	-	-	-	-	-	-
F2 PHCs (C10-C16) F3 PHCs (C16-C34)	μg/L μg/L	100 250	150 500	-	-	-	-	-	-	-	-	-
F4 PHCs (C34-C50)	μg/L	250	500	-	-	-	-	-	-	-	-	-
F4G PHCs (gravimetric)  Volatile Organic Compounds (VOCs) inclu	μg/L	250	500 Senzene and Xylenes (RTEXs)	-	-	-	-	-	-	-	-	-
Acetone	μg/L	20	130000	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzene Bromodichloromethane	μg/L μg/L	0.50 0.50	430 85000	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Bromoform	μg/L μg/L	0.50	770	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	μg/L	0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride Chlorobenzene	μg/L μg/L	0.20 0.50	8.4 630	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50	<0.20 <0.50
Chloroform	μg/L	0.50	22	<0.50	<0.50	<0.50	<0.50	<0.50	1.70	<0.50	<0.50	<0.50
Dibromochloromethane Dibromoethane, 1,2-	μg/L μg/L	0.50 0.20	82000 0.83	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20	<0.50 <0.20
Dichlorobenzene, 1,2-	μg/L	0.50	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3- Dichlorobenzene, 1,4-	μg/L μg/L	0.50 0.50	9600 67	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Dichlorodifluoromethane	μg/L	0.50	4400	6.86	6.95	15.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethane, 1,1- Dichloroethane, 1,2-	μg/L μg/L	0.50 0.50	3100 12	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Dichloroethylene, 1,1-	μg/L	0.50	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, cis-1,2- Dichloroethylene, trans-1,2-	μg/L μg/L	0.50 0.50	17 17	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Dichloromethane	μg/L μg/L	1.0	5500	<0.50	<0.50	<0.50 <1.0	<1.0	<0.50 <1.0	<0.50	<0.50	<0.50 <1.0	<1.0
Dichloropropane, 1,2-	μg/L	0.50	140	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloropropylene, cis+trans-1,3- Dichloropropylene, cis-1,3-	μg/L μg/L	0.50 0.30	45 NV	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30	<0.50 <0.30
Dichloropropylene, trans-1,3-	μg/L	0.30	NV	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene Hexane, n-	μg/L μg/L	0.50 0.50	2300 520	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Methyl ethyl ketone [MEK]	μg/L	20	1.50E+06	<20	<20	<20	<20	<20	<20	<20	<20	<20
Methyl isobutyl ketone [MIBK] Methyl-tert-butyl ether [MTBE]	μg/L μg/L	20 0.50	580000 1400	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50	<20 <0.50
Styrene	μg/L	0.50	9100	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2- Tetrachloroethane, 1,1,2,2-	μg/L	0.50 0.50	28 15	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Tetrachloroethylene	μg/L μg/L	0.50	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	μg/L	0.50	18000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1- Trichloroethane, 1,1,2-	μg/L μg/L	0.50 0.50	6700 30	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Trichloroethylene	μg/L	0.50	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane Vinyl chloride	μg/L μg/L	0.50 0.50	2500 1.7	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50	<0.50 <0.50
Xylene, m+p-	μg/L	0.40	NV	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Xylene, o- Xylenes, total	μg/L μg/L	0.30 0.50	NV 4200	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50	<0.30 <0.50
Polycyclic Aromatic Hydrocarbons												
Acenaphthene Acenaphthylene	μg/L μg/L	0.010 0.010	1700 1.8	-	-	<0.010 <0.010	-	-	-	-	-	-
Anthracene	μg/L	0.010	2.4	-	-	<0.010	=	-	=	=	-	=
Benz(a)anthracene Benzo(a)pyrene	μg/L μg/L	0.010 0.0050	4.7 0.81	-	-	<0.010 0.0070	-	-	-	-	-	-
Benzo(b+j)fluoranthene	μg/L μg/L	0.010	0.75	-	-	0.013	-	-	-	-	-	-
Benzo(g,h,i)perylene	μg/L	0.010	0.2 0.4	-	-	0.014	-	-	-	-	-	-
Benzo(k)fluoranthene Chrysene	μg/L μg/L	0.010 0.010	1	-	-	<0.010 <0.010	-	-	=	=	-	=
Dibenz(a,h)anthracene	μg/L	0.0050	0.52	-	-	<0.0050	-	-	-	-	-	-
Fluoranthene Fluorene	μg/L μg/L	0.010 0.010	130 400	-	-	0.014 <0.010	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	μg/L	1 '				<0.010	_	_	-	-		-
Methylnaphthalene, 1+2- Methylnaphthalene, 1-		0.010	0.2	-	-						-	
Methylnaphthalene, 2-	μg/L ug/L	0.015	1800	- - -	-	<0.015	-	- -	-	-	- - -	-
	μg/L μg/L	0.015 0.010 0.010	1800 1800 1800	- - -	- - -	<0.015 <0.010 <0.010	- - -	- - -	- - -	- - -	- - -	- - -
Naphthalene	μg/L μg/L μg/L	0.015 0.010 0.010 0.050	1800 1800 1800 6400	- - - - -	- - - - -	<0.015 <0.010 <0.010 <0.050	- - - -	- - - -	- - - -	- - - -	- - - - -	- - - -
Naphthalene Phenanthrene Pyrene	μg/L μg/L	0.015 0.010 0.010	1800 1800 1800	- - - - - -	- - - - - -	<0.015 <0.010 <0.010	- - - - -	- - - - -	- - - -	- - - -	- - - - -	- - - - -
Naphthalene Phenanthrene	µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020	1800 1800 1800 6400 580	- - - - - - -	- - - - - - -	<0.015 <0.010 <0.010 <0.050 <0.020	- - - - - -	- - - - -	- - - - -	- - - - - -		- - - - - - -
Naphthalene Phenanthrene Pyrene <b>Metals</b> Antimony Arsenic	µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010	1800 1800 1800 6400 580 68		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018 <-1.00 <1.00		- - - - - -	-	- - - - - -	- - - - - - -	- - - - - - -
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium	µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010	1800 1800 1800 6400 580 68		1	<0.015 <0.010 <0.010 <0.050 <0.050 <0.020 0.018	- - - - - - - - -	- - - - - - -	-	-	- - - - - - -	- - - - - - - -
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010 0.10 0.10 0.10 0.020 10	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <100	- - - - - - - - - - - - - - - - - - -	- - - - - - - -	-	-		- - - - - - - - - - -
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010 0.10 0.10 0.10 0.020 10	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7	- - - - - - - - - - - - - - - - - - -	1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500		- - - - - - - - - -	-	-	-	- - - - - - - - - - - - - - - - - - -
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI]	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.50	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140	- - - - - - - - - - - - - - - - - - -	1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.00 <0.000 <0.0500 <50.00 <0.500 <0.500	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	-	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010 0.10 0.10 0.020 10 0.0050 0.50 0.5	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.00 <0.200 <100 <0.0500 <5.00 <0.50 <1.00	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI]	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	0.015 0.010 0.010 0.050 0.020 0.010 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.50	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.00 <0.000 <0.0500 <50.00 <0.500 <0.500	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene  Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury	#E/L #E/L #E/L #E/L #E/L #E/L #E/L #E/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <0.500 <1.00 <2.00 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper	ルE/L NE/L NE/L	0.015 0.010 0.050 0.020 0.010 0.10 0.10 0.10 0.20 10 0.0050 0.50 0.50 0.50 0.50	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <1.00 <2.00 <1.00 <0.500 <5.00 <0.500 <1.00 <2.00 <0.500				- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium		0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.020 10 0.0050 0.50 0.50 0.0050 0.0050 0.050 0.050 0.050	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <1.00 <2.00 <0.500 <1.00 <0.500 <1.00 <0.500 <5.00 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500		- - - - - - - - - - - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel	##/L ###/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <0.500 <1.00 <2.00 <0.500 <1.00 <2.00 <0.500 <1.22 <5.00					- - - - - - - - - - - - - - - - - - -	
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Boron Cadmium Chromium Chromium Chromium Choper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium	##/L ##/L ##/L ##/L ##/L ##/L ##/L ##/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.50 0.50 0.50	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.050 <0.200 <100 <0.0500 <5.00 <0.500 <1.00 <2.00 <0.500 <0.500 <0.500 <1.22 <5.00 <0.500 <0.500 <0.100 <5.71000 <0.100 <5.71000 <0.100						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium	#E/L #E/L #E/L #E/L #E/L #E/L #E/L #E/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.050 <0.200 <1.00 <0.0500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.500 <0.100 <0.500 <0.100 <0.500 <0.100 <0.500 <0.100 <0.500						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc		0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.50 0.50 0.50	1800 1800 1800 6400 580 68 20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420		1	<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <1.00 <0.0500 <5.00 <1.00 <2.00 <0.500 <0.500 <0.500 <1.00 <0.500 <0.0050 <5.00 <0.100 <0.0500 <1.100 <0.0500 <1.100 <0.0500 <0.100 <1.100 <0.100 <1.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <0.100 <						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Boron Cadmium Chromium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics	##/L ##/L ##/L ##/L ##/L ##/L ##/L ##/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010	1800 1800 1800 1800 1800 6400 580 68  20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100			<0.015 <0.010 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <0.500 <0.500 <0.500 <0.500 <0.0050 <1.22 <5.00 <0.500 <0.100 571000 <0.100 11.8 <5.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Soldum Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity	#E/L #E/L #E/L #E/L #E/L #E/L #E/L #E/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.50	1800 1800 1800 1800 6400 580 68  20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100			<0.015 <0.010 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <0.500 <1.00 <2.00 <0.500 <1.00 <5.500 <0.100 571000 <0.100 11.8 <5.00 <10.00 <11.8 <5.00 <10.00 <10.00 <11.800 <0.09						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride		0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.0050 0.50 0.50	1800 1800 1800 1800 1800 6400 580 68  20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100			<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.50 <0.200 <100 <0.0500 <5.00 <0.500 <0.500 <0.500 <0.0050 <1.00 <0.500 <0.100 <1.22 <5.00 <0.100 571000 <0.100 11.8 <5.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.						
Naphthalene Phenanthrene Pyrene Metals Antimony Arsenic Barium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls	#E/L #E/L #E/L #E/L #E/L #E/L #E/L #E/L	0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.5 0.5 0.10 0.20 0.050 0.050 0.050 0.050 0.050 0.050 0.50	1800 1800 1800 1800 6400 580 68  20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100	- - -		<0.015 <0.010 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 405 <0.200 <100 <0.0500 <5.00 <0.500 <1.00 <2.00 <0.500 <1.00 <5.500 <0.100 571000 <0.100 11.8 <5.00 <10.00 <11.8 <5.00 <10.00 <10.00 <11.800 <0.09						
Naphthalene Phenanthrene Phyrene  Metals  Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Chromium, hexavalent [Cr VI] Cobalt Copper Lead Mercury Molybdenum Nickel Selenium Silver Sodium Thallium Uranium Vanadium Zinc General Inorganics Chloride Conductivity Cyanide, free pH Polychlorinated Biphenyls Aroclor 1016		0.015 0.010 0.010 0.050 0.020 0.010  0.10 0.10 0.10 0.10 0.020 10 0.0050 0.50 0.50 0.50 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.010 50 0.010 50 0.010 50 0.010 0.50 1.0	1800 1800 1800 1800 1800 6400 580 68  20000 1900 29000 67 45000 2.7 810 140 66 87 25 2.8 9200 490 63 1.5 2.30E+06 510 420 250 1100	- - -		<0.015 <0.010 <0.010 <0.050 <0.020 0.018  <1.00 <1.00 <40.50 <0.200 <100 <0.0500 <5.00 <0.500 <0.500 <0.500 <0.0050 <1.00 <0.500 <0.100 <1.22 <5.00 <0.100 571000 <0.100 11.8 <5.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <11.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.00 <10.						
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NV - No value listed in MECP site condition standards
- · Not Analyzed
ND - Not detected above laboratory method detection limits
Exceeds MECP site condition standards

# Appendix A

# Sampling and Analysis Plan

# Sampling and Analysis Plan

1299-1315 Richmond Road Ottawa, Ontario

Prepared for: 13008916 Canada Inc.



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### Background

Lopers & Associates (Lopers) was retained by 13008916 Canada Inc. (Brigil) to complete a Phase Two Environmental Site Assessment (Phase Two ESA) of the commercial property with Civic address No. 1299-1315 Richmond Road, Ottawa, Ontario ("Phase Two Property", "Property" or "Site").

Lopers has previously completed a Phase One Environmental Site Assessment (Phase One ESA) (Reference No. LOP23-029A, dated Revised February 2024) for Brigil at the Property. The Phase One ESA identified the presence of three potentially contaminating activities (PCAs) at the Property which were interpreted to represent an areas of potential environmental concern (APECs).

**Table 1: Potentially Contaminating Activities and Areas of Potential Environmental Concern** 

PCA / APEC Report Reference No.	Potentially Contaminating Activity	Location	Potential Contaminants of Concern
PCA #1 APEC #1	Operational Dry Cleaner  (O.Reg. 153/04 PCA Item 37: Operation of Dry Cleaning Equipment (where chemicals are used))	North-Central portion of the Phase One Property	VOCs
PCA #2	Pad mounted electrical transformer  (O.Reg. 153/04 PCA Item 55: Transformer Manufacturing, Processing and Use)  (O.Reg. 153/04 PCA Item 18: and Electricity Generation, Transformation and Power Stations)	North portion of the	PHCs/BTEXs,
APEC #2		Phase One Property	PCBs
PCA #3	Hydraulic elevator, hydraulic oil reservoir, storage and sump pit  (O.Reg. 153/04 PCA Item 28: Gasoline and Associated Products Storage in Fixed Tanks)	North portion of the	PHCs/BTEXs,
APEC #3		Phase One Property	PAHs

Previous environmental reports were provided, which document the presence of contaminant concentrations that exceed the Site Condition Standards at the Phase One Property; the contaminants are associated with the aforementioned APEC #1.

Based on the identification of APECs at the Phase One Property and the requirement for documentation associated with an RSC, it was recommended that a Phase Two Environmental Site Assessment Report be completed to provide documentation that the Property meets the soil and groundwater quality standards applicable to its future use.

The scope of work for the Phase Two ESA included drilling seven boreholes at the Phase Two Property. Five of the boreholes were instrumented with groundwater monitoring wells with

screens installed in the overburden. Additional excess soil characterization sampling and analysis was completed concurrently with this Phase Two ESA, for future planning purposes.

In the event that additional contaminants of APECs are identified during the drilling or sampling fieldwork, additional scope of work will be discussed with BRIGIL to complete the Phase Two ESA.

# Planning Site Investigation - Specific Objectives

The following are the specific objectives for planning a site investigation of the Phase Two Environmental Site Assessment, as defined in O.Reg. 153/04.

- 1. To plan an investigation that will achieve the general objectives of a Phase Two Environmental Site Assessment.
  - i. through the use of an appropriate and complete information base concerning the Phase Two Property, and
  - ii. through the conduct of an investigation based both on information obtained before the Phase Two Environmental Site Assessment begins and on the incorporation of information obtained during the Phase Two Environmental Site Assessment.
- 2. To develop a sampling and analysis plan that will adequately assess all areas of the Phase Two Property where contaminants may be present in land or water on, in or under the Property.
- 3. To develop a quality assurance program that is designed to effectively limit errors and bias in sampling and analysis through implementation of assessment and control measures that will ensure data are useful, appropriate and accurate in the determination of whether the Phase Two Property, or any record of site condition (RSC) property within it, meets applicable site condition standards and any standards specified in a risk assessment.

# 3. Underground Utility Service Locates

Prior to completing the Phase Two ESA field investigation activities, public underground locates will be coordinated through Ontario One Call. As it is understood that the Site is developed with a commercial place and that no privately owned underground services or infrastructure drawings are available, therefore private locates will also be completed in the proposed drilling locations.

The locations of the proposed boreholes will be reviewed in relation to the public underground locates and locations will be modified accordingly if conflicts exist between any location or if the location is in close proximity to an active underground service.

A copy of the public underground locates will be retained by Lopers' field personnel during all excavation components of the fieldwork.

# 4. Planning Site Investigation - Specific Requirements

The qualified person has ensured the following requirements were met in planning a site investigation. The Phase One conceptual site model for the Phase One Environmental Site Assessment report was used in conjunction with other information in determining:

### i. Media for Investigation

Soil and groundwater sampling and analysis for the purpose of assessing environmental quality will be completed as part of the Phase Two ESA.

There are no surface water bodies at the Phase Two Property, as such, sediment and surface water quality sampling and analysis will not be completed as part of this Phase Two ESA.

### ii. Locations and Depths for Sampling

A total of five borehole locations have been proposed to provide coverage of the APECs identified at the Phase Two Property. Boreholes will be located in the north-central portion of the Property to assess APECs #1, #2 and #3. A distribution of 2 boreholes will be spread over the remaining areas of the Property, to assess future excess soil management requirements.

Sampling depths will include as a minimum, collection of samples in 0.6 m intervals from the ground surface to native soil conditions within the groundwater table. Borehole/monitoring wells depths are proposed to be drilled to approximately 5-6 m to intercept the groundwater table in APECs were groundwater quality assessment is required. Boreholes are proposed to be drilled to a depth of approximately 3 m where an assessment of the fill quality is required.

#### iii. Parameters for Laboratory Analysis.

The parameters for laboratory analysis will be selected based on the contaminants of potential concern for each APEC as well as the field screening observations.

The contaminants of potential concern associated with fuel storage and fuelling are generally The presence of an operational Dry Cleaner at the Phase One Property is interpreted as PCA #1 associated with the O.Reg. 153/04 PCA: Operation of Dry Cleaning Equipment (where chemicals

are used) and represents APEC #1 for the Property. The contaminants of potential concern associated with dry cleaning chemicals are volatile organic compounds (VOCs).

A pad mounted electrical transformer was observed on the north portion of the of the Phase One Property. The pad mounted electrical transformer is interpreted as PCA #2 associated with the O.Reg. 153/04 PCAs: Transformer Manufacturing, Processing and Use and Electricity Generation, Transformation and Power Stations, which represents APEC #2 for the Property. The CPCs associated with the electrical transformation equipment are polychlorinated biphenyls (PCBs), petroleum hydrocarbons (PHCs) and benzene, toluene, ethylbenzene and xylenes (BTEXs).

The presence of a hydraulic elevator, hydraulic oil reservoir, storage and sump pit (PCA #3) are associated with the O.Reg. 153/04 PCAs "Gasoline and Associated Products Storage in Fixed Tanks" and "Storage, Maintenance, Fuelling and Repair of Equipment, Vehicles, and Material used to Maintain Transportation Systems" and have been interpreted to represent APEC #3 for the Phase One Property. The CPCs associated with the hydraulic elevator are PHCs, BTEXs, and polycyclic aromatic hydrocarbons (PAHs).

The contaminants of concern for a particular sample will be based on the relative location and depth of the sample, visual and/or olfactory observations and combustible vapour screening concentrations.

Information obtained after the completion of the phase one environmental site assessment shall be used to modify the investigation, as appropriate.

# Quality Assurance and Quality Control

The qualified person has ensured that there is a quality assurance and quality control program, data quality objectives, standard operating procedures and a description of any physical impediments that interfere with or limit the ability to conduct sampling and analysis.

The quality assurance and quality control program includes the following requirements:

#### 5.1 Field Equipment Decontamination

All non-dedicated sampling and monitoring equipment must be cleaned following each use.

The split spoons, which are the only media to come into contact with the soil samples, will be washed using soap and water and a scrub brush between samples to minimize the potential for cross-contamination among samples. The field technician will use sterile nitrile gloves, which are to be changed prior to the handling of each soil sample to further reduce the potential of

#### LOPERS & ASSOCIATES

cross-contamination. The flights of the hollow stem augers are to be cleaned manually following each borehole.

Water level monitoring equipment, including water level meters and interface probes will be decontaminated with an environmentally safe cleaning solution and rinsed with deionized water between water level readings to prevent cross contamination.

The field technician will change dedicated sterile nitrile gloves prior to initiating work at each monitoring well and change gloves prior to sample collection to minimize the potential for cross-contamination.

### 5.2 Trip Blanks

Since groundwater samples are to be analyzed for volatile organic compounds (VOCs), one trip blank sample shall be submitted for laboratory analysis with each laboratory submission of groundwater samples.

#### 5.3 Field Duplicates

Sufficient field duplicate samples shall be collected in each medium (soil and groundwater) being sampled, so that at least one field duplicate sample can be submitted for laboratory analysis for every ten samples submitted for laboratory analysis.

At least one field duplicate sample shall be submitted for laboratory analysis for every ten samples submitted for laboratory analysis.

One field duplicate will be submitted from each medium sampled for PHCs, VOCs, PAHs and metals & inorganics which are the parameter suites identified as a contaminants of concern in APECs #1 through #3 as part of the previously prepared Phase One ESA.

### 5.4 Equipment Calibration

Field screening of the soil samples will be completed using an RKI Instruments Model Eagle-2 combustible gas detector ("RKI Eagle"). The RKI Eagle used for soil sample screening as part of this Phase Two ESA will be obtained from Maxim Environmental and Safety Inc. and will be calibrated prior to use.

Measurements of the groundwater quality field parameters will be completed to determine stabilization of these parameters prior to sampling. These measurements will be completed using Horiba U-52 groundwater quality measurement device ("Horiba"). The Horiba used for groundwater quality parameter stabilization measurements as part of this Phase Two ESA will be obtained from Maxim Environmental and Safety Inc. and will be calibrated prior to use.

### 5.5 Data Quality Objectives

The data quality objectives for all types of field data collected during the Phase Two Environmental Site Assessment field investigation that set the level of uncertainty in environmental data shall be such that,

- (a) the decision-making is not affected; and
- (b) the overall objectives of the investigation are met.

## 6. Standard Operating Procedures

Standard operating procedures were developed for all of the following field investigation methods used in the field investigation.

#### 6.1 Borehole Drilling

The drilling field program will be completed under full time supervision of Lopers & Associates personnel. The drilling subcontractor retained for the Phase Two ESA is OGS Inc., located at 5518 Appleton Side Road, Almonte, Ontario, K0A 1A0. The drill rig used for the Phase Two ESA will be a truck mounted CME drill, equipped with hollow stem augers and stainless steel split spoons. The boreholes / monitoring wells located on the interior of the Site building will be drilled using a potable drill and tripod set-up, with sample collection using stainless steel split spoons. Operation of the drilling equipment is the responsibility of the drilling subcontractor, who is trained and competent in the operation of this equipment.

The field technician logs the drilling and recovery of soil samples from each borehole, noting the soil type, physical and environmental characteristics at each borehole location on the field borehole logs.

### 6.2 Soil Sampling

Samples are to be collected from auger cuttings or split spoons at the ground surface for surficial samples (0-0.6 m below ground surface (m BGS)) and then using split spoons for subsequent samples. Split spoon samples are generally not collected from surficial depths, as poor recovery of loose packed fill material does not yield sufficient volume of samples required for field screening or laboratory analysis. Split spoon samples, collected in 0.6 m segments, are to be recovered at continuous 0.76 m intervals; the additional 0.16 m between split spoon samples will be over-drilled to provide undisturbed field measurement of geotechnical parameters (blow counts) and to prevent cave in materials from stratigraphic units above the intended sampling intervals from being collected at unrepresentative depths during sampling.

Soil samples are initially collected in Ziploc bags for initial screening as part of sample selection. Soil samples selected for laboratory analysis are collected in dedicated clear glass jars prepared and provided by the analytical laboratory. Soil samples collected for BTEXs/VOCs and the F1 range of PHCs analysis are collected using a dedicated graduated syringe provided by the laboratory and placed directly into a glass vial with methanol preservative. Analytes and associated preservatives are specified on each jar/vial by the laboratory. Each jar/vial sample set is provided with a unique sample identifier, project number and date of sampling in the field.

#### 6.3 Field Soil Screening Measurements

Initial field screening of the soil samples will consist of visual and olfactory observations made at the time of sample collection during the drilling program.

Additional field screening of the soil samples will be completed using an RKI Instruments Model Eagle-2 combustible gas detector ("RKI Eagle"). The RKI Eagle is capable of measuring combustible vapours at concentrations ranging from 0 parts per million (PPM) to 50% of the lower explosive limit (LEL). The RKI Eagle is also capable of measuring VOC vapours at concentrations ranging from 0 ppm to 1000 ppm.

### 6.4 Monitoring Well Installation

Installation of monitoring wells in selected boreholes is to be completed by OGS Inc., who is a licensed well driller in accordance with O.Reg. 903. The wells will be installed using slotted PVC No. 10 monitoring well screens, which are 51 mm in diameter; these screens are to be installed at the base of each of the aforementioned boreholes, directly above the bedrock surface. Well screens can range from 1.5 m to 4.5 m in length. The monitoring wells are extended to approximately 0.15 m below the surface grade with PVC riser, also 51 mm in diameter. A threaded PVC end cap should be installed at the base of the screen to prevent sediment infiltration, while a J-Plug is installed at the top of the riser to present surface influence.

The annular space in each monitoring well is to be backfill with clean silica sand to approximately 0.3 m above the monitoring well screens. A layer of bentonite chips is then used to make a hydraulic seal above the sand pack to near the ground surface. The monitoring wells are to be completed with flushmount aluminum protective casings, which were backfilled with sand to provide drainage from the protective casing.

### 6.5 Elevation Survey

An elevation survey of all boreholes and monitoring wells will be conducted following the completion of the drilling program. A fixed temporary benchmark should be used as a reference elevation; the top of the spindle of a fire hydrant is preferred for this purpose as geodetic elevations can be obtained for these points. The reference benchmark should be assigned a field site datum of 100.00 m for the purposes of the elevation survey. The ground surface elevation of all boreholes should be surveyed. The top of piezometer of each

#### LOPERS & ASSOCIATES

monitoring well should also be surveyed; this allows for higher accuracy in the interpretation of groundwater elevations.

#### 6.6 Monitoring Well Development;

Groundwater monitoring wells will be developed on the day of drilling using LDPE tubing and a footvalve. At least three and up to ten well volumes will be removed from the monitoring wells in order to remove as much sediment as possible from the wells. In cases where the monitoring well goes dry prior to purging three well volumes, the well should be purged dry a minimum of three times, waiting at least one hour between purging events. The LDPE tubing should be removed from the monitoring wells following well development.

### 6.7 Field Measurement of Water Quality Indicators

Field measurement of water quality parameters were collected at regular intervals (0 L, 0.5 well volumes, 1 well volume, 2 well volumes, etc.) during purging of the monitoring wells prior to sampling. The Horiba was placed in a flow-through cell and water quality parameters were measured until they were found to stabilize to within approximately 10% of the previous measurements prior to sample collection.

### 6.8 Groundwater Sampling

Follow a period of stabilization after drilling and monitoring well development (1 week recommended), static groundwater elevations are measured relative to the top of piezometer at each groundwater monitoring well on the day of sampling, prior to disturbance of the water column.

Following static groundwater elevation measurements, 6 mm LDPE tubing is placed in each of the monitoring wells. The LDPE tubing is connected to silicon tubing, run through a peristaltic pump set to low flow (approximately 0.2-0.5 L/minute) during purging and sampling. The peristaltic pump is used to avoid mixture of sediment into the groundwater column and prevent volatilization during sample collection. The monitoring wells are purged on the day of sampling while water quality parameters were measured and stabilize as noted above.

Groundwater samples are collected in dedicated amber glass bottles and vials or plastic bottles prepared and provided by the analytical laboratory. Analytes and associated preservatives are specified on each bottle by the laboratory. Each bottle sample set will be provided with a unique sample identifier, project number and date of sampling in the field. Samples for PHCs, BTEXs, VOCs, PAHs and general chemistry are unfiltered, while metals samples are to be field filtered using a dedicated 0.45 µm filter for each sample.

## Appendix B

# **Underground Utility Locates**

 From:
 solutions@on1call.com

 To:
 Luke Lopers

 Subject:
 Request 2024016235

 Date:
 January 4, 2024 4:20:47 PM



### LOCATE REQUEST CONFIRMATION

REQUEST #: REQUEST PRIORITY: REQUEST TYPE: WORK TO BEGIN DATE:

2024016235 PROJECT WORK REGULAR 01/11/2024

Update of Request Project #:LOP23-029B Call Date: 01/04/2024 Transmit Date: 01/04/2024

04:11:18 PM 04:20:03 PM

#### REQUESTOR'S CONTACT INFORMATION

Contractor ID: 343253

Contact Name: LUKE LOPERS On-site Contact Name: LUKE LOPERS

Company Name: LOPERS & ASSOCIATES On-site Contact #: (613) 327-9073

Address: 30 LANSFIELD WAY, OTTAWA, ON, K2G3V8

Email: Luke@Lopers.ca

**Primary Phone #:** (613) 327-9073

Intersecting Street 2: SIR JOHN A

MACDONALD PKWY

Cell Phone #: (613) 327-9073

#### **DIG INFORMATION**

Region/County: OTTAWA Work Done for: Pre-Marked: Area Not Pre-Marked PROPERTY OWNER

**Property Type:** Private Property,

Community: Reason for Work: Public Property
ENVIRONMENTAL

Site Meeting: No

City: OTTAWA Dig Method: Machine Dig Permit #: No

Address: 1299, RICHMOND RD To 1315 Depth: More than 15 Feet Work End Date: 02/17/2024

Intersecting Street 1: STARFLOWER

LANE

### ADDITIONAL INFORMATION QUALIFYING INFORMATION

Civic#: 1299,1315

THIS REQUEST IS FOR A RE-MARK OF TICKET #20234416156 PREVIOUS REQUEST WILL EXPIRE PRIOR TO COMPLETION OF THE DIGGING.
DRILLING MONITORING WELLS FOR ENVIRONMENTAL DELINEATION PURPOSES.
PLEASE LOCATE ENTIRE SITE AND SECTION OF STARFLOWER LANE TO THE NORTH OF THE BUILDING; WE ARE APPLYING FOR A ROAD CUT PERMIT FOR DRILLING ON THE RIGHT OF WAY.

### MEMBERS NOTIFIED: The following owners of underground infrastructure in the area of your excavation site have been notified.

Member Name	Station Code	Initial Status
HYDRO OTTAWA (HOT1)	HOT1	Notification sent
PROMARK FOR ENBRIDGE GAS (ENOE01)	ENOE01	Notification sent
CITY OF OTTAWA WATER/SEWER (OTWAWS01)	OTWAWS01	Notification sent
BLACK AND MC DONALD FOR CITY OF OTTAWA STREET LIGHTS (OTWASL01)	OTWASL01	Notification sent
CLI FOR ROGERS (ROGOTT01)	ROGOTT01	Notification sent
CITY OF OTTAWA TRAFFIC SIGNALS (OTWATS01)	OTWATS01	Notification sent
BELL CANADA (BCOE01)	BCOE01	Notification sent

MAP SELECTION: Map Selection provided by the excavator through Ontario One Call's map tool or through agent interpretation by phone



#### **IMPORTANT INFORMATION: Please read.**

#### **Defining "NC" - Non-Compliant**

- Non-compliant members have not met their obligations under section 5 of the Ontario Underground Infrastructure Notification Act. ON1Call has notified these members to ensure they are aware of your excavation. In this circumstance, should the member not respond, the excavator should contact the member directly to obtain their locates or request a status. ON1Call will not be provided with a locate status from the member regarding this request and therefore, cannot provide further information at this time. For locate status contact information please refer to our website.

#### You have a valid locate when...

- You have reviewed your locate request information for accuracy. UPDATE your request IMMEDIATELY if changes are needed and obtain a corrected locate request confirmation.

NOTE: Intersecting streets are often suggested by Ontario One Call's system, in some circumstances they may not reflect the closest intersecting streets to your excavation. You can change the intersecting streets before submitting the request by going through the "Review" page of your locate request, and editing any inaccurate information. Intersecting streets are for reference only, and unless you change the streets manually, you will not be asked to correct them if they are chosen by the system. If you don't agree with a street name, make sure to edit the request before you submit it, if you found a mistake after submitting the request, update your requests immediately on the web portal.

- You have obtained locates or clearances from all ON1Call members listed in this request before beginning your dig.

#### You've met your obligations when...

- You respect the marks and instructions provided by the locators and dig with care; the marks and locator instructions MUST MATCH. You must wait for responses from all members notified on your locate request before

beginning to dig..

- You have obtained any necessary permits from the municipality in which you are digging.
- You have made Ontario One Call aware if you have come across any new or unlisted infrastructure in the public right of way AND stopped digging to prevent damages while we review.
- You have arranged for locates for your private lines on your private property where applicable.

#### What does "Cleared" mean in the "Initial Status" section?

1. The information that you have provided about your dig will not affect that member's underground infrastructure and they have provided you with a clearance, if anything about your excavation changes, please ensure that you update your request immediately.

#### What are the images under "Map Selection"?

- 1. A drawing created by an excavator directly within Ontario One Call's Web request tool, this is expected to be an accurate rendition of the dig site, and it is the excavator's responsibility to ensure the location matches the information they provide under the 'Dig Location'; section OR;
- 2. A drawing created by an Ontario One Call agent, this drawing is based on a verbal description by phone of the area by the excavator. Agents may create drawings that are larger than the proposed dig to minimize risk of interpretation. It is the excavator's responsibility to review these map selections for accuracy. Changes can be made by the excavator through the Web request tool, to learn how visit www.ontarioonecall.ca.
- 3. All drawings dictate which members are notified.

# Promark telecon

#### Primary Locate Sheet

Request #2024016235

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A copy of this Primary Locate Sheet and Auxiliary Locate Sheet(s) must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.

Promark telecon	
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### Primary Locate Sheet

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Phone: 613-723-9888 Toll Free: 1-800-371-8866

Utilities □Bell • Gas □Hydro One □Rogers □ Zayo Request #016235 Date Located: Located: DVideotron □BHT □ Elexicon Energy 01/09/2024 mmiddigggg Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 0.5M N. OF S.FC OF PARKING LOT TO: S.BL 1315 RICHMOND RD. FROM: W.FC OF PARKING LOT TO: E.FC OF PARKING LOT Legend CAUTION: Hand dig within 1 M as measured horizontally from the field markings to avoi **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW Driveway DW --Manhole M/H Pedestal  $\bowtie$ O Buried CableTV -TV-Flush to Grade FTG Pedestal **Buried Service** BSW --N.BL **Buried Cable** -B-Conduit -C-Fiber Optic Cable -- FO --1315 Bell Hydro Service -- BH -Gas Valve S.BL M ᇑ Gas Service - GS -Gas Main — GM — Transformer Demarcation (DMD) Hydro -- H --PARKING LOT Hydro Primary - HP Hydro Secondary -- HS Catch Basin CB NO BURIED SENBRIDGE GAS NETWORK IN LOCATED AREA Sewer Manhole **(3**) Water Valve Hydrant  $\mathbf{x}$ S.FC Water Valve LOCATED Chamber Hydro / Bell Pole 0 AREA Railway End Cap (T) Traffic Manhole Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West w South Gas Material - Steel Plastic PE THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. - Copper CP Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine

operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.



OTTLocateFollowup@Promark-Telecon.ca

Phone: 613-723-9888 Toll Free: 1-800-371-8866

Utilities 

Bell 

Gas 

Hydro One 

Rogers 

Zayo Request #016235 Date Located: Located: DVideotron □BHT □ Elexicon Energy 01/09/2024 mmiddigggg Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 0.5M N. OF S.FC OF PARKING LOT TO: S.BL 1315 RICHMOND RD. FROM: W.FC OF PARKING LOT TO: E.FC OF PARKING LOT Legend CAUTION: Hand dig within 1 M as measured horizontally from the field markings to avoi **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW Driveway DW --Manhole M/H Pedestal  $\bowtie$ O Buried CableTV -TV-Flush to Grade FTG Pedestal **Buried Service** BSW --N.BL **Buried Cable** -B-Conduit -C-Fiber Optic Cable -- FO -1315 Bell Hydro Service -- BH Gas Valve S.BL M ᇑ Gas Service - GS -Gas Main — GM — Transformer Demarcation (DMD) Hydro -- H --PARKING LOT Hydro Primary - HP Hydro Secondary -- HS NO BURIED BELL NETWORK Catch Basin CB IN THE LOCATED AREA Sewer Manhole **(3**) Water Valve Hydrant  $\mathbf{x}$ Water Valve LOCATED Chamber Hydro / Bell Pole 0 AREA Railway End Cap (T) Traffic Manhole Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West w South Gas Material - Steel Plastic PE THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. - Copper CP Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine

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OTTLocateFollowup@Promark-Telecon.ca

Phone: 613-723-9888 Toll Free: 1-800-371-8866

Date Located: Request # Utilities Hydro Ottawa 2024016235 Located: 01/09/2024 mmiddigggg Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 0.5M N. OF S.FC OF PARKING LOT TO: S.BL 1315 RICHMOND RD. FROM: W.FC OF PARKING LOT TO: E.FC OF PARKING LOT Legend CAUTION: Hand dig within 1.5 M as measured horizontally from the field markings to avoid **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW Driveway DW --Manhole M/H Pedestal  $\bowtie$ O Buried CableTV -TV-Flush to Grade FTG Pedestal **Buried Service** BSW --N.BL **Buried Cable** -- B --Conduit -C-Fiber Optic Cable -- FO -1315 Bell Hydro Service -- BH -Gas Valve S.BL M ᇑ Gas Service - GS -Gas Main — GM — Transformer Demarcation (DMD) Hydro -- H --PARKING LOT Hydro Primary - HP Hydro Secondary -- HS NO BURIED HYDRO OTTAWA NETWORK Catch Basin CB IN THE LOCATED AREA Sewer Manhole **(3**) Water Valve Hydrant  $\mathbf{x}$ Water Valve LOCATED Chamber Hydro / Bell Pole 0 AREA Railway End Cap Traffic Manhole (T) Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West W. South THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine

operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.



OTTLocateFollowup@Promark-Telecon.ca

Phone: 613-723-9888 Toll Free: 1-800-371-8866

Location of underground infrastructures Utilities □Bell • Gas □Hydro One □Rogers □ Zayo Request #016235 Date Located: Located: DVideotron □BHT □ Elexicon Energy 01/09/2024 mmiddigggg Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 6.0M N. OF N.BL 1315 RICHMOND RD. TO: N.BL 1315 RICHMOND RD. FROM: 55.0M W. OF E.BL 1315 RICHMOND RD. TO: 10.0M W. OF E.BL 1315 RICHMOND RD. Legend CAUTION: Hand dig within 1 M as measured horizontally from the field markings to avoi **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW DW --Driveway Manhole M/H Pedestal  $\bowtie$ Buried CableTV -TV-Flush to Grade NO BURIED SENBRIDGE GAS NETWORK FTG Pedestal IN LOCATED AREA **Buried Service** BSW --**Buried Cable** -B-Conduit -C-1315 Fiber Optic Cable -- FO -Bell Hydro Service -- BH LOCATED -S.BL Gas Valve M Gas Service - GS -AREA Gas Main — GM — Transformer Demarcation (DMD) Hydro -- H --PARKING LOT Hydro Primary - HP Hydro Secondary -- HS Catch Basin CB Sewer Manhole **(3**) Water Valve Hydrant  $\mathbf{x}$ Water Valve Chamber Hydro / Bell Pole 0 Railway End Cap (T) Traffic Manhole Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West w South Gas Material - Steel Plastic PE THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. - Copper CP Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.



### **Auxiliary Locate Sheet**

OTTLocateFollowup@Promark-Telecon.ca

Phone: 613-723-9888 Toll Free: 1-800-371-8866

Utilities ●Bell □ Gas □ Hydro One □ Rogers □ Zayo Request #016235 Date Located: Located: DVideotron □BHT □ Elexicon Energy 01/09/2024 mmiddigggg Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 6.0M N. OF N.BL 1315 RICHMOND RD. TO: N.BL 1315 RICHMOND RD. FROM: 55.0M W. OF E.BL 1315 RICHMOND RD. TO: 10.0M W. OF E.BL 1315 RICHMOND RD. Legend CAUTION: Hand dig within 1 M as measured horizontally from the field markings to avoi **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW DW --Driveway Manhole M/H Pedestal  $\bowtie$ Buried CableTV -TV-Flush to Grade LOCATED FTG Pedestal **Buried Service** AREA BSW --**Buried Cable** -B-Conduit -C-1315 Fiber Optic Cable -- FO -Bell Hydro Service -- BH S.BL Gas Valve M ᇑ Gas Service - GS -Gas Main — GM — Transformer Demarcation (DMD) Hydro -- H --PARKING LOT Hydro Primary - HP Hydro Secondary -- HS Catch Basin CB Sewer Manhole **6** Water Valve Hydrant  $\mathbf{x}$ Water Valve Chamber Hydro / Bell Pole 0 Railway End Cap (T) Traffic Manhole Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West w South Gas Material - Steel Plastic PE THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. - Copper CP Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.

This form revised January 2023



### Auxiliary Locate Sheet

OTTLocateFollowup@Promark-Telecon.ca

Phone: 613-723-9888 Toll Free: 1-800-371-8866

Location of underground infrastructures Utilities | Hydro Ottawa Date Located: Request # 2024016235 Located: 01/09/2024 mmääääyyyy Number of Services marked: (Specify building/house numbers) N/A LOCATED AREA: EXCAVATOR SHALL NOT WORK OUTSIDE THE LOCATED AREA WITHOUT OBTAINING ANOTHER LOCATE FROM: 6.0M N. OF N.BL 1315 RICHMOND RD. TO: N.BL 1315 RICHMOND RD. FROM: 55.0M W. OF E.BL 1315 RICHMOND RD. TO: 10.0M W. OF E.BL 1315 RICHMOND RD. Legend CAUTION: Hand dig within 1.5 M as measured horizontally from the field markings to avoi **Building Line** -- BL -damaging the underground utilities. If you damage the plant, you may be held liable. Fence Line -FL-If you damage underground plant, contact the facility owner immediately. Face of Curb -- FC --Depth varies and MUST be verified by hand diaging or vacuum excavation. Asphalt Edge -- AE --LOCATED AREA HAS BEEN ALTERED AS PER: N/A Sidewalk SW DW --Driveway Manhole M/H Pedestal M Buried CableTV -TV-Flush to Grade LOCATED FTG Pedestal **Buried Service** AREA BSW --**Buried Cable** -- B --Conduit -C-1315 Fiber Optic Cable -- FO --Bell Hydro Service -- BH -Direct buried S.BL Gas Valve M conduits Gas Service - GS -륪 Gas Main - GM -Concrete encased Transformer PARKING LOT Demarcation (DMD) \*\*\*Danger - Do Not Proceed\*\*\* Hydro -- H --Buried high voltages cables located within - HP the area. You must send Locate through Hydro Primary hydroottawa.com/locates Hydro Secondary -- HS If you have questions about the online form, Catch Basin CB please call 613-738-6418. For urgent matters Sewer Manhole **(3**) involving power outages and after hours emergencies, call 613-738-6404 Water Valve Hydrant  $\mathbf{x}$ Water Valve Chamber Hydro / Bell Pole 0 Railway End Cap Traffic Manhole ൱ Street Light Cable - SL RICHMOND RD. Street Light North N. East E. West W. South THIS FORM VALID ONLY WITH Primary Locate Form. This sketch is not to scale. Any privately owned services within the located area have not been marked- check with service/property owner. A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine

operator during work operations. If sketch and markings do not coincide, the Excavator must obtain a new locate.

This form revised January 2023



#### ROGERS Auxiliary Locate Sheet

ON 1 Call Ticket #:

2024016235

Ph: (905)479-5674 Email: ontario@canadianlocators.com

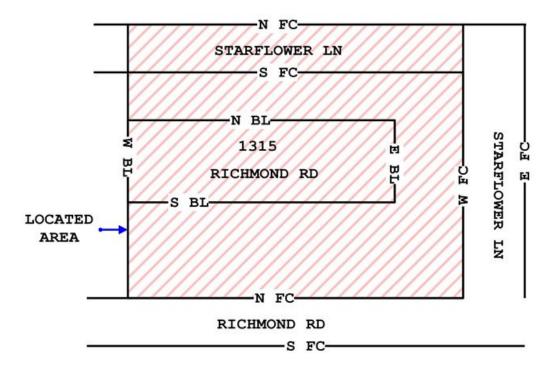
Utilities Marked :  Coaxial Plant	m	Fibre Optics Plant	m				
Number of Services N	Marked: (specify b	building/house numbers)					
NA							
	LOCATED	AREA CONTAINS ALL K	NOWN F	ROGERS INFRA	STRUCT	URE	
FROM: N FC OF STARFLO	OWER LN		TO: N FC OF	RICHMOND RD			_
FROM: W BL OF 1315 RI	CHMOND RD		TO: W FC OF	STARFLOSER LN			

Hand dig within 1 meter or 3.28 feet as measured horizontally from the field markings to avoid damaging the underground utilities. If you damage the utilities, you may be held liable. For all cut cable, please call: 1.800-265-9601 immediately!

Depth of cable plant varies and MUST be determined by hand digging or vacuum excavation.

LOCATED AREA ALTERED AS PER:

#### ROGERS CABLES CLEAR IN LOCATED AREA



Sketch not drawn to scale LEGEND: Road Edge - RE -Property Line - PL -Transformer TFR Streetlight (SL) Tree Fibre Optic - FO Bldg Line - BL -Pedestal X Lot Line - LL -Manhole (%) Hand Hole HH Cable / T.V. - CATV -Pole (X) Face of Curb - FC -North Direction N Catch Basin CB Hydrant (H) Conduit - C Valve M Driveway - DW -Railway = Sidewalk SW North N East E Fence Line - FL -Vault V South S West W Work Area Measurement -> --

A copy of this Auxiliary Locate Sheet(s) and the Primary Locate Sheet must be on site and in the hands of the machine operator during work operations. Should sketch and markings not coincide, a new locate MUST be obtained.



(905)479-5674 Email: ontario@canadianlocators.com

#### ROGERS Primary Locate Sheet

ON 1 Call Ticket #:

2024016235

Contractor / Excavator : Contact Name : LOPERS & ASSOCIATES LUKE LOPERS Tel: Alt. Phone: Email: 613-327-9073 613-327-9073 luke@lopers.ca Received Date : Excavation Date : Revised Excavation Date: Type of Work: Jan 4 2024 Jan 11 2024 ENVIRONMENTAL City / Municipality : Locate Address : 1299-1315 RICHMOND RD OTTAWA, ONTARIO Nearest Intersection: STARFLOWER LANE & SIR JOHN A MACDONALD PKWY Method of Field Marking: Paint Stakes Flags Caller's Remarks (Additional Info): THIS REQUEST IS FOR A RE-MARK OF TICKET #20234416156 PREVIOUS REQUEST WILL EXPIRE PRIOR TO COMPLETION OF THE DIGGING. DRILLING MONITORING WELLS FOR ENVIRONMENTAL DELINEATION PURPOSES. PLEASE LOCATE ENTIRE SITE AND SECTION OF STARFLOWER LANE TO THE NORTH OF THE BUILDING; WE ARE APPLYING FOR A ROAD CUT PERMIT FOR DRILLING ON THE RIGHT OF WAY., TOOLS USED: [Machine Dig], PREMARKED VALUES: [Area Not Pre-Marked], PROPERTY TYPES: [Private Property], [Public Property], SITE MEETING: No, PROJECT NUMBER: LOP23 Utilities Marked: Does this locate have multiple work areas which are greater than 100 m apart? Coaxial Plant ☐ Fibre Optics Plant ☐ Yes How many? No. Total Length: Total Length: m m Field sketch and Located Area shown on auxiliary locate sheet(s) This locate is for ROGERS plant / infrastructure ONLY! Apply sticker here if required CAUTION: Locate is VOID after 90 days! CAUTION: Hand dig within one (1) meter or 3.28 feet of markings. The Located Area defined on the Auxiliary Locate Sheet(s) contains all known ROGERS infrastructure. Any changes to excavation area or nature of work requires a new locate. For all cut cable, please call: Locator's Comments: 1-800-265-9501 ROGERS CABLES CLEAR IN LOCATED AREA Locator's Name: (Please Print) Jason Bisier Date: Start Time: End Time: 2:30 PM Jan 8 2024 12:30 PM A copy of this Primary Locate Sheet and Auxiliary Locate Sheet(s) must be on site and in the hands of the machine operator during work operations. Should sketch and markings not coincide, a new locate MUST be obtained.

## Ontario One Call TF

## City of Ottawa Street Light Locate



NOTICE OF INTENT TO EXCAVATE Header Code: PROJECT WORK

Request Type: NORMAL

Ticket No: 2024016235

Original Call Date: 1/4/2024 4:20:00 PM

Work To Begin Date: 01/11/2024

Company: LOPERS & ASSOCIATES

Contact Name: LUKE LOPERS Pager:

Contact Phone: (613)-327-9073 ext. Cell: (613)-327-9073 ext.

Fax:

Alternate Contact: LUKE LOPERS Alt. Phone: (613)-327-9073 ext.

Place: OTTAWA

Street: 1299, RICHMOND RD TO 1315

Nearest Intersecting Street: STARFLOWER LANE

Second Intersecting Street: SIR JOHN A MACDONALD PKWY

Subdivision:

Additional Dig Information: Depth in M. 0

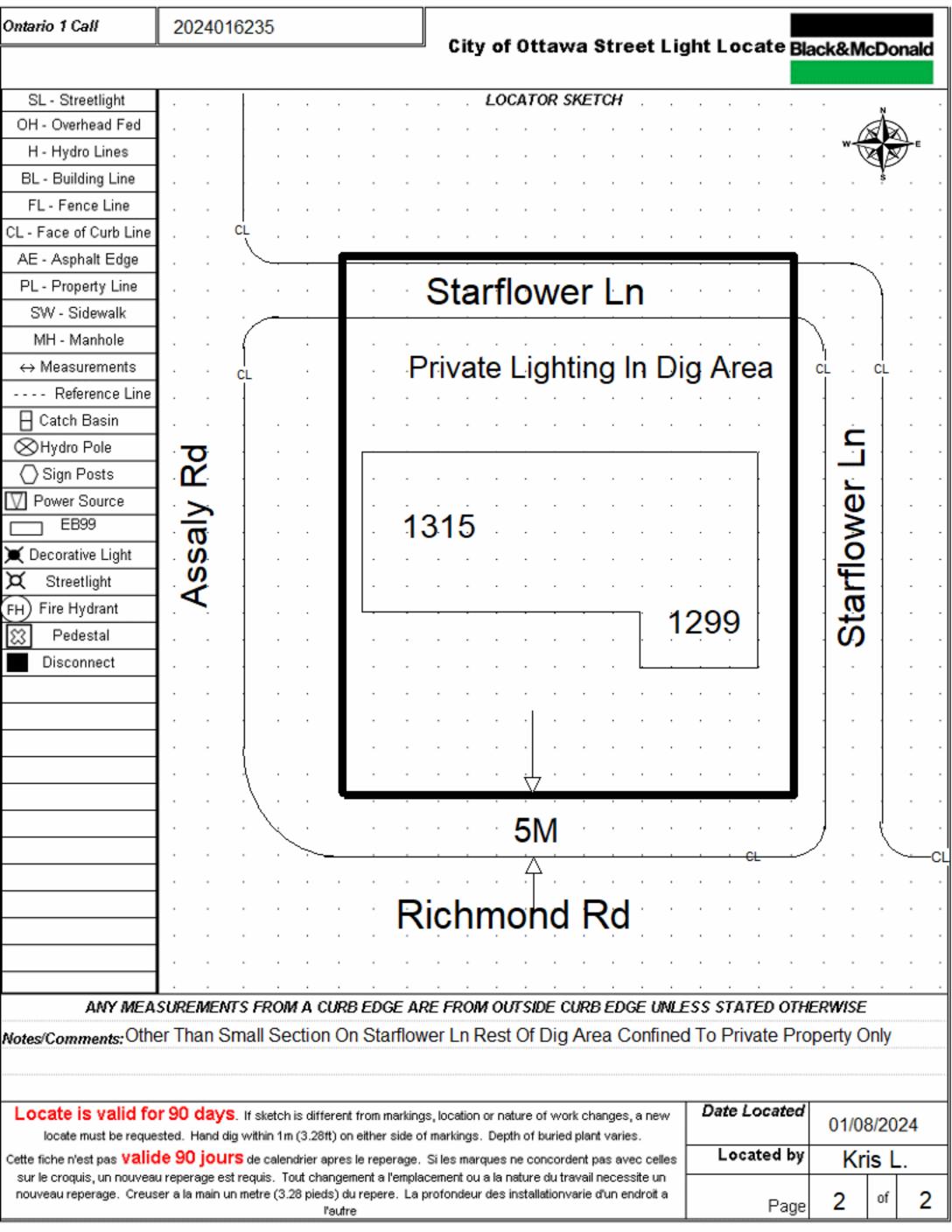
MAP REF.: 613 828 PRIVATE PROPERTY, PUBLIC PROPERTY SITE MEETING: NO PERMIT #. NO CIVIC#. 1299,1315 THIS REQUEST IS FOR A RE-MARK OF TICKET #20234416156 PREVIOUS REQUEST WILL EXPIRE PRIOR TO COMPLETION OF THE DIGGING. DRILLING MONITORING WELLS FOR ENVIRONMENTAL DELINEATION PURPOSES. PLEASE LOCATE ENTIRE SITE AND SECTION OF STARFLOWER LANE TO THE NORTH OF THE BUILDING; WE ARE APPLYING FOR A ROAD CUT PERMIT FOR DRILLING ON THE RIGHT OF WAY.

WO/JOB#:

Type Of Work: ENVIRONMENTAL

### Remarks:

HYDRO OTTAWA (HOT1), HOT1, NOTIFICATION SENT, PROMARK FOR ENBRIDGE GAS (ENOE01), ENOE01, NOTIFICATION SENT, CITY OF OTTAWA WATER/SEWER (OTWAWS01), OTWAWS01, NOTIFICATION SENT, BLACK AND MC DONALD FOR CITY OF OTTAWA STREET LIGHTS (OTWASL01), OTWASL01, NOTIFICATION SENT, CLI FOR ROGERS (ROGOTT01), ROGOTT01, NOTIFICATION SENT, CITY OF OTTAWA TRAFFIC SIGNALS (OTWATS01), OTWATS01, NOTIFICATION SENT,



 From:
 Forbes, Terry

 To:
 Luke Lopers

 Subject:
 2024016235

**Date:** January 5, 2024 7:40:55 AM

\_

This Ontario One Ticket is \*\*Clear of Underground City of Ottawa / Ville d'Ottawa Traffic Lights Infrastucture in Proposed Work Area \*\*

"Locates are Valide for 90 Days"

Ce billet Ontario One est \*\* **libre** de toute infrastructure souterraine de la ville d'Ottawa pour les feux de signalisation dans la zone de travail proposée \*\*

"Les locataires sont sont valides pendant 90 jours"

Terry Forbes City of Ottawa Traffic Plant Investigator/Locator Cell # 613 223 7710

,

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

•



#### Water Service : S0942064000 Location Address: 1299 To RICHMOND RD City: 00 Qualifier: XStreet1: Dist: Ward: Ward 7 STARFLOWER LANE Unit: XStreet2: **ASSALY RD** Block: S Plan: **Sketch Information** Looking: unknown North Degree: Facing: The: front of building Start at the: left corner Move straight out: 14.6 m 14.6 m Then go: For: right 9.6 m Other Structure: ID: Drawing Code: 9.6 m **Attributes** Ownership **PUBLIC** Install Date Status **OPERATING** Billing Account Frost Warning **Condition Rating** Tracer? **Service Characteristics** Located On: Depth(m) Diameter(mm) Material Public(At Main) 0 40 CO Private(At Post) 0

Joint Type

Surface

Soil

Backfill

### Comments

Bedding

Length

Insulation Type

0



#### Water Service : S0942072000 Location Address: 1315 To RICHMOND RD City: 00 Qualifier: XStreet1: Dist: Ward: Ward 7 STARFLOWER LANE Unit: XStreet2: **ASSALY RD** Block: S Plan: **Sketch Information** Looking: unknown North Degree: Facing: The: front of building Start at the: left corner Move straight out: 19.8 m 19.8 m Then go: For: 28 m right Other Structure: ID: Drawing Code: 28 m **Attributes** Ownership **PUBLIC** Install Date Status **OPERATING** Billing Account Frost Warning **Condition Rating** Tracer? **Service Characteristics** Located On: Depth(m) Diameter(mm) Material Public(At Main) 0 51 CO Private(At Post) 0

Joint Type

Surface

Soil

Backfill

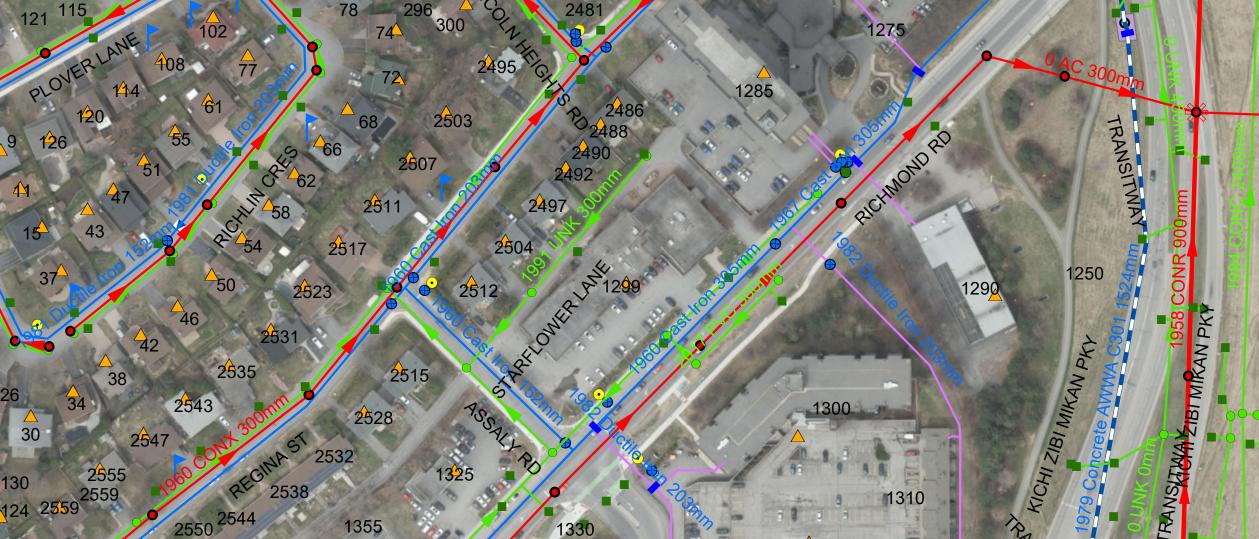
### Comments

Bedding

Length

**Insulation Type** 

0





#### DISCLAIMER

The excavator must have a copy of this locate on the job site during excavation.

**Locate area:** The excavator must not work outside the area indicated in the location of work or located area in the diagram without an updated locate. Stakes or markings may disappear or be displaced. If any delays occur in acting on the stakeout information, or if markings become unclear, a new locate must be obtained.

**Locating the plant**: The plant location information provided is only an estimate. Depth of underground plant varies and the exact location must be determined by hand digging prior to excavation with mechanical equipment.

**Warning**: Do not use mechanical equipment within one (1) metre of the estimated location of the water or sewer plant. If the plant is greater than or equal to 600mm, mechanical equipment must not be used within three (3) meters.

**Digging around exposed plants:** Must do any further excavation within 0.3 metres of an exposed water or sewer plant by hand.

Contractors are to perform all work in accordance with applicable City of Ottawa By-laws and any applicable federal and provincial legislation or regulations, including but not limited to the *Public Utilities Act, R.S.O. 1990,* 

c. P.52, s. 56(1); Ontario Regulation 210/01 under the Technical Safety Standards Act, 2000, S.O. 2000 c. 16; Ontario Regulation 213/91 under the Occupational Health and Safety Act, R.S.O. 1990, c. O.1.

### **AVIS DE NON-RESPONSABILITÉ**

L'opérateur de l'excavatrice doit avoir en sa possession ce rapport de localisation pendant l'excavation.

**Zone de localisation**: l'opérateur de l'excavatrice ne doit pas creuser en dehors de la zone indiquée sur l'ordre de travail ni à l'extérieur de la zone indiquée sur le diagramme, à moins d'avoir en sa possession un rapport de localisation actualisé. Les piquets ou les marques peuvent disparaître ou être déplacés. S'il y a un retard à intervenir sur la base des données de surveillance ou si le marquage devient imprécis, il faut obtenir un nouveau rapport de localisation.

Déterminer l'emplacement des conduites : les renseignements sur l'emplacement des conduites sont approximatifs. Pour déterminer l'emplacement et la profondeur, on doit creuser manuellement avant d'utiliser une excavatrice.

**Avertissement** : n'utilisez pas d'équipement mécanique [excavatrice] à moins d'un [1] mètre de l'emplacement supposé de la conduite d'eau ou d'égout. Si la conduite compte plus de 406 mm de diamètre, aucun équipement mécanique ne doit être utilisé à moins [3] de trois mètres de celle-ci.

Creuser autour des conduites exposées : toute excavation à moins de 0,3 m d'une conduite d'eau ou d'égout doit se faire manuellement.

Les entrepreneurs doivent exécuter tous les travaux conformément aux règlements de la Ville d'Ottawa et aux lois et règlements fédéraux ou provinciaux applicables, y compris, mais sans s'y limiter, la *Loi sur les services* 

publics, L.R.O. 1990, chap. P.52, art. 56[1]; le Règlement 210/01 de l'Ontario en vertu de la Loi de 2000 sur les normes techniques et la sécurité, L.O. 2000, chap. 16; et le Règlement 213/91 de l'Ontario en vertu de la Loi sur la santé et la sécurité au travail L.R.O. 1990, chap. O.1.



2022

Dear Excavator.

### **Re: Marking Preservation**

Your City of Ottawa Water & Sewer locate request has been completed based on the information you provided Ontario One Call. The locate is valid for 90 days from the date indicated on the City of Ottawa Locate Report – Water and Sewer Utilities. Please be aware it's the requestors responsibility to contact Ontario One Call for a new locate if any changes are known, suspected or for a relocate if excavation continues beyond 90 days.

The City of Ottawa expects excavators to protect and preserve the paint marks and flags placed at the time of the original locate ticket. If markings are removed due to weather or excavation work, the excavator is expected to recreate the markings based on the tie-in measurements provided on the original locate ticket report. Valid locate documentation is always required to be on site.

This is in accordance with the below section from the Canadian Common Ground Alliance Best Practices handbook version 3.0 – October 2018 (p. 55)

**4-16: Marking Preservation Practice Statement:** The excavator, where practical, protects and preserves the staking, marking, or other designations for underground facilities until no longer required for proper and safe excavation. The excavator stops excavating and notifies the notification service for re-marks if any facility mark is removed or no longer visible.

If an excavator would like the City of Ottawa to refresh the markings, please contact Ontario One Call to request a Remark and reference the original locate ticket number.

Thank you,

City of Ottawa, Water and Sewer Locates

## Enbridge Excavator Checklist



## Prior to site arrival Ensure you have received all locate sheets (total of package is found on page 1). If required, print additional copies of locate package for crews at various locations on site. If required, ensure all clearances have been received, printed and included in locate package. Upon site arrival Review the sketch and the located area limits. Do you have what was requested? If not, do not excavate outside what was issued until the locate service provider has been contacted and the locate corrected. Review the markings on site, is the entire plant identified on the locate form marked in the field? If not, contact the locate service provider. Ensure a plan is in place to protect and preserve the original yellow paint markings. White paint can be used to preserve and maintain the markings but should be placed beside or at the top or bottom of the original markings, ensuring not to replace the vellow paint. Prior to excavation Ensure appropriate safeguards to expose all marked gas lines will be used. Hand dig or hydro excavation method must be used within 1 m (3.3 ft) (or as directed by Enbridge Gas Inc.) of any marked lines. If hydro-excavation will be used, ensure equipment is operated per Enbridge requirements. If support of gas lines or trench protection will be required through the course of excavation, ensuring approved methods and materials are readily available. **During Excavation** Ensure no mechanical equipment is used within 1 m (3.3 ft) (or as directed by Enbridge Gas Inc.) of locate marks. Once gas lines are fully exposed (top, sides, bottom) ensure no mechanical equipment is used within 0.3 m (1 ft) (or greater if directed by Enbridge) of exposed pipe. Ensure all locate marks are verified. Expose per locate mark. Do not assume a gas line found away from the mark is what the locator was actually marking; you may have found an abandoned line or a missed line. Ensure all exposed gas identified in your excavation match the description on the auxiliary sheet of your locate (i.e., size and material). Any discrepancies should be reported to the locate service provider.

Additional information for Excavators can be found in the

Enbridge Third-Party Requirements in the Vicinity of Natural Gas Facilities Standard

enbridgegas.com/~/media/Extranet-Pages/Safety/Before-you-dig/Third-Party-Requirements-in-the-Vicinity-of-Natural-Gas-Facilities





April 06th, 2022

To all Excavators:

Bell locates are valid for the life of the excavation project and will not automatically be relocated every 90days.

Please note the following for the above apply:

- A) Construction within the located area begins within 90 days of the "locate completed date" on the original ticket.
- B) The construction company named on the locate remains active on the site.

Bell expects excavators will protect and preserve the paint marks put down on the original locate ticket. If markings are removed due to weather or excavation work, the excavator is expected to recreate the markings based on the tie-in measurements provided on the original locate ticket.

If an excavator would like their, markings freshened up, they can contact **Promark** (Bell Canada Locate Service Provider in this area) directly to arrange for them to place a fresh markings on the ground. **However, this will be at the excavator's expense.** 

Promark can be reached at:

Toronto – 905-474-1114 toll free – 1-888-883-6273

Ottawa - 613-723-9888 toll free - 1-800-371-8866

The locate will be considered officially expired one day after the final day of construction.

Best regards



Date: Nov 22/23

# Locate Sketch

(not to scale)

Customer Lopers + Associates

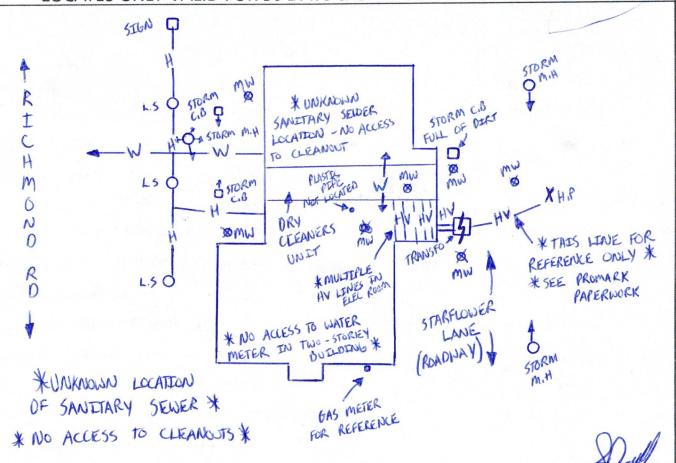
Property Description, Address, City, Work Area: MONITORING WELLS

1299 Richmond Rd

Onsite Contact LUKE

Attended Locate (Y) N As Built or Site Plan Provided (Y) (N)

## LOCATES ONLY VALID FOR 30 DAYS & ONLY FOR WORK AREA INDICATED



### **CAUTION: HAND DIG WITHIN 1.5 METERS OF ALL UTILITY MARKINGS**

MW = PROPOSED MONITORING WELL

Legend of Located Utilities

-C- Cable, -H- Hydro, -G- Gas, -FO- Fibre Optic, -B- Phone (Bell), -W- Water, -S- Sewer, -ST- Storm Sewer, -E- Electrical

BL = Building Line, CB = Catch Basin, CL = Curb Line, FH = Fire Hydrant, FL = Fence Line

MH = Man Hole, LS = Light Standard, WV = Water Valve, X = Hydro Pole

# Appendix C

# Borehole Logs

Lopers & Associates 30 Lansfield Way Ottawa, Ontario K2G3V8

	c c c c		000 lno	COMPLE	EIEU <u>24-1-7</u>	GROUND ELEVATION 69.42 m HOLE SIZE 5 cm			
JKILLIN			OGS Inc.	on with Trin	and	_ GROUND WATER LEVELS:			
OGGE	GWEI	I Lopore	iuai mstalialio	OHECKE	ED BY D. Plenderleith	AFTER DRILLING 3.81 m / Ele	ev 65.61 m		
					e of Fire Hydrant SW of P	– Property			
					•	,			
DEPTH (m)	TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG		TERIAL DESCRIPTION		WELL DIAGRAM  Casing Top Elev: 69.32 (m)	
				0.13			69.29 69.19	·[ ,	
$\uparrow$	1			0	Oldar Oldric Gravel.	vel. Brown, compact, moist.	03.13		
1X	SS 1		Vapor = 10		SS1 - Laboratory An	alysis for VOCs, Metals& Inorganics	}		
+	}——			0.6	<u> </u>	e Sand. Brown and grey, firm, moist.	68.81		
1	SS 2		Vapor = 20		Clayey Silt Will Softe	e Sanu. Brown and grey, mm, moist.			
	SS 3		Vapor = 25		SS3 - Laboratory An	alysis for Grain size.			
2	SS 4		Vapor = 15	2.44	4		66.98		
					Silty Clay with Sand.	Grey, soft, moist to wet.	·		
3	SS 5		Vapor = 35						
	SS 6		Vapor = 15						
4	SS 7		Vapor = 23		▼ SS7 - Laboratory Ar	nalysis for VOCs, Grain size.		Groundwater Let 3.81 m BGS	
	SS 8		Vapor = 0		Wet @ 4.5 m.				
5	SS 9		Vapor = 25	5.49	Inorganics & Duplica	alysis for PHCs, VOCs, Metals& tte Sample for VOCs	63.93		

Lopers & Associates 30 Lansfield Way Ottawa, Ontario K2G3V8

ROJECT NUM	BER LOP23-0	)29B			PROJECT LOCATION 1299-13	15 Richmo	ond road	
ATE STARTE	<b>D</b> 24-2-5		COMPLI	<b>ETED</b> 24-2-5	GROUND ELEVATION 69.43 m	HOL	E SIZE	5 cm
	TRACTOR O							
					▼ AFTER DRILLING 3.99 m / Elev			
OGGED BY	I Loners		CHECK	ED BY D. Plenderleith	✓ AFTER DRILLING 3.99 m / Elev	65.44 m		
· ·				e of Fire Hydrant SW of Pro	operty			
OTES SILE D			o o Spiridi	e of Fire Hydrant SVV of Fir	operty			
~		ENVIRONMENTAL DATA						
SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	¥ĕ	GRAPHIC LOG	NAA T	EDIAL DECODIDATION		10/	ELL DIAGRAM
	BLC VOUC VA	S A	F.M.	IVIAT	ERIAL DESCRIPTION		VV	ELL DIAGRAM
00 2	02	<u>}</u>	ا ق					
			Section 1				Casing Top	Elev: 69.37 (m)
			0.2			69.33 69.20	n red	
			٥. · · · ·		. Brown, compact, dry.			
- √  ss	\/2	por = 0	$[\circ : \bigcirc]$	•	•			
- \  1	va	PO1 - 0	):   Ø :	SS1 - Laboratory Ana & Inorganics	lysis for PHCs/BTEXs, PAHs and Metal	s		
_/ \			0.8	3		68.60		
1					Sand. Grey, stiff, moist.			
+ 1								
1//								
	Va	por = 0						
2 /\	Va	ροι – υ						
- \   SS   3								
	Va	por = 0						
_		PG. 0						
				•		00.40		
3	Va	por = 5			nd Gravel. Grey and brown, compact,	66.43	7 V 7	
4/ \		•		moist.	, , , , ,			
						ļ:		
V ss		ļ						
- 5	Va	por = 5						
4//		ļ						
4       ss				$ar{ar{\Lambda}}$				Croundwater Law
	Vap	por = 10		=				Groundwater Lev 3.99 m BGS
-				W-+ O 4 05				
4/ /				Wet @ 4.25 m				
				SS7 - Laboratory Ana	lysis for PHCs/BTEXs			
7	Var	por = 15		22. Laboratory Aria	,			
-/						::		
5								
	Var	por = 15						
<b> </b>	Į va,	70. 10						
-/ \								
		ŀ	5.5	9		63.84		

Lopers & Associates 30 Lansfield Way Ottawa, Ontario K2G3V8

	MBER LO		COMP: ET	TED 24.2.24	PROJECT LOCATION 1299-13				
					GROUND ELEVATION 69.08 m HOLE SIZE 20.32 cm				
		ck Mounted (							
				<b>DBY</b> D. Plenderleith	AFTER DRILLING 3.53 m / Elev	/ 65.55 m			
				of Fire Hydrant SW of Pr	onerty				
<u> </u>	Datum - 71		p or opinale	or rice riyurant ovv or r	operty				
(m) SAMPLE TYPE NI MABEB	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG		ERIAL DESCRIPTION		WELL DIAGRAM  Casing Top Elev: 69.01 (m)		
SS 1	4-5-6- 6/0.06	Vapor = 10	0.10	Asphalt Silty Sand and Gravel SS1 - Laboratory Ana	. Brown and grey, loose, dry.	68.98			
1 SS 2	1-2-2-1 (4)	Vapor = 0	0.76	Clayey Silt with some	Sand. Asphalt in tip no recovery.	68.32			
2   SS 3	1-1-1-1 (2)	Vapor = 0	1.50	Silty Clay with Sand. 4.11 BGS.	Grey and brown, soft, moist to wet @	67.58			
3	1-2-2-2 (4)	Vapor = 10		SS6 - Laboratory Ana	lysis for VOCs				
SS 5	1-2-1-3	Vapor = 10		Ā			Groundwater Le 3.53 m BGS		
4 SS 6	1-1-1-2	Vapor = 5							
5 SS 7	1-2-1-2	Vapor = 0							
-\ SS 8	0-1-0-1	Vapor = 0							

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Ottawa Ontario K2G3V8

CLIEN	<b>T</b> Brigil					PROJECT NAME Phase Two	Environm	ental Site Assessment		
		BER LOP	23-029B			PROJECT LOCATION 1299-13				
				COMPI	FTFD 24-2-21					
			OGS Inc.		<u> </u>	GROUND ELEVATION 69.05 m HOLE SIZE 20.32 cm  GROUND WATER LEVELS:				
			ck Mounted C							
					KED BY _ D. Plenderleith	▼ AFTER DRILLING 3.63 m / Ele	v 65.42 m	<u>n</u>		
					dle of Fire Hydrant SW of Pro	pperty				
				J 0. 0p		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1		
DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG		ERIAL DESCRIPTION		WELL DIAGRAM  Casing Top Elev: 68.98 (m)		
· -	SS 1	25-50-50- 50/0.06	Vapor = 15		·	Brown, compact, dry.	68.95			
	SS 2	2-1-2-2 (3)	Vapor = 20		Sandy Silt with trace g moist. SS2 - Laboratory Anal	ravel and clay. Brown and grey, soft, ysis for VOCs	68.29			
2	SS 3	2-1-2-2 (3)	Vapor = 15		.29		66.76			
3	SS 4	2-5-3-3 (8)	Vapor = 10		Clayey Silt with some moist.	Sand and Gravel. Brown, compact,				
-	SS 5	1-2-4-2 (6)	Vapor = 10	3	Silty Clay with Sand. E	Brown, soft, moist.	66.00	Groundwater Leve		
4 -	SS 6	1-1-2-2 (3)	Vapor = 5							
5	SS 7	2-1-4-2 (5)	Vapor = 5							
6	SS 8	1-0-1-0 (1)	Vapor = 15		SS8 - Laboratory Anal	ysis for VOCs				
				<i>[/////</i> 6.	.06	tom of hole at 6.06 m.	62.99	100 A-00 A		

Lopers & Associates 30 Lansfield Way Ottawa, Ontario K2G3V8

DRILL	ING C	ONTRAC	TOR _	OGS Inc.			GROUND ELEVATION 69.17 m HOLE SIZE 20 GROUND WATER LEVELS:			20.32 cm
DRILLING METHOD _Track Mounted CME 45 LOGGED BY _L. Lopers CHECKED BY _D. Plenderleith  NOTES _Site Datum = 71.02 mASL Top of Spindle of Fire Hydrant SW of Property							v 65.20 m	l .		
DEPTH (m)	SAMPLE TYPE	BLOW	(N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MA	TERIAL DESCRIPTION			ELL DIAGRAM  DELEV: 69.13 (m)
-	s		0.06	Vapor = 0		SS1 - Laboratory An PHCs/BTEXs, PCBs		69.07 68.45		
1 - -	S			Vapor = 0		Clayey Silt with som	e Sand. Brown and grey, soft, moist.			
2	S			Vapor = 0						
3	S			Vapor = 0						
- - -	S	.		Vapor = 0						Groundwater Le 3.34 m BGS
4	S	S 1-2-	-1-2	Vapor = 0		Ā				
- 5 -	s			Vapor = 0		PHC/BTEXs, PČBs.	alysis for Metals & Inorganics, PAHs,			
- - 6	S 8	S 0-0-		Vapor = 0		5.33 Silty Clay with Sand.	Grey, soupy soft, wet.	63.84		

Lopers & Associates 30 Lansfield Way Ottawa, Ontario K2G3V8

PROJE	CT NUM	BER LOP	23-029B			PROJECT LOCATION 1299-1315 Richmond road			
DATE	STARTE	D 24-2-22	2	COM	PLETED 24-2-22	GROUND ELEVATION 69.13 m	HOLE SIZE 20.32 cm		
DRILL	ING CON	TRACTOR	OGS Inc.			GROUND WATER LEVELS:			
DRILL	ING MET	HOD Trac	k Mounted C	ME 45	<u> </u>	AFTER DRILLING			
LOGG	ED BY _	L. Lopers		CHE	CKED BY D. Plenderleith	7.1 TERESTATE			
NOTES	Site D	atum = 71.	02 mASL Top	of Sp	ndle of Fire Hydrant SW of Pro	pperty			
DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATE	ERIAL DESCRIPTION	WELL DIAGRAM		
_					<sub>0.10</sub> Asphalt.		69.03		
0.5	SS 1	2-1-3- 2/0.06	Vapor = 5		Sandy Silt with trace g compact, moist.	ravel and clay. Brown and grey,			
1.0 - - - - 1.5	SS 2	2-3-2-3 (5)	Vapor = 0		SS1 - Laboratory Anal Inorganics	ysis for PHCs/BTEXs, PAHs, Metals &			
- - - 2.0	SS 3	2-2-3-6 (5)	Vapor = 5						
-					2.29		66.84		
2.5	SS 4	3-2-2-2 (4)	Vapor = 10		Silty Sand. Brown, co	mpact, moist to wet. ysis for PHCs/BTEXs, PAHs, , Metals &			
3.0	SS 5	1-2-1-1 (3)	Vapor = 0		3.66		65.47		
						tom of hole at 3.66 m.			

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30 Lansfield Way
Ottawa, Optario, K2G3V8

ROJECT NUM	BER LOF	P23-029B			PROJECT LOCATION 1299-1315	PROJECT LOCATION 1299-1315 Richmond road			
			COM	PLETED 24-2-22	GROUND ELEVATION 69.3 m				
ORILLING CON									
ORILLING MET					-				
				CKED BY D. Plenderleith	AFTER DRILLING				
NOTES Site D	atum = 71.	02 mASL Top	of Spi	ndle of Fire Hydrant SW of Pro	perty				
DEPTH (m) SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATE	RIAL DESCRIPTION		WELL DIAGRAM		
SAN NUN	S COL	ENVIRO D,	GR/ L						
				<sub>0.10</sub> Asphalt.		69.20			
4//				Silty Sand and gravel fi	II. Grey, compact , dry				
-∭ ss	10-6-4-								
0.5	4/0.06	\/	, O						
		Vapor = 0		SS1 - Laboratory Analy	rsis for PHCs/BTEXs, PAHs, , Metals &				
		1		Inorganics					
		1		0.76 Silty Sand. Brown, con	npact. moist.	68.54			
4\ /				zy Sana. Brown, con					
1.0   SS	2-3-4-6								
$-\left  \begin{array}{c} \\ \\ \end{array} \right  \left  \begin{array}{c} \\ \\ 2 \end{array} \right $	(7)	Vapor = 10							
- / \									
1		1							
1.5				1.52		67.78			
		1	17,19		avel and clay. Brown, firm, moist.				
4\/									
-\   ss	3-4-5-6	Vapor = 0	127						
2.0	(9)		1						
1		-							
]		1	000	2.29		67.01			
1/ /				Silty Clay with Sand. Br	rown, compact, moist.				
2.5	000=	Vapor = 5							
	3-3-9-5 (12)	vapoi – 3							
- /\	. ,								
$\forall \  $									
3.0		1							
		-							
]\									
\  <sub>ee</sub>	1-2-2-1								
-	(4)	Vapor = 0		SS5 - Laboratory Analy	sis for PHCs/BTEXs, Metals &				
3.5				Inorganics					
$\dashv$ $\lor$				3.66		65.64			
				Botto	om of hole at 3.66 m.				

9 Auriga Drive, Ottawa, Ontario K2E 7T9

**SOIL PROFILE AND TEST DATA** 

Geotechnical Investigation Proposed Mixed-Use High-Rise Development 1299 Richmond Road, Ottawa, Ontario

**DATUM** Geodetic FILE NO. **PG6598 REMARKS** HOLE NO. BORINGS BY CME-55 Low Clearance Drill **BH 1-23 DATE** March 13, 2023 **SAMPLE** Pen. Resist. Blows/0.3m Monitoring Well Construction PLOT **DEPTH** ELEV. SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY VALUE STRATA NUMBER TYPE Water Content % N o v **GROUND SURFACE** 80 20 0+69.32Asphaltic concrete 0.13 1 FILL: Grey crushed stone, some 0.69 SS 2 100 9 1+68.32SS 3 100 5 0 Loose, brown SANDY SILT, trace to 2+67.32some clay SS 4 100 5 2.97 3+66.32SS 5 100 3 4+65.32SS 6 100 5 Very stiff to stiff, brown SILTY CLÁY, trace sand seams O 7 SS 2 100 5 + 64.32SS 8 100 1 Ó 6.02 6+63.32SS 9 5 0 25 7+62.32SS 10 100 3 0 SS 11 17 4 8+61.32GLACIAL TILL: Grey silty clay with sand, gravel, cobbles and boulders G 12 0 9+60.32SS 13 33 3 0 10+59.32SS 14 3 0 SS 11.13 15 100 4 11 + 58.32SS 16 40 84 0 **GLACIAL TILL:** Dense to very 12+57.32dense, brown silty sand to sandy silt, S 17 50+ 67 some clay, gravel, cobbles and boulders × SS 50+ 18 50 13+56.32 13.26 ^^ End of Borehole Practical refusal to augering at 13.26m depth. (GWL @ 3.79m - March 23, 2023) 20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

9 Auriga Drive, Ottawa, Ontario K2E 7T9

**SOIL PROFILE AND TEST DATA** 

Geotechnical Investigation Proposed Mixed-Use High-Rise Development 1299 Richmond Road, Ottawa, Ontario

**DATUM** Geodetic FILE NO. **PG6598 REMARKS** HOLE NO. **BH 2-23** BORINGS BY CME-55 Low Clearance Drill **DATE** March 13, 2023 **SAMPLE** Pen. Resist. Blows/0.3m Monitoring Well Construction PLOT **DEPTH** ELEV. SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY VALUE STRATA NUMBER TYPE Water Content % N o v **GROUND SURFACE** 80 20 0+69.06Asphaltic concrete 80.0 1 Ó FILL: Crushed stone, some silty 0.23 sand 0.76 SS 2 100 5 1+68.06FILL: Brown silty clay, some sand Loose, brown SANDY SILT, trace SS 3 100 6 0 2+67.06to some clay Ö SS 4 100 3 O 3+66.06Very stiff to stiff, brown SILTY 0 SS 5 100 2 **CLAY**, some sand seams 4 + 65.06Ó SS 6 100 2 - stiff to firm and grey by 4.7m depth 5+64.06v 6+63.067 SS 100 1 7+62.06SS 8 100 1 SS 9 100 1 8+61.06GLACIAL TILL: Grey silty clay with SS 10 0 7 sand, gravel, cobbles and boulders 9+60.06SS 11 24 58 0 10+59.06SS 12 88 50 +O GLACIAL TILL: Compact to dense, SS 13 29 50 +11 + 58.06grey silty sand to sandy silt with gravel, cobbles and boulders SS 14 50+ 0 12+57.06SS 15 71 50 +0 13.03 SS 16 0 50+ 13+56.06End of Borehole Practical refusal to augering at 13.03m depth. (GWL @ 5.41m - March 23, 2023) 40 60 80 100 20 Shear Strength (kPa) ▲ Undisturbed △ Remoulded

9 Auriga Drive, Ottawa, Ontario K2E 7T9

**SOIL PROFILE AND TEST DATA** 

▲ Undisturbed

△ Remoulded

Geotechnical Investigation Proposed Mixed-Use High-Rise Development 1299 Richmond Road, Ottawa, Ontario

**DATUM** Geodetic FILE NO. **PG6598 REMARKS** HOLE NO. **BH 3-23** BORINGS BY CME-55 Low Clearance Drill **DATE** March 14, 2023 **SAMPLE** Pen. Resist. Blows/0.3m Monitoring Well Construction PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY VALUE r RQD STRATA NUMBER TYPE Water Content % N o v **GROUND SURFACE** 20 0+69.30Asphaltic concrete 0.05 1 0 FILL: Crushed stone 0.56 SS 2 100 6 1+68.30Loose, brown SANDY SILT, trace to some clay SS 3 92 4 2+67.30- some sand seams by 2.3m depth 2.74 4 100 7 3+66.30Ó SS 5 100 4 4 + 65.30SS 6 100 2 Very stiff, brown SILTY CLAY some sand seams 7 SS 5 100 5 + 64.30- silty sand layer from 5 to 5.2m depth 6+63.30SS 8 100 1 7+62.30SS 9 100 1 8+61.30- trace gravel by 8.1m depth SS 10 8 2 O. 9+60.30GLACIAL TILL: Grey silty clay with SS 11 3 8 0 sand, gravel, cobbles and boulders 10+59.3010.21 SS 12 21 16 0 SS 13 100 50 +11 + 58.30**GLACIAL TILL:** Compact to very SS 14 67 50+ 0 dense, grey silty sand, some gravel, 12+57.30cobbles and boulders, trace clay SS 15 83 50+ Ö. 13 + 56.30SS 16 100 50 +Ċ 14.05 SS 17 86 50+ 14 + 55.30RC 1 100 100 15 + 54.30**BEDROCK:** Excellent quality, grey quartz sandstone RC 2 100 98 16 + 53.3016.54 End of Borehole (GWL @ 5.84m - March 23, 2023) 40 60 100 20 Shear Strength (kPa)

9 Auriga Drive, Ottawa, Ontario K2E 7T9

**SOIL PROFILE AND TEST DATA** 

Shear Strength (kPa)

△ Remoulded

▲ Undisturbed

Geotechnical Investigation Proposed Mixed-Use High-Rise Development 1299 Richmond Road, Ottawa, Ontario

**DATUM** Geodetic FILE NO. **PG6598 REMARKS** HOLE NO. **BH 4-23** BORINGS BY CME-55 Low Clearance Drill **DATE** March 15, 2023 **SAMPLE** Pen. Resist. Blows/0.3m Monitoring Well Construction PLOT DEPTH ELEV. SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY VALUE STRATA NUMBER TYPE Water Content % N o v **GROUND SURFACE** 20 0+69.18Asphaltic concrete 0.08 1 0 FILL: Crushed stone with silty sand 0.38 FILL: Brown silty clay, trace sand 0.69 SS 2 100 6 1+68.18and gravel 3 SS 100 6 2+67.18Loose, brown SANDY SILT, trace to some clay 3.05 3+66.18 SS 4 100 4 Very stiff, brown SILTY CLAY, trace 4+65.18to some sand seams SS 5 100 6 5+64.185.49 ¥ 6+63.18SS 6 100 1 Stiff to firm, grey SILTY CLAY 7+62.18SS 7 100 1 8+61.18 GLACIAL TILL: Grey silty clay with 9+60.18sand and gravel O SS 8 100 50+ 0 10+59.18GLACIAL TILL: Very dense, grey SS 9 58 50 +11 + 58.18silty sand to sandy silt with gravel, cobbles and boulders SS 10 58 50+ 12+57.18SS 11 90 50+ RC 1 100 100 13+56.18RC 2 95 100 **BEDROCK:** Excellent quality, grey quartz sandstone 14 + 55.18RC 3 100 95 15.11 E 15+54.18End of Borehole (GWL @ 5.63m - March 23, 2023) 40 60 80 100

9 Auriga Drive, Ottawa, Ontario K2E 7T9

Geodetic

**DATUM** 

**SOIL PROFILE AND TEST DATA** 

FILE NO.

Geotechnical Investigation Proposed Mixed-Use High-Rise Development 1299 Richmond Road, Ottawa, Ontario

**PG6598 REMARKS** HOLE NO. **BH 5-23** BORINGS BY CME-55 Low Clearance Drill **DATE** March 15, 2023 **SAMPLE** Pen. Resist. Blows/0.3m Monitoring Well Construction PLOT **DEPTH** ELEV. SOIL DESCRIPTION 50 mm Dia. Cone (m) (m) RECOVERY VALUE STRATA NUMBER TYPE Water Content % N o v **GROUND SURFACE** 80 20 0+69.55TOPSOIL 0.10 FILL: Brown sandy silt, some clay, 0.60 trace gravel and organics SS 2 83 11 1+68.55Compact to loose, brown SANDY **SILT**, trace to some clay SS 3 92 7 2+67.55- increasing clay content with depth 2.59 ¥ 3+66.55SS 4 100 5 Hard to very stiff, brown SILTY 4+65.55CLAY, some sand 5 SS 100 3 5 + 64.55- stiff and grey by 5.5m depth 6.10 6+63.55SS 6 3 75 7+62.55SS 7 58 12 8+61.55GLACIAL TILL: Grey silty clay with sand and gravel, occasional cobbles 9+60.55SS 8 83 4 Ó 10 + 59.55SS 9 2 58 11 + 58.550 SS 10 100 1 11.99 0 12+57.55GLACIAL TILL: Dense, grey silty SS 11 83 45 Ö sand to sandy silt with gravel, 12.78 cobbles and boulders, some to trace 13+56.55RC 1 100 100 \clay **BEDROCK:** Excellent quality, grey 14 + 55.55quartz sandstone RC 2 100 98 <u>15</u>.04 □ 15 + 54.55End of Borehole (GWL @ 3.08m - March 23, 2023) 20 40 60 80 100 Shear Strength (kPa) Undisturbed △ Remoulded

# Appendix D

# Certificates of Equipment Calibration





The RKI Instrument listed below has been inspected and calibrated following the Manufacturer's specifications and methods.

<u>Instrument Model:</u> <u>RKI Eagle 2</u> <u>Serial Number:</u> <u>E2F796</u> <u>Calibration Date:</u> <u>January 5, 2024</u>

SENSOR	<u>CALIBRATION</u> GAS STANDARD	CALIBRATION GAS CONCENTRATION	READING PRIOR TO ADJUSTMENT	<u>INSTRUMENT</u> SPAN SETTINGS	ALARM LEVEL SETTING
VOC	Isobutylene LOT# 22-9430	100 PPM	99 PPM	100 PPM	400 & 1000 PPM
Combustible	Methane LOT# 23-9790	50% LEL	<500 PPM	"ME" MODE	
Combustible	Hexane LOT# 23-9964	1650 PPM	1700 PPM	15% LEL FULL GAS RESPONSE MODE	10 & 50% LEL
Combustible	Hexane LOT# 23-9964	15% LEL	15% LEL	15% LEL "METHANE ELIMINATION" MODE	10 & 50% LEL

The calibration gas standard used is considered to be a certified standard and is traceable to the National Institute of Standards and Technology (NIST). Certificate of Analysis is available upon request.

The instrument indicated above is now certified to be operating within the Manufacturer's specifications. This does not eliminate the requirement for regular maintenance and pre-use sensor response checks in order to ensure continued complete and accurate operating condition.

Certified By:

Jeff Loney

### Maxim Environmental and Safety Inc.

sales@maximenvironmental.com www.maximenvironmental.com







Head Office:

9 - 170 Ambassador Dr., Mississauga, ON L5T 2H9 (905)670-1304 | Toll Free (888)285-2324

Ottawa Office:





The RKI Instrument listed below has been inspected and calibrated following the Manufacturer's specifications and methods.

<u>Instrument Model:</u> <u>RKI Eagle 2</u> <u>Serial Number:</u> <u>E2H103</u> <u>Calibration Date:</u> <u>January 31, 2024</u>

SENSOR	<u>CALIBRATION</u> GAS STANDARD	CALIBRATION GAS CONCENTRATION	READING PRIOR TO ADJUSTMENT	<u>INSTRUMENT</u> <u>SPAN SETTINGS</u>	ALARM LEVEL SETTING
voc	Isobutylene LOT# 22-9430	100 PPM	99 PPM	100 PPM	400 & 1000 PPM
Combustible	Methane LOT# 23-9790	50% LEL	<500 PPM	"ME" MODE	
Combustible	Hexane LOT# 23-9964	1650 PPM	1700 PPM	15% LEL FULL GAS RESPONSE MODE	10 & 50% LEL
Combustible	Hexane LOT# 23-9964	15% LEL	15% LEL	15% LEL "METHANE ELIMINATION" MODE	10 & 50% LEL

The calibration gas standard used is considered to be a certified standard and is traceable to the National Institute of Standards and Technology (NIST). Certificate of Analysis is available upon request.

The instrument indicated above is now certified to be operating within the Manufacturer's specifications. This does not eliminate the requirement for regular maintenance and pre-use sensor response checks in order to ensure continued complete and accurate operating condition.

Certified By:

Jeff Loney

## Maxim Environmental and Safety Inc.

sales@maximenvironmental.com www.maximenvironmental.com







Head Office:

9 - 170 Ambassador Dr., Mississauga, ON L5T 2H9 (905)670-1304 | Toll Free (888)285-2324

Ottawa Office:





The RKI Instrument listed below has been inspected and calibrated following the Manufacturer's specifications and methods.

<u>Instrument Model:</u> RKI Eagle 2 <u>Serial Number:</u> E2G958 <u>Calibration Date:</u> February 15, 2024

SENSOR	<u>CALIBRATION</u> GAS STANDARD	CALIBRATION GAS CONCENTRATION	READING PRIOR TO ADJUSTMENT		ALARM LEVEL SETTING
voc	lsobutylene LOT# 22-9430	100 PPM	100 PPM	100 PPM	400 & 1000 PPM
Combustible	Methane LOT# 23-9790	50% LEL	<500 PPM	"ME" MODE	
Combustible	Hexane LOT# 23-9964	1650 PPM	1500 PPM	15% LEL FULL GAS RESPONSE MODE	10 & 50% LEL
Combustible	Hexane LOT# 23-9964	15% LEL	15% LEL	15% LEL "METHANE ELIMINATION" MODE	10 & 50% LEL

The calibration gas standard used is considered to be a certified standard and is traceable to the National Institute of Standards and Technology (NIST). Certificate of Analysis is available upon request.

The instrument indicated above is now certified to be operating within the Manufacturer's specifications. This does not eliminate the requirement for regular maintenance and pre-use sensor response checks in order to ensure continued complete and accurate operating condition.

Certified By:

Vincent Marin

## Maxim Environmental and Safety Inc.

<u>sales@maximenvironmental.com</u> <u>www.maximenvironmental.com</u>







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Ottawa Office:





The HORIBA Instrument listed below has been inspected and calibrated following the Manufacturer's specifications and methods.

Instrument Model:	HORIBA U-52	<u>Serial Number:</u>	UOXAOESX	Calibration Date: March 5, 2024	
2-POINT pH	CONDUCTIVITY	<u>TURBIDITY</u>	DISSOLVED OXYGEN	OXIDIZATION-REDUCTION POTENTIAL	<u>TEMPERATURE</u>
4.00 pH, 7.00 pH	4.49mS/cm ZERO CHECKED	0 & 100 NTU	8.42 mg/L @ 24 DegC SODIUM SULFITE ZERO	240mV	Fisher Scientific s/n 230606647
AutoCal 4.00 pH Solution LOT # 3GE0924	AutoCal Solution LOT # 3GH0985	AutoCal Solution LOT# 3GH0985	Oakton Zero Solution LOT # 773998	Hanna ORP LOT # 8976	
Expiry Date: August 1, 2024	Expiry Date: August 1, 2024	Expiry Date: August 1, 2024		Expiry Date: March 1, 2025	
pH 7.00 LOT # 3GH0684	@25 DegC LOT # 3GH0985	Turb. 100 NTU LOT # A2237A			
Expiry Date: August 1, 2025		Expiry Date: August 1, 2024			

The calibration standard used is considered to be a certified standard and is traceable to the National Institute of Standards and Technology (NIST). Certificate of Analysis is available upon request.

The instrument indicated above is now certified to be operating within the Manufacturer's specifications. This does not eliminate the requirement for regular maintenance and pre-use sensor response checks in order to ensure continued complete and accurate operating condition.

Certified By:

Vincent Marin

## Maxim Environmental and Safety Inc.

sales@maximenvironmental.com www.maximenvironmental.com







Head Office:

9 - 170 Ambassador Dr., Mississauga, ON L5T 2H9 (905)670-1304 | Toll Free (888)285-2324

Ottawa Office:

# Appendix E

# **Laboratory Certificates of Analysis**



## **ALS Laboratory Group**

819-58th Street, Saskatoon,SK

### PARTICLE SIZE DISTRIBUTION CURVE

Client Name: WT2400552002

**Project Number:** 

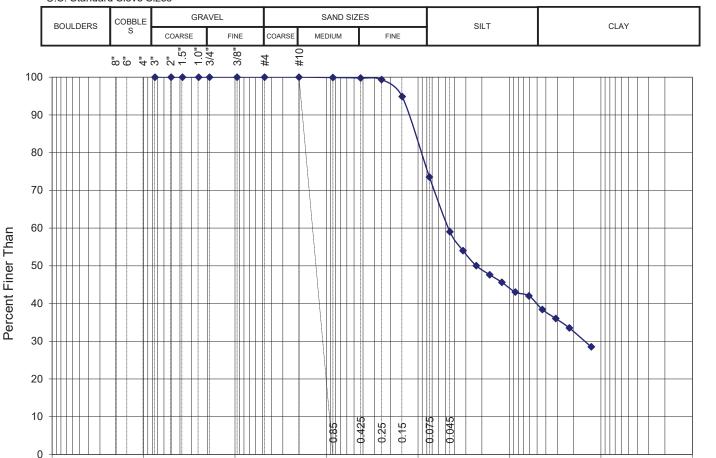
Client Sample ID BH1-24-SS7
Lab Sample ID WT2400552002
Date Sample Received: 00-Jan-00
Test Completion Date: 12-Jan-24
Analyst: HML



100

1000

10



0.1

Grain Size (mm)

0.01

0.001

0.0001

METHOD DESCRIPTION		SUMMARY OF RESULTS		
Method Reference: ASTM D6913 & D7928		GRAIN SIZE	WT %	DIA. RANGE (mm)
Dispersion method: Mechanical		% GRAVEL:	< 1	> 4.75
Dispesion period: 1 minute	cm/s	% COARSE SAND :	< 1	2.0 - 4.75
		% MEDIUM SAND :	< 1	0.425 - 2.0
		% FINE SAND :	26.24	0.075 - 0.425
DESCRIPTION OF SAND AND GRAVEL PARTICLES		% SILT :	33.69	0.075 - 0.005
Shape: Angular		% CLAY :	39.85	< 0.005
Hardness: Hard				



## **ALS Laboratory Group**

819-58th Street, Saskatoon,SK

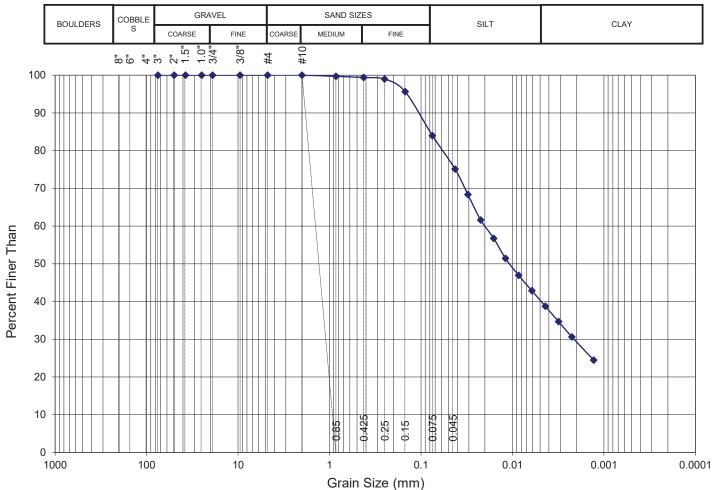
### PARTICLE SIZE DISTRIBUTION CURVE

Client Name: WT2400552005

**Project Number:** 

Client Sample ID BH1-24-SS3
Lab Sample ID WT2400552005
Date Sample Received: 00-Jan-00
Test Completion Date: 12-Jan-24
Analyst: HML





METHOD DESCRIPTION		SUMMARY OF RES	SUMMARY OF RESULTS		
Method Reference: ASTM D6913 & D7928		GRAIN SIZE	WT %	DIA. RANGE (mm)	
Dispersion method: Mechanical		% GRAVEL:	< 1	> 4.75	
Dispesion period: 1 minute	cm/s	% COARSE SAND :	< 1	2.0 - 4.75	
		% MEDIUM SAND :	< 1	0.425 - 2.0	
		% FINE SAND :	15.42	0.075 - 0.425	
DESCRIPTION OF SAND AND GRAVEL PARTICLES		% SILT :	43.60	0.075 - 0.005	
Shape: Angular	_	% CLAY :	40.37	< 0.005	
Hardness: Hard					

# **ALS Canada Ltd.**



# **CERTIFICATE OF ANALYSIS**

**Work Order** : **WT2400552** Page : 1 of 7

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo ON Canada N2V 2B8

 Telephone
 : 613 327 9073
 Telephone
 : 613 225 8279

 Project
 : LOP23-029B\
 Date Samples Received
 : 08-Jan-2024 16:30

PO : --- Date Analysis Commenced : 10-Jan-2024

C-O-C number : ---- Issue Date : 16-Jan-2024 14:41

Sampler : CLIENT Site .

Quote number : SOA 2024

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
- Surrogate Control Limits

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
Hedy Lai	Team Leader - Inorganics	Sask Soils, Saskatoon, Saskatchewan
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Metals, Waterloo, Ontario
Niki Goebel		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

Page : 2 of 7

Work Order : WT2400552

Client : Lopers & Associates

Project : LOP23-029B\



#### **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.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances 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

<: less than.

>: greater than.

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

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

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 7
Work Order : WT2400552

Client : Lopers & Associates
Project : LOP23-029B\



Sub-Matrix: Soil		Cli	ent sample ID	BH1-24-SS1	BH1-24-SS7	BH1-24-SS9	DUP-01/07	BH1-24-SS3
(Matrix: Soil/Solid)								
			ling date / time	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00
Analyte CAS Number	Method/Lab	LOR	Unit	WT2400552-001 Result	WT2400552-002	WT2400552-003 Result	WT2400552-004	WT2400552-005
Physical Tests				Result	Result	Result	Result	Result
	E100-L/WT	0.00500	mS/cm	0.190		1.08		
Moisture E	E144/WT	0.25	%	7.81	23.5	26.7	19.7	
pH (1:2 soil:CaCl2-aq) E	E108A/WT	0.10	pH units	7.78		7.78		
Particle Size								
Grain size curve E	E185/SK	-	-		See Attached			See Attached
Percent Passing								
] ",	E181/SK	1.0	%		100			100
	E181/SK	1.0	%		100			100
	E181/SK	1.0	%		100			100
• • • • • • • • • • • • • • • • • • •	E181/SK	1.0	%		100			100
]	E181/SK	1.0	%		100			100
1 2, /	E181/SK	1.0	%		100			100
Passing (76.2mm) E	E181/SK	1.0	%		100			100
Passing (1.0mm) E	E182/SK	1.0	%		99.9			99.7
Passing (0.841mm) E	E182/SK	1.0	%		99.9			99.7
I	E182/SK	1.0	%		99.8			99.4
Passing (0.420mm) E	E182/SK	1.0	%		99.8			99.4
Passing (0.250mm) E	E182/SK	1.0	%		99.4			99.0
Passing (0.149mm) E	E182/SK	1.0	%		94.8			95.6
1	E182/SK	1.0	%		87.9			91.8
Passing (0.075mm) E	E182/SK	1.0	%		73.5			84.0
Passing (0.063mm) E	E182/SK	1.0	%		67.8			80.7
Passing (0.05mm) E	E182/SK	1.0	%		61.5			77.2
Passing (0.0312mm) E	E183/SK	1.0	%		53.6			68.6
,	E183/SK	1.0	%		48.9			59.8
Passing (0.005mm) E	E183/SK	1.0	%		39.7			40.2
Passing (0.004mm) E	E183/SK	1.0	%		37.7			37.5
Passing (0.002mm) [	E183/SK	1.0	%		32.4			29.1

Page : 4 of 7 Work Order : WT2400552

Client : Lopers & Associates
Project : LOP23-029B\



Sub-Matrix: Soil		C	lient sample ID	BH1-24-SS1	BH1-24-SS7	BH1-24-SS9	DUP-01/07	BH1-24-SS3
(Matrix: Soil/Solid)								
			oling date / time	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2400552-001 Result	WT2400552-002 Result	WT2400552-003 Result	WT2400552-004 Result	WT2400552-005 Result
Percent Passing				Result	Result	Result	Result	Result
Passing (2.0mm)	E181/SK	1.0	%		100			100
Cyanides								
Cyanide, weak acid dissociable	E336A/WT	0.050	mg/kg	<0.050		<0.050		
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2 E484/WT	0.50	mg/L	6.42		62.9		
Magnesium, soluble ion content	7439-95-4 E484/WT	0.50	mg/L	1.41		19.5		
Sodium, soluble ion content	17341-25-2 E484/WT	0.50	mg/L	12.4		98.3		
Sodium adsorption ratio [SAR]	E484/WT	0.10	-	1.15		2.78		
Metals								
Antimony	7440-36-0 E440C/WT	0.10	mg/kg	<0.10		<0.10		
Arsenic	7440-38-2 E440C/WT	0.10	mg/kg	2.13		1.66		
Barium	7440-39-3 E440C/WT	0.50	mg/kg	104		215		
Beryllium	7440-41-7 E440C/WT	0.10	mg/kg	0.28		0.51		
Boron	7440-42-8 E440C/WT	5.0	mg/kg	6.1		5.0		
Boron, hot water soluble	7440-42-8 E487/WT	0.10	mg/kg	0.18		<0.10		
Cadmium	7440-43-9 E440C/WT	0.020	mg/kg	0.049		0.076		
Chromium	7440-47-3 E440C/WT	0.50	mg/kg	16.8		44.8		
Cobalt	7440-48-4 E440C/WT	0.10	mg/kg	5.82		12.2		
Copper	7440-50-8 E440C/WT	0.50	mg/kg	12.4		24.3		
Lead	7439-92-1 E440C/WT	0.50	mg/kg	5.77		4.59		
Mercury	7439-97-6 E510C/WT	0.0050	mg/kg	0.0096		<0.0050		
Molybdenum	7439-98-7 E440C/WT	0.10	mg/kg	0.86		0.66		
Nickel	7440-02-0 E440C/WT	0.50	mg/kg	11.2		25.9		
Selenium	7782-49-2 E440C/WT	0.20	mg/kg	<0.20		0.28		
Silver	7440-22-4 E440C/WT	0.10	mg/kg	<0.10		<0.10		
Thallium	7440-28-0 E440C/WT	0.050	mg/kg	0.109		0.242		
Uranium	7440-61-1 E440C/WT	0.050	mg/kg	0.444		1.15		
Vanadium	7440-62-2 E440C/WT	0.20	mg/kg	24.0		69.3		
Zinc	7440-66-6 E440C/WT	2.0	mg/kg	22.0		66.4		
Speciated Metals								

Page : 5 of 7 Work Order : WT2400552

Client : Lopers & Associates
Project : LOP23-029B\



Sub-Matrix: Soil		C	lient sample ID	BH1-24-SS1	BH1-24-SS7	BH1-24-SS9	DUP-01/07	BH1-24-SS3
(Matrix: Soil/Solid)								
	Mathad# als	Client samp	oling date / time	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2400552-001 Result	WT2400552-002 Result	WT2400552-003 Result	WT2400552-004 Result	WT2400552-005 Result
Speciated Metals				rtodak	result	roout	rtodati	rtodak
Chromium, hexavalent [Cr VI]	18540-29-9 E532/WT	0.10	mg/kg	0.16		0.14		
Volatile Organic Compounds								
Acetone	67-64-1 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Benzene	71-43-2 E611D/WT	0.0050	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	
Bromodichloromethane	75-27-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Bromoform	75-25-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Bromomethane	74-83-9 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Carbon tetrachloride	56-23-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Chlorobenzene	108-90-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Chloroform	67-66-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dibromochloromethane	124-48-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorodifluoromethane	75-71-8 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, 1,1-	75-35-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloromethane	75-09-2 E611D/WT	0.045	mg/kg	<0.045	<0.045	<0.045	<0.045	
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.050	mg/kg			<0.050		
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.075	mg/kg	<0.050	<0.050		<0.050	
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.030	mg/kg			<0.030		
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.050	mg/kg	<0.050	<0.050		<0.050	
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.030	mg/kg			<0.030		
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.050	mg/kg	<0.050	<0.050		<0.050	
Ethylbenzene	100-41-4 E611D/WT	0.015	mg/kg	<0.015	<0.015	<0.015	<0.015	

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Work Order : WT2400552

Client : Lopers & Associates
Project : LOP23-029B\



Sub-Matrix: Soil		C	lient sample ID	BH1-24-SS1	BH1-24-SS7	BH1-24-SS9	DUP-01/07	BH1-24-SS3
(Matrix: Soil/Solid)								
		Client samp	oling date / time	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2400552-001	WT2400552-002	WT2400552-003	WT2400552-004	WT2400552-005
				Result	Result	Result	Result	Result
Volatile Organic Compounds								
Hexane, n-	110-54-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Methyl isobutyl ketone [MIBK]	108-10-1 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.040	mg/kg	<0.040	<0.040	<0.040	<0.040	
Styrene	100-42-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Tetrachloroethylene	127-18-4 E611D/WT	0.050	mg/kg	0.832	<0.050	<0.050	<0.050	
Toluene	108-88-3 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Trichloroethylene	79-01-6 E611D/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	
Trichlorofluoromethane	75-69-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Vinyl chloride	75-01-4 E611D/WT	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	
Xylene, m+p-	179601-23-1 E611D/WT	0.030	mg/kg	< 0.030	<0.030	<0.030	<0.030	
Xylene, o-	95-47-6 E611D/WT	0.030	mg/kg	< 0.030	<0.030	<0.030	<0.030	
Xylenes, total	1330-20-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
BTEX, total	E611D/WT	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	
Hydrocarbons			3 3					
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<del></del>		<5.0		
F2 (C10-C16)	E601.SG-L/W	10	mg/kg			<10		
F3 (C16-C34)	E601.SG-L/W	50	mg/kg			<50		
F4 (C34-C50)	E601.SG-L/W	50	mg/kg			<50		
F1-BTEX	EC580/WT	5.0	mg/kg			<5.0		
Hydrocarbons, total (C6-C50)	n/a EC581/WT	80	mg/kg			<80		
Chromatogram to baseline at nC50	n/a E601.SG-L/W	-	-			YES		
Hydrocarbons Surrogates								

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# Analytical Results

Sub-Matrix: Soil			Cli	ient sample ID	BH1-24-SS1	BH1-24-SS7	BH1-24-SS9	DUP-01/07	BH1-24-SS3
(Matrix: Soil/Solid)									
			Client samp	ling date / time	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00	07-Jan-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2400552-001	WT2400552-002	WT2400552-003	WT2400552-004	WT2400552-005
					Result	Result	Result	Result	Result
Hydrocarbons Surrogates									
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E	601.SG-L/W	1.0	%			89.2		
Dichlorotoluene, 3,4-	95-75-0 E	581.F1/WT	1.0	%			110		
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4 E	611D/WT	0.10	%	93.5	85.9	92.3	94.5	
Difluorobenzene, 1,4-	540-36-3	611D/WT	0.10	%	101	92.8	97.7	102	

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.



# **QUALITY CONTROL INTERPRETIVE REPORT**

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Client Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers **Account Manager** : Costas Farassoglou Address

Address :30 Lansfield Way : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo, Ontario Canada N2V 2B8

Telephone :613 327 9073 Telephone : 613 225 8279 Project :LOP23-029B\ **Date Samples Received** : 08-Jan-2024 16:30

PO Issue Date : 16-Jan-2024 14:41 C-O-C number ٠ \_\_\_\_

Sampler : CLIENT

Quote number :SOA 2024

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

Site

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
- Matrix Spike outliers occur please see following pages for full details.
- 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.

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# **Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

#### Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Volatile Organic Compounds	Anonymous	Anonymous	Acetone	67-64-1	E611D	146 % MES	50.0-140%	Recovery greater than
								upper data quality
								objective

## **Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

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# **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: Soli/Solid			Evaluation: * =	Holding time exceedance; • = within Holding Time
Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation	Analysis

Cyanides: WAD Cyanide (0.01M NaOH Extraction) Glass soil jar/Teflon lined cap	Times Eval Actual
Cyanides: WAD Cyanide (0.01M NaOH Extraction) Glass soil jar/Teflon lined cap	Actual
Glass soil jar/Teflon lined cap	
BH1-24-SS1 E336A 07-Jan-2024 10-Jan-2024 14 4 davs ✓ 12-Jan-2024 14 davs	
1	2 days ✓
days	
Cyanides: WAD Cyanide (0.01M NaOH Extraction)	
Glass soil jar/Teflon lined cap	
BH1-24-SS9 E336A 07-Jan-2024 10-Jan-2024 14 4 days ✓ 12-Jan-2024 14 days	2 days ✓
days	
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID	·
Glass soil methanol vial	
BH1-24-SS9 E581.F1 07-Jan-2024 10-Jan-2024 40 4 days ✓ 10-Jan-2024 40 days	4 days ✓
days	
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)	
Glass soil jar/Teflon lined cap	
BH1-24-SS9 E601.SG-L 07-Jan-2024 11-Jan-2024 14 5 days ✓ 12-Jan-2024 40 days	1 days ✓
days	
Metals : Boron-Hot Water Extractable by ICPOES	
Glass soil jar/Teflon lined cap	
BH1-24-SS1 E487 07-Jan-2024 12-Jan-2024 180 5 days ✓ 12-Jan-2024 180	0 days ✓
days	
Metals : Boron-Hot Water Extractable by ICPOES	
Glass soil jar/Teflon lined cap	
BH1-24-SS9 E487 07-Jan-2024 12-Jan-2024 180 5 days ✓ 12-Jan-2024 180	0 days ✓
days	
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)	
Glass soil jar/Teflon lined cap	
BH1-24-SS1 E510C 07-Jan-2024 11-Jan-2024 28 5 days ✓ 12-Jan-2024 28 days	5 days ✓
days	

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Lopers & Associates LOP23-029B\ Client Project



Matrix: Soil/Solid					Ev	/aluation: <b>×</b> =	Holding time exce	edance ; •	/ = Within	Holding Time
Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap										
BH1-24-SS9	E510C	07-Jan-2024	11-Jan-2024	28 days	5 days	✓	12-Jan-2024	28 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap										
BH1-24-SS1	E440C	07-Jan-2024	11-Jan-2024	180 days	5 days	✓	12-Jan-2024	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap BH1-24-SS9	E440C	07-Jan-2024	11-Jan-2024	180 days	5 days	✓	12-Jan-2024	180 days	6 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap BH1-24-SS1	E484	07-Jan-2024	12-Jan-2024	180 days	5 days	✓	12-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap BH1-24-SS9	E484	07-Jan-2024	12-Jan-2024	180 days	5 days	✓	12-Jan-2024	180 days	0 days	✓
Particle Size : Grain Size Report (Attachment) Hydrometer/Sieve Method										
Paper Bag (Brown) BH1-24-SS3	E185	07-Jan-2024					16-Jan-2024			
Particle Size : Grain Size Report (Attachment) Hydrometer/Sieve Method										
Paper Bag (Brown) BH1-24-SS7	E185	07-Jan-2024					16-Jan-2024			
Percent Passing : Particle Size Analysis - Hydrometer										
Paper Bag (Brown) BH1-24-SS3	E183	07-Jan-2024	11-Jan-2024	365 days	5 days	1	11-Jan-2024	365 days	5 days	✓
Percent Passing : Particle Size Analysis - Hydrometer										
Paper Bag (Brown) BH1-24-SS7	E183	07-Jan-2024	11-Jan-2024	365 days	5 days	4	11-Jan-2024	365 days	5 days	✓

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Matrix: Soil/Solid

Evaluation: <b>x</b> = Holding time exceedance ; ✓ = Within Holding Time	Evaluation: × = Holding	g time exceedance ; 🗸	= Within Holding Time
--	-------------------------	-----------------------	-----------------------

Analyse Group : Analysis Interest Clinic Sampling Date   Extraction / Preparation	ix: Soil/Solid					E۱	/aluation: 🗴 =	Holding time excee	edance ; 🕦	= Within	<b>Holding Tim</b>
Percent Passing : Particle Size Analysis - Sieve <2mm	alyte Group : Analytical Method	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Percent Passing : Particle Size Analysis - Sieve <2mm	ontainer / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
Paper Bag (Brown)   BH1-24-SS3   E182   07-Jan-2024   11-Jan-2024   365   5 days   ✓					Rec	Actual		-			
BH1-24-SS3	cent Passing : Particle Size Analysis - Sieve <2mm										
Percent Passing : Particle Size Analysis - Sieve <2mm    Paper Bag (Brown)   BH1-24-SS3   E182   07-Jan-2024   11-Jan-2024   365   5 days   ✓   365   3	per Bag (Brown)										
Percent Passing : Particle Size Analysis - Sieve <2mm  Paper Bag (Brown)	BH1-24-SS3	E182	07-Jan-2024	11-Jan-2024	365	5 days	✓	11-Jan-2024	365	5 days	✓
Paper Bag (Brown)   E182   07-Jan-2024   11-Jan-2024   365   5 days   ✓   365   6 days   ✓   3					days				days		
BH1-24-SS7	cent Passing : Particle Size Analysis - Sieve <2mm										
Percent Passing : Particle Size Analysis - Sieve > 2mm  Paper Bag (Brown) BH1-24-SS3  E181 07-Jan-2024 11-Jan-2024 365 5 days ✓ 11-Jan-2024 365 days  Percent Passing : Particle Size Analysis - Sieve > 2mm  Paper Bag (Brown) BH1-24-SS7  E181 07-Jan-2024 11-Jan-2024 365 days ✓ 11-Jan-2024 365 days  Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS9  E100-L 07-Jan-2024 12-Jan-2024 30 5 days ✓ 12-Jan-2024 30 days  Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS9  E100-L 07-Jan-2024 12-Jan-2024 30 5 days ✓ 12-Jan-2024 30 days 6 days  Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS9  E100-L 07-Jan-2024 12-Jan-2024 30 5 days ✓ 12-Jan-2024 30 days 6 days  Physical Tests : Moisture Content by Gravimetry											
Percent Passing : Particle Size Analysis - Sieve >2mm  Paper Bag (Brown)	BH1-24-SS7	E182	07-Jan-2024	11-Jan-2024	365	5 days	✓	11-Jan-2024	365	5 days	✓
Paper Bag (Brown)   BH1-24-SS3					days				days		
E181   07-Jan-2024   11-Jan-2024   365   5 days   ✓   365   6 days   ✓   365	cent Passing : Particle Size Analysis - Sieve >2mm										
Percent Passing : Particle Size Analysis - Sieve >2mm    Paper Bag (Brown)											
Percent Passing: Particle Size Analysis - Sieve >2mm  Paper Bag (Brown) BH1-24-SS7  E181  07-Jan-2024  11-Jan-2024  365 days  Physical Tests: Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS1  E100-L  07-Jan-2024  12-Jan-2024  30 days  5 days  12-Jan-2024  30 days  6 days  Physical Tests: Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS9  E100-L  07-Jan-2024  12-Jan-2024  30 days  5 days  12-Jan-2024  30 days  6 days  Physical Tests: Moisture Content by Gravimetry	BH1-24-SS3	E181	07-Jan-2024	11-Jan-2024	365	5 days	<b>✓</b>	11-Jan-2024		5 days	✓
Paper Bag (Brown)         E181         07-Jan-2024         11-Jan-2024         365 days         ✓         11-Jan-2024         365 days         ✓         5 days         ✓         11-Jan-2024         365 days         ✓         5 days         ✓         11-Jan-2024         365 days         ✓         5 days         ✓         11-Jan-2024         365 days         ✓         12-Jan-2024         30 days         6 days           Physical Tests: Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)           Glass soil jar/Teflon lined cap         E100-L         07-Jan-2024         12-Jan-2024         30 days         5 days         ✓         12-Jan-2024         30 days         6 days           Physical Tests: Moisture Content by Gravimetry					days				days		
BH1-24-SS7											
Physical Tests: Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS1  E100-L  O7-Jan-2024  12-Jan-2024  30 5 days  12-Jan-2024  30 days  Floor-L  O7-Jan-2024  O7							,				
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap  BH1-24-SS1  E100-L  O7-Jan-2024  12-Jan-2024  30 5 days  12-Jan-2024  30 days  6 days  Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap  BH1-24-SS9  E100-L  O7-Jan-2024  12-Jan-2024  30 5 days  12-Jan-2024  30 days  6 days  Physical Tests : Moisture Content by Gravimetry	BH1-24-SS7	E181	07-Jan-2024	11-Jan-2024		5 days	✓	11-Jan-2024		5 days	✓
Glass soil jar/Teflon lined cap BH1-24-SS1         E100-L         07-Jan-2024         12-Jan-2024         30 days         5 days         ✓         12-Jan-2024         30 days         6 days           Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)           Glass soil jar/Teflon lined cap BH1-24-SS9         E100-L         07-Jan-2024         12-Jan-2024         30 days         5 days         ✓         12-Jan-2024         30 days         6 days           Physical Tests : Moisture Content by Gravimetry					days				days		
BH1-24-SS1  E100-L  07-Jan-2024  12-Jan-2024  30 days  5 days  ✓  12-Jan-2024  30 days  6 days  Physical Tests: Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  E100-L  07-Jan-2024  12-Jan-2024  30 days  5 days  ✓  12-Jan-2024  30 days  6 days  Physical Tests: Moisture Content by Gravimetry											
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap BH1-24-SS9  E100-L  07-Jan-2024  12-Jan-2024  30			07.1.0004	40 1 0004			,	40 1 0004	00.1		,
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)  Glass soil jar/Teflon lined cap  BH1-24-SS9  E100-L  07-Jan-2024  12-Jan-2024  30 5 days  √  12-Jan-2024  30 days  Physical Tests : Moisture Content by Gravimetry	BH1-24-SS1	E100-L	07-Jan-2024	12-Jan-2024		5 days	✓	12-Jan-2024	30 days	6 days	✓
Glass soil jar/Teflon lined cap         E100-L         07-Jan-2024         12-Jan-2024         30 days         5 days         ✓         12-Jan-2024         30 days         6 days           Physical Tests : Moisture Content by Gravimetry					days						
BH1-24-SS9											
Physical Tests : Moisture Content by Gravimetry		F400 I	07.10004	40 1 0004				40 1 0004	00.1		
Physical Tests : Moisture Content by Gravimetry	ВH1-24-SS9	E100-L	07-Jan-2024	12-Jan-2024		5 days	<b>~</b>	12-Jan-2024	30 days	6 days	✓
					days						
Glass soil jar/Teflon lined cap		E444	07 1- 0001					40 1- 2001		4 -10000	
BH1-24-SS1 E144 07-Jan-2024 10-Jan-2024 4 days	BH1-24-SS1	E144	07-Jan-2024					10-Jan-2024		4 days	
Physical Tests : Moisture Content by Gravimetry							<u> </u>				
Glass soil jar/Teflon lined cap			07.1.005.					40 1 005 1			
BH1-24-SS7 E144 07-Jan-2024 10-Jan-2024 4 days	BH1-24-SS7	E144	07-Jan-2024					10-Jan-2024		4 days	
Physical Tests : Moisture Content by Gravimetry											
Glass soil jar/Teflon lined cap	·										
BH1-24-SS9 E144 07-Jan-2024 10-Jan-2024 4 days	BH1-24-SS9	E144	07-Jan-2024					10-Jan-2024		4 days	

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Matrix: Soil/Solid

Evaluation: **x** = Holding time exceedance : ✓ = Within Holding Time

Matrix: Soil/Solid					Εν	aluation: × =	Holding time exceed	edance ; 🔻	= Within	Holding Tin
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
DUP-01/07	E144	07-Jan-2024					10-Jan-2024		4 days	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
BH1-24-SS1	E108A	07-Jan-2024	11-Jan-2024	30	5 days	✓	15-Jan-2024	30 days	9 days	✓
				days						
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
BH1-24-SS9	E108A	07-Jan-2024	11-Jan-2024	30	5 days	✓	15-Jan-2024	30 days	9 days	✓
				days						
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
BH1-24-SS1	E532	07-Jan-2024	11-Jan-2024	30	5 days	✓	15-Jan-2024	7 days	4 days	✓
				days						
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
BH1-24-SS9	E532	07-Jan-2024	11-Jan-2024	30	5 days	✓	15-Jan-2024	7 days	4 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial										
BH1-24-SS1	E611D	07-Jan-2024	10-Jan-2024	40	4 days	✓	10-Jan-2024	40 days	4 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial										
BH1-24-SS7	E611D	07-Jan-2024	10-Jan-2024	40	4 days	✓	10-Jan-2024	40 days	4 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial										
BH1-24-SS9	E611D	07-Jan-2024	10-Jan-2024	40	4 days	✓	10-Jan-2024	40 days	4 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial										
DUP-01/07	E611D	07-Jan-2024	10-Jan-2024	40	4 days	✓	10-Jan-2024	40 days	4 days	✓
				days						

**Legend & Qualifier Definitions** 

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

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# **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		Evaluati	on: × = QC freque	ency outside spe	ecification; ✓ =	QC frequency wit	hin specificatio
Quality Control Sample Type				ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1299638	1	13	7.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1299338	1	12	8.3	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1299681	1	15	6.6	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1299636	1	16	6.2	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1299634	1	8	12.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1299639	1	13	7.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1299640	1	15	6.6	5.0	✓
Moisture Content by Gravimetry	E144	1298914	1	7	14.2	5.0	✓
Particle Size Analysis - Hydrometer	E183	1300400	1	2	50.0	5.0	✓
Particle Size Analysis - Sieve <2mm	E182	1300399	1	2	50.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1299961	1	14	7.1	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1299637	1	16	6.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1299337	1	15	6.6	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1298937	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1299638	2	13	15.3	10.0	1
CCME PHC - F1 by Headspace GC-FID	E581.F1	1299338	1	12	8.3	5.0	<b>√</b>
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1299681	1	15	6.6	5.0	1
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1299636	2	16	12.5	10.0	<b>√</b>
Hexavalent Chromium (Cr VI) by IC	E532	1299634	2	8	25.0	10.0	1
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1299639	2	13	15.3	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1299640	2	15	13.3	10.0	✓
Moisture Content by Gravimetry	E144	1298914	1	7	14.2	5.0	✓
Particle Size Analysis - Hydrometer	E183	1300400	1	2	50.0	5.0	✓
Particle Size Analysis - Sieve <2mm	E182	1300399	1	2	50.0	5.0	✓
Particle Size Analysis - Sieve >2mm	E181	1300398	1	2	50.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1299961	1	14	7.1	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1299637	2	16	12.5	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1299337	1	15	6.6	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1298937	1	4	25.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1299638	1	13	7.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1299338	1	12	8.3	5.0	<u>-</u> ✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1299681	1	15	6.6	5.0	<u>√</u>
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1299636	1	16	6.2	5.0	<u>√</u>

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Matrix: Soil/Solid Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Matrix. Soli/Solid		Evaluatio	on. 🗸 – QC irequi	ency outside sp	ecincation, • -	QC frequericy with	Till Specification
Quality Control Sample Type			Co	ount		Frequency (%)	)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Hexavalent Chromium (Cr VI) by IC	E532	1299634	1	8	12.5	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1299639	1	13	7.6	5.0	<b>√</b>
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1299640	1	15	6.6	5.0	<b>√</b>
Moisture Content by Gravimetry	E144	1298914	1	7	14.2	5.0	<b>√</b>
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1299637	1	16	6.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1299337	1	15	6.6	5.0	<b>√</b>
WAD Cyanide (0.01M NaOH Extraction)	E336A	1298937	1	4	25.0	5.0	<b>√</b>
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	1299338	1	12	8.3	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1299681	1	15	6.6	5.0	<b>√</b>
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1299337	1	15	6.6	5.0	<b>√</b>
WAD Cyanide (0.01M NaOH Extraction)	E336A	1298937	1	4	25.0	5.0	<b>√</b>

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# **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 E3530	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}\text{C}$ ) 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. This method is equivalent to ASTM D4972 and is acceptable for topsoil analysis.
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.
Particle Size Analysis - Sieve >2mm	E181  ALS Environmental -  Saskatoon	Soil/Solid	ASTM D6913-17 (mod)	Soil samples are disaggregated and sieved through a 2mm sieve. Material retained on the sieve is then further sieved through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Sieve <2mm	E182  ALS Environmental -  Saskatoon	Soil/Solid	ASTM D6913-17 (mod)	Soil samples are disaggregated and sieved through a 2mm sieve. Material passed through the sieve is then further disaggregated using calgon solution and passed through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Hydrometer	E183  ALS Environmental - Saskatoon	Soil/Solid	ASTM D7928-21 (mod)	Soil material is separated from coarse material (>2mm). A specimen is then disaggregated through mixing with Calgon solution. The material is then suspended in solution wherein regular hydrometer readings are taken at specific time intervals. The principles of Stokes' Law are applied to determine the amount of material remaining in solution as well as the maximum particle size remaining in solution at the specified time.
Grain Size Report (Attachment) Hydrometer/Sieve Method	E185  ALS Environmental - Saskatoon	Soil/Solid	ASTM D6913/D7928	A grain size curve is a graphical representation of the particle sizing of a sample representing the percent passing against the effective particle size.
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.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 HCI.  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.
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 HNO3 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.

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Method / Lab Analytical Methods Matrix CCME PHCs - F2-F4 by GC-FID (Low Level) E601.SG-L Soil/Solid CCME PHC in Soil - Tier Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). ALS Environmental -Waterloo 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. Soil/Solid EPA 8260D (mod) VOCs (Eastern Canada List) by Headspace F611D Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. GC-MS Samples are prepared in headspace vials and are heated and agitated on the ALS Environmental headspace autosampler, causing VOCs to partition between the aqueous phase and Waterloo the headspace in accordance with Henry's law. F1-BTFX Soil/Solid EC580 CCME PHC in Soil - Tier F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX). ALS Environmental -Waterloo Sum F1 to F4 (C6-C50) EC581 Soil/Solid CCME PHC in Soil - Tier Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sq is not used within this calculation due to ALS Environmental overlap with other fractions. Waterloo Preparation Methods Method / Lab Matrix Leach 1:2 Soil:Water for pH/EC Soil/Solid BC WLAP METHOD: The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample FP108 PH FLECTROMETRIC with deionized/distilled water at a 1.2 ratio of sediment to water ALS Environmental -SOIL Waterloo Soil/Solid MOEE E3137A Leach 1:2 Soil: 0.01CaCl2 - As Received for EP108A A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M На calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is ALS Environmental separated from the soil by centrifuging, settling or decanting and then analyzed using a Waterloo pH meter and electrode. Cvanide Extraction for CFA (0.01M NaOH) EP333A Soil/Solid ON MECP E3015 (mod) Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide. ALS Environmental -Waterloo Soil/Solid EPA 200.2 (mod) Digestion for Metals and Mercury (355 µm EP440C Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl. This Sieve) method is intended to liberate metals that may be environmentally available. ALS Environmental -Waterloo HW EXTR. EPA 6010B Boron-Hot Water Extractable EP487 Soil/Solid 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. ALS Environmental -Waterloo 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)

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation of Hexavalent Chromium (Cr VI)	EP532	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as
for IC				described in EPA 3060A.
	ALS Environmental -			
	Waterloo			
VOCs Methanol Extraction for Headspace	EP581	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace
Analysis				vials and are heated and agitated on the headspace autosampler, causing VOCs to
	ALS Environmental -			partition between the aqueous phase and the headspace in accordance with Henry's
	Waterloo			law.
PHCs and PAHs Hexane-Acetone Tumbler	EP601	Soil/Solid	CCME PHC in Soil - Tier	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted
Extraction			1 (mod)	with 1:1 hexane:acetone using a rotary extractor.
	ALS Environmental -			
	Waterloo			
Dry and Grind in Soil/Solid <60°C	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
			Methods of Analysis,	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	ALS Environmental -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Waterloo			<2 mm. Further size reduction may be needed for particular tests.

# **ALS Canada Ltd.**



# **QUALITY CONTROL REPORT**

Work Order : WT2400552

Client : Lopers & Associates

Address : 30 Lansfield Way

Ottawa ON Canada K2G 3V8

: Luke Lopers

Telephone

Contact

Project : LOP23-029B\

PO :----C-O-C number :----

Sampler : CLIENT 613 327 9073

Site

Quote number : SOA 2024

No. of samples received : 5
No. of samples analysed : 5

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Laboratory ; ALS Environmental - Waterloo

Account Manager : Costas Farassoglou

Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

Telephone :613 225 8279

Date Samples Received : 08-Jan-2024 16:30

Date Analysis Commenced : 10-Jan-2024

Issue Date : 16-Jan-2024 14:41

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	
Hedy Lai	Team Leader - Inorganics	Saskatoon Sask Soils, Saskatoon, Saskatchewan	
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario	
Nik Perkio	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario	
Nik Perkio	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario	
Niki Goebel		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	

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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.

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## 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							Labora	tory Duplicate (D	UP) 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: 1298914)										
WT2400299-007	Anonymous	Moisture		E144	0.25	%	19.3	19.1	0.778%	20%	
Physical Tests (QC	Lot: 1299636)										
WT2339955-001	Anonymous	Conductivity (1:2 leachate)		E100-L	5.00	μS/cm	1.38 mS/cm	1400	1.00%	20%	
Physical Tests (QC	Lot: 1299961)										
WT2400463-003	Anonymous	pH (1:2 soil:CaCl2-aq)		E108A	0.10	pH units	6.95	6.87	1.16%	5%	
Percent Passing (C	QC Lot: 1300399)										
WT2400552-002	BH1-24-SS7	Passing (0.05mm)		E182	1.0	%	61.5	63.9	3.83%	15%	
		Passing (0.063mm)		E182	1.0	%	67.8	69.1	1.87%	15%	
		Passing (0.075mm)		E182	1.0	%	73.5	73.8	0.328%	15%	
		Passing (0.125mm)		E182	1.0	%	87.9	88.2	0.253%	15%	
		Passing (0.149mm)		E182	1.0	%	94.8	95.1	0.225%	15%	
		Passing (0.250mm)		E182	1.0	%	99.4	99.5	0.106%	15%	
		Passing (0.420mm)		E182	1.0	%	99.8	99.8	0.0559%	15%	
		Passing (0.50mm)		E182	1.0	%	99.8	99.8	0.0492%	15%	
		Passing (0.841mm)		E182	1.0	%	99.9	99.9	0.0254%	15%	
		Passing (1.0mm)		E182	1.0	%	99.9	99.9	0.0216%	15%	
Percent Passing (C	C Lot: 1300400)										
WT2400552-002	BH1-24-SS7	Passing (0.002mm)		E183	1.0	%	32.4	33.4	2.97%	15%	
		Passing (0.004mm)		E183	1.0	%	37.7	39.1	3.54%	15%	
		Passing (0.005mm)		E183	1.0	%	39.7	41.0	3.22%	15%	
		Passing (0.020mm)		E183	1.0	%	48.9	51.8	5.80%	15%	
		Passing (0.0312mm)		E183	1.0	%	53.6	56.9	6.07%	15%	
Cyanides (QC Lot:	1298937)										
WT2400552-001	BH1-24-SS1	Cyanide, weak acid dissociable		E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
Metals (QC Lot: 12	99637)										
WT2339955-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	6.67	6.56	1.66%	30%	
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	0.84	0.78	0.06	Diff <2x LOR	
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	264	262	0.760%	30%	
Metals (QC Lot: 12	99638)										
WT2400552-001	BH1-24-SS1	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.18	0.18	0.004	Diff <2x LOR	

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Sub-Matrix: Soil/Solid											
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: 129	99639)										
WT2400552-001	BH1-24-SS1	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0096	0.0080	0.0016	Diff <2x LOR	
Metals (QC Lot: 129	9640)										
WT2400552-001	BH1-24-SS1	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	2.13	2.04	4.47%	30%	
		Barium	7440-39-3	E440C	0.50	mg/kg	104	97.5	6.06%	40%	
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.28	0.30	0.02	Diff <2x LOR	
		Boron	7440-42-8	E440C	5.0	mg/kg	6.1	7.2	1.0	Diff <2x LOR	
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.049	0.051	0.002	Diff <2x LOR	
		Chromium	7440-47-3	E440C	0.50	mg/kg	16.8	17.4	3.30%	30%	
		Cobalt	7440-48-4	E440C	0.10	mg/kg	5.82	5.72	1.58%	30%	
		Copper	7440-50-8	E440C	0.50	mg/kg	12.4	11.9	3.46%	30%	
		Lead	7439-92-1	E440C	0.50	mg/kg	5.77	5.67	1.71%	40%	
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.86	0.92	5.98%	40%	
		Nickel	7440-02-0	E440C	0.50	mg/kg	11.2	11.2	0.148%	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	0.109	0.111	0.002	Diff <2x LOR	
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.444	0.474	6.70%	30%	
		Vanadium	7440-62-2	E440C	0.20	mg/kg	24.0	24.6	2.62%	30%	
		Zinc	7440-66-6	E440C	2.0	mg/kg	22.0	21.8	1.22%	30%	
Speciated Metals(C	QC Lot: 1299634)										
WT2400552-001	BH1-24-SS1	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.16	0.17	0.008	Diff <2x LOR	
Volatile Organic Co	mpounds (QC Lot: 1299	337)									
WT2400596-007	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	
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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	Qualifie
Volatile Organic Co	mpounds (QC Lot: 129	9337) - continued									
WT2400596-007	Anonymous	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	
		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	
Hydrocarbons (QC	Lot: 1299338)										
WT2400596-007	Anonymous	F1 (C6-C10)		E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	
Hydrocarbons (QC	Lot: 1299681)										
WT2400636-001	Anonymous	F2 (C10-C16)		E601.SG-L	10	mg/kg	<10 µg/g	<10	0	Diff <2x LOR	
	·	F3 (C16-C34)		E601.SG-L	50	mg/kg	<50 μg/g	<50	0	Diff <2x LOR	

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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	
Hydrocarbons (QC	Lot: 1299681) - continue	d										
WT2400636-001	Anonymous	F4 (C34-C50)		E601.SG-L	50	mg/kg	<50 μg/g	<50	0	Diff <2x LOR		

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## 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: 1298914)					
Moisture	E144	0.25	%	<0.25	
Physical Tests (QCLot: 1299636)					
Conductivity (1:2 leachate)	E100-L	5	μS/cm	<5.00	
Cyanides (QCLot: 1298937)					
Cyanide, weak acid dissociable	E336A	0.05	mg/kg	<0.050	
Metals (QCLot: 1299637)					
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: 1299638)					•
Boron, hot water soluble	7440-42-8 E487	0.1	mg/kg	<0.10	
letals (QCLot: 1299639)					
Mercury	7439-97-6 E510C	0.005	mg/kg	<0.0050	
letals (QCLot: 1299640)					
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	

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Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 1299634)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	
olatile Organic Compounds (QCLot	: 1299337)					
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		0.05	mg/kg	<0.050	
Toluene	108-88-3	F611D	0.05	mg/kg	<0.050	

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#### Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QC	Lot: 1299337) - 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	
Hydrocarbons (QCLot: 1299338)						
F1 (C6-C10)		E581.F1	5	mg/kg	<5.0	
Hydrocarbons (QCLot: 1299681)						
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	
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## 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: 1298914)									
Moisture		E144	0.25	%	50 %	99.2	90.0	110	
Physical Tests (QCLot: 1299636)									
Conductivity (1:2 leachate)		E100-L	5	μS/cm	1409 μS/cm	99.1	90.0	110	
Physical Tests (QCLot: 1299961)									
oH (1:2 soil:CaCl2-aq)		E108A		pH units	7 pH units	99.8	98.0	102	
Cyanides (QCLot: 1298937)									
Cyanide, weak acid dissociable		E336A	0.05	mg/kg	1.25 mg/kg	85.5	80.0	120	
Metals (QCLot: 1299637)									
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	100	80.0	120	
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	101	80.0	120	
Metals (QCLot: 1299638)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	108	70.0	130	
Metals (QCLot: 1299639)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	112	80.0	120	
Metals (QCLot: 1299640)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	104	80.0	120	
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	107	80.0	120	
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	97.1	80.0	120	
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	92.2	80.0	120	
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	91.4	80.0	120	
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	99.1	80.0	120	
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	101	80.0	120	
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	99.3	80.0	120	
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	99.6	80.0	120	
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	105	80.0	120	
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	99.5	80.0	120	
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	98.8	80.0	120	
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	102	80.0	120	
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	90.4	80.0	120	
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	100.0	80.0	120	

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Metals (QCLot: 1299640) - continued 7440-61-1 E440C 0.05 80.0 120 Uranium mg/kg 0.5 mg/kg 104 7440-62-2 E440C 0.2 mg/kg 0.08 120 Vanadium 50 mg/kg 101 Zinc 7440-66-6 E440C mg/kg 98.0 80.0 120 50 mg/kg Speciated Metals (QCLot: 1299634) 18540-29-9 E532 0.1 Chromium, hexavalent [Cr VI] 80.0 120 mg/kg 0.8 mg/kg 96.0 Volatile Organic Compounds (QCLot: 1299337) Acetone 67-64-1 E611D 0.5 mg/kg 128 60.0 140 3.475 mg/kg 71-43-2 E611D 0.005 70.0 130 Benzene mg/kg 3.475 mg/kg 91.9 Bromodichloromethane 75-27-4 E611D 0.05 mg/kg 50.0 140 3.475 mg/kg 96.8 75-25-2 E611D 0.05 Bromoform mg/kg 3.475 mg/kg 96.6 70.0 130 Bromomethane 74-83-9 E611D 0.05 mg/kg 3.475 mg/kg 91.7 50.0 140 56-23-5 E611D 0.05 70.0 Carbon tetrachloride mg/kg 3.475 mg/kg 89.9 130 0.05 108-90-7 E611D 70.0 130 mg/kg Chlorobenzene 3.475 mg/kg 91.6 67-66-3 E611D 0.05 70.0 130 Chloroform mg/kg 3.475 mg/kg 96.5 124-48-1 E611D 0.05 60.0 130 Dibromochloromethane mg/kg 3.475 mg/kg 97.8 Dibromoethane, 1,2-106-93-4 E611D 0.05 mg/kg 100 70.0 130 3.475 mg/kg 95-50-1 E611D 0.05 130 Dichlorobenzene, 1,2mg/kg 70.0 3.475 mg/kg 92.6 541-73-1 E611D 0.05 70.0 130 Dichlorobenzene, 1,3mg/kg 3.475 mg/kg 89.3 Dichlorobenzene, 1,4-106-46-7 E611D 0.05 mg/kg 3.475 mg/kg 89.3 70.0 130 75-71-8 E611D Dichlorodifluoromethane 0.05 mg/kg 3.475 mg/kg 58.2 50.0 140 Dichloroethane, 1,1-75-34-3 E611D 0.05 mg/kg 96.3 60.0 130 3.475 mg/kg 107-06-2 E611D 0.05 Dichloroethane, 1,2mg/kg 3.475 mg/kg 105 60.0 130 75-35-4 E611D 0.05 60.0 130 Dichloroethylene, 1,1mg/kg 3.475 mg/kg 91.3 156-59-2 E611D 0.05 70.0 130 Dichloroethylene, cis-1,2mg/kg 3.475 mg/kg 95.5 Dichloroethylene, trans-1,2-156-60-5 E611D 0.05 mg/kg 96.0 60.0 130 3.475 mg/kg 75-09-2 E611D 0.045 70.0 130 Dichloromethane mg/kg 3.475 mg/kg 102 78-87-5 E611D 0.05 mg/kg 98.2 70.0 130 Dichloropropane, 1,2-3.475 mg/kg 10061-01-5 E611D 0.03 70.0 130 Dichloropropylene, cis-1,3mg/kg 3.475 mg/kg 95.0 10061-02-6 E611D 0.03 mg/kg 70.0 130 Dichloropropylene, trans-1,3-3.475 mg/kg 93.8 Ethylbenzene 100-41-4 E611D 0.015 mg/kg 3.475 mg/kg 86.5 70.0 130 Hexane, n-110-54-3 E611D 0.05 mg/kg 88.9 70.0 130 3.475 mg/kg Methyl ethyl ketone [MEK] 78-93-3 E611D 0.5 mg/kg 3.475 mg/kg 120 60.0 140 108-10-1 E611D 0.5 60.0 140 Methyl isobutyl ketone [MIBK] mg/kg 3.475 mg/kg 115 70.0 Methyl-tert-butyl ether [MTBE] 1634-04-4 E611D 0.04 mg/kg 3.475 mg/kg 94.8 130

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Recovery (%) Spike Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Volatile Organic Compounds (QCLot: 1299337) - continued 100-42-5 E611D 0.05 mg/kg 70.0 130 3.475 mg/kg 90.8 630-20-6 E611D 0.05 60.0 Tetrachloroethane, 1,1,1,2mg/kg 3.475 mg/kg 130 94.2 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 0.05 mg/kg 3.475 mg/kg 108 60.0 130 127-18-4 E611D 0.05 Tetrachloroethylene mg/kg 3.475 mg/kg 88.2 60.0 130 108-88-3 E611D 0.05 70.0 130 Toluene mg/kg 3.475 mg/kg 86.9 71-55-6 E611D 0.05 130 Trichloroethane, 1,1,1mg/kg 3.475 mg/kg 89.9 60.0 79-00-5 E611D 0.05 60.0 130 Trichloroethane, 1,1,2mg/kg 3.475 mg/kg 101 Trichloroethylene 79-01-6 E611D 0.01 mg/kg 3.475 mg/kg 91.6 60.0 130 75-69-4 E611D 0.05 50.0 140 Trichlorofluoromethane mg/kg 3.475 mg/kg 84.2 75-01-4 E611D 140 Vinyl chloride 0.02 mg/kg 85.9 60.0 3.475 mg/kg 179601-23-1 E611D 0.03 70.0 130 Xylene, m+pmg/kg 88.1 6.95 mg/kg 95-47-6 E611D mg/kg Xylene, o-0.03 3.475 mg/kg 88.5 70.0 130 Hydrocarbons (QCLot: 1299338) ---- E581.F1 5 80.0 120 mg/kg 96.4 F1 (C6-C10) 69.1875 mg/kg Hydrocarbons (QCLot: 1299681) F2 (C10-C16) ---- E601.SG-L 10 mg/kg 108 70.0 130 671.175 mg/kg 50 F3 (C16-C34) ---- E601.SG-L 70.0 130 mg/kg 1384.058 mg/kg 112 F4 (C34-C50) ---- E601.SG-L 50 mg/kg 70.0 130 738.5 mg/kg 115

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## 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.

ub-Matrix: Soil/So	lid					Matrix Spike (MS) Report							
					Spi	ike	Recovery (%)	Recovery Limits (%)					
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie			
yanides (QCLc	ot: 1298937)												
/T2400552-001	BH1-24-SS1	Cyanide, weak acid dissociable		E336A	1.15 mg/kg	1.25 mg/kg	90.8	70.0	130				
olatile Organic	Compounds (QCLo	t: 1299337)											
VT2400596-007	Anonymous	Acetone	67-64-1	E611D	3.01 mg/kg	3.125 mg/kg	146	50.0	140	MES			
		Benzene	71-43-2	E611D	2.02 mg/kg	3.125 mg/kg	98.4	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	2.08 mg/kg	3.125 mg/kg	101	50.0	140				
		Bromomethane	74-83-9	E611D	2.04 mg/kg	3.125 mg/kg	99.6	50.0	140				
		Carbon tetrachloride	56-23-5	E611D	2.00 mg/kg	3.125 mg/kg	97.2	50.0	140				
		Chlorobenzene	108-90-7	E611D	1.99 mg/kg	3.125 mg/kg	97.0	50.0	140				
		Chloroform	67-66-3	E611D	2.13 mg/kg	3.125 mg/kg	104	50.0	140				
		Dibromochloromethane	124-48-1	E611D	2.14 mg/kg	3.125 mg/kg	104	50.0	140				
		Dibromoethane, 1,2-	106-93-4	E611D	2.18 mg/kg	3.125 mg/kg	106	50.0	140				
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.02 mg/kg	3.125 mg/kg	98.4	50.0	140				
		Dichlorobenzene, 1,3-	541-73-1	E611D	1.93 mg/kg	3.125 mg/kg	93.8	50.0	140				
		Dichlorobenzene, 1,4-	106-46-7	E611D	1.93 mg/kg	3.125 mg/kg	94.0	50.0	140				
		Dichlorodifluoromethane	75-71-8	E611D	1.77 mg/kg	3.125 mg/kg	86.2	50.0	140				
		Dichloroethane, 1,1-	75-34-3	E611D	2.14 mg/kg	3.125 mg/kg	104	50.0	140				
		Dichloroethane, 1,2-	107-06-2	E611D	2.31 mg/kg	3.125 mg/kg	112	50.0	140				
		Dichloroethylene, 1,1-	75-35-4	E611D	2.08 mg/kg	3.125 mg/kg	101	50.0	140				
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.10 mg/kg	3.125 mg/kg	102	50.0	140				
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.15 mg/kg	3.125 mg/kg	105	50.0	140				
		Dichloromethane	75-09-2	E611D	2.26 mg/kg	3.125 mg/kg	110	50.0	140				
		Dichloropropane, 1,2-	78-87-5	E611D	2.16 mg/kg	3.125 mg/kg	105	50.0	140				
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	1.95 mg/kg	3.125 mg/kg	95.0	50.0	140				
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	1.91 mg/kg	3.125 mg/kg	93.1	50.0	140				
		Ethylbenzene	100-41-4	E611D	1.88 mg/kg	3.125 mg/kg	91.8	50.0	140				
		Hexane, n-	110-54-3	E611D	2.08 mg/kg	3.125 mg/kg	101	50.0	140				
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.54 mg/kg	3.125 mg/kg	124	50.0	140				
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.56 mg/kg	3.125 mg/kg	125	50.0	140				
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.03 mg/kg	3.125 mg/kg	98.9	50.0	140				
	1	Styrene	100-42-5	E611D	1.98 mg/kg	3.125 mg/kg	96.6	50.0	140				

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Sub-Matrix: Soil/Sol	id						Matrix Spik	re (MS) Report		
_					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic	Compounds (QCLot:	: 1299337) - continued								
WT2400596-007	Anonymous	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.07 mg/kg	3.125 mg/kg	101	50.0	140	
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.40 mg/kg	3.125 mg/kg	117	50.0	140	
		Tetrachloroethylene	127-18-4	E611D	1.93 mg/kg	3.125 mg/kg	93.8	50.0	140	
		Toluene	108-88-3	E611D	1.89 mg/kg	3.125 mg/kg	92.1	50.0	140	
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.98 mg/kg	3.125 mg/kg	96.4	50.0	140	
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.20 mg/kg	3.125 mg/kg	107	50.0	140	
		Trichloroethylene	79-01-6	E611D	2.01 mg/kg	3.125 mg/kg	97.9	50.0	140	
		Trichlorofluoromethane	75-69-4	E611D	1.94 mg/kg	3.125 mg/kg	94.5	50.0	140	
		Vinyl chloride	75-01-4	E611D	2.06 mg/kg	3.125 mg/kg	100	50.0	140	
		Xylene, m+p-	179601-23-1	E611D	3.86 mg/kg	6.25 mg/kg	93.9	50.0	140	
		Xylene, o-	95-47-6	E611D	1.93 mg/kg	3.125 mg/kg	94.0	50.0	140	
Hydrocarbons (0	QCLot: 1299338)									
WT2400596-007	Anonymous	F1 (C6-C10)		E581.F1	40.4 mg/kg	62.5 mg/kg	98.5	60.0	140	
Hydrocarbons (0	QCLot: 1299681)									
WT2400636-001	Anonymous	F2 (C10-C16)		E601.SG-L	517 mg/kg	671.175 mg/kg	95.6	60.0	140	
		F3 (C16-C34)		E601.SG-L	1120 mg/kg	1384.058 mg/kg	100.0	60.0	140	
		F4 (C34-C50)		E601.SG-L	608 mg/kg	738.5 mg/kg	102	60.0	140	

**Qualifiers** 

Qualifier Description

MES Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered

acceptable as per OMOE & CCME).

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## 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).

Second Passing (OCLot: 129658)   March   Conductivity (1-2 leachain)   E1004   1384 µScm   98.4   70.0   130   1	Sub-Matrix:						Refere	Reference Material (RM) Report			
Second   Passing (OCLot: 129658)   Passing (OSDrm)   E181   100 %   100   90.0   110   1						RM Target	Recovery (%)	Recovery I	Limits (%)		
March   Conductivity (12 leachate)	Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier	
RM	Physical Tests	(QCLot: 1299636)									
RM   Passing (19mm)		RM	Conductivity (1:2 leachate)		E100-L	1384 μS/cm	98.4	70.0	130		
RM Passing (2.0mm) — E181 100 % 100 90.0 110  RM Passing (2.5 4mm) — E181 100 % 100 90.0 110  RM Passing (2.5 4mm) — E181 100 % 100 90.0 110  RM Passing (3.5 mm) — E181 100 % 100 90.0 110  RM Passing (4.7 5mm) — E181 100 % 100 90.0 110  RM Passing (5.0 8mm) — E181 100 % 100 90.0 110  RM Passing (6.0 8mm) — E181 100 % 100 90.0 110  RM Passing (7.5 2mm) — E181 100 % 100 90.0 110  RM Passing (5.0 8mm) — E181 100 % 100 90.0 110  RM Passing (0.5 8mm) — E181 100 % 100 90.0 110  RM Passing (0.5 8mm) — E181 100 % 100 90.0 110  RM Passing (0.5 8mm) — E181 100 % 100 90.0 110  RM Passing (0.5 8mm) — E182 54.0 % 98.8 90.0 110  RM Passing (0.5 8mm) — E182 57.4 % 100 90.8 100  RM Passing (0.5 8mm) — E182 67.4 % 100 90.8 100  RM Passing (0.5 8mm) — E182 67.4 % 100 90.8 100  RM Passing (0.5 8mm) — E182 67.4 % 100 90.8 100  RM Passing (0.5 8mm) — E182 97.4 % 100 91.4 100  RM Passing (0.5 8mm) — E182 97.4 % 100 91.4 100  RM Passing (0.5 8mm) — E182 97.4 % 100 91.4 100  RM Passing (0.5 8mm) — E182 98.5 % 99.7 93.1 107  RM Passing (0.5 8mm) — E182 99.5 % 99.7 93.1 107  RM Passing (0.5 8mm) — E182 99.5 % 99.7 93.1 107  RM Passing (0.5 8mm) — E182 99.5 % 99.7 93.1 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E182 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E183 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E183 99.5 % 99.1 94.7 105  RM Passing (0.5 8mm) — E183	Percent Passin	g (QCLot: 1300398)									
RM Passing (28.4mm) E181 100 % 100 90.0 110 RM Passing (38.1mm) E181 100 % 100 90.0 110 RM Passing (47.5mm) E181 100 % 100 90.0 110 RM Passing (47.5mm) E181 100 % 100 90.0 110 RM Passing (58.8mm) E181 100 % 100 90.0 110 RM Passing (58.8mm) E181 100 % 100 90.0 110 RM Passing (78.2mm) E181 100 % 100 90.0 110 RM Passing (9.5mm) E181 100 % 100 90.0 110 RM Passing (9.5mm) E181 100 % 100 90.0 110 RM Passing (9.5mm) E181 100 % 100 90.0 110 RM Passing (0.5mm) E182 54.08 % 99.8 90.0 110 RM Passing (0.5mm) E182 54.08 % 99.8 90.0 110 RM Passing (0.5mm) E182 54.08 % 99.8 90.0 110 RM Passing (0.5mm) E182 57.14 % 100 90.8 100 90.1 100 RM Passing (0.5mm) E182 57.14 % 100 90.8 100 90.1 100 RM Passing (0.5mm) E182 57.14 % 100 90.8 100 90.1 100 RM Passing (0.5mm) E182 90.15 % 100 91.4 100 90.8 100 RM Passing (0.5mm) E182 90.15 % 100 91.4 100 90.8 100 RM Passing (0.5mm) E182 90.15 % 100 91.4 100 90.8 100 RM Passing (0.5mm) E182 90.15 % 99.7 99.7 99.1 107 E182 90.15 % 99.7 99.1 99.1 105 E182 90.15 % 99.7 99.1 99.1 105 E182 90.15 % 99.1 99.1 99.1 99.1 105 E182 90.1 99.1 99.1 99.1 99.1 99.1 99.1 99.1		RM	Passing (19mm)		E181	100 %	100	90.0	110		
RM Passing (38.1mm) E181 100% 100 90.0 110 RM Passing (58.8mm) E181 100% 100 90.0 110 RM Passing (95.8mm) E181 100% 100 90.0 110 RM Passing (95.8mm) E182 100% 100 90.0 110 RM Passing (0.68.8mm) E182 57.14% 100 90.8 100 90.0 110 RM Passing (0.68.8mm) E182 57.14% 100 90.8 109 RM Passing (0.75.8mm) E182 57.14% 100 90.8 109 RM Passing (0.75.8mm) E182 57.14% 100 90.8 109 RM Passing (0.75.8mm) E182 57.14% 100 90.8 100 90.0 110 RM Passing (0.75.8mm) E182 57.14% 100 90.8 109 RM Passing (0.75.8mm) E182 57.14% 100 90.8 109 RM Passing (0.75.8mm) E182 57.14% 100 90.8 100 90.7 100 90.0 90.		RM	Passing (2.0mm)		E181	100 %	100	90.0	110		
RM Passing (4.76mm)		RM	Passing (25.4mm)		E181	100 %	100	90.0	110		
RM Passing (50.8mm) E181 100 % 100 90.0 110 RM Passing (9.5mm) E181 100 % 100 90.0 110 RM Passing (9.5mm) E181 100 % 100 90.0 110 RM Passing (0.5mm) E181 100 % 100 90.0 110  RM Passing (0.5mm) E182 54.08 % 99.8 99.0 110 RM Passing (0.65mm) E182 57.14 % 100 90.8 109 RM Passing (0.65mm) E182 57.14 % 100 90.8 109 RM Passing (0.75mm) E182 60.15 % 100 91.4 109 RM Passing (0.75mm) E182 60.15 % 100 91.4 109 RM Passing (0.125mm) E182 68.19 % 100.0 92.7 107 RM Passing (0.145mm) E182 68.19 % 100.0 92.7 107 RM Passing (0.450mm) E182 89.4 % 99.0 94.1 106 RM Passing (0.420mm) E182 89.9 % 99.0 94.1 106 RM Passing (0.50mm) E182 89.9 % 99.0 94.1 106 RM Passing (0.50mm) E182 89.9 % 99.1 94.7 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E182 96.4 % 99.4 94.9 105 RM Passing (0.50mm) E183 24.6 % 84.2 76.0 124 RM Passing (0.50mm) E183 24.6 % 84.2 76.0 124 RM Passing (0.50mm) E183 34.8 26.6 % 84.2 76.0 113 RM Passing (0.50mm) E183 34.8 26.6 % 94.1 87.0 113		RM	Passing (38.1mm)		E181	100 %	100	90.0	110		
RM         Passing (76.2mm)          E181         100 %         100         90.0         110            RM         Passing (9.5mm)          E181         100 %         100         90.0         110            recent Passing (OCLot: 1300399)           RM         Passing (0.05mm)          E182         54.08 %         99.8         90.0         110            RM         Passing (0.05mm)          E182         57.14 %         100         90.8         109            RM         Passing (0.05mm)          E182         60.15 %         100         91.4         109            RM         Passing (0.125mm)          E182         68.19 %         100.0         92.7         107            RM         Passing (0.149mm)          E182         72.05 %         99.7         93.1         107            RM         Passing (0.250mm)          E182         89.24 %         99.0         94.4         106            RM         Passing (0.42mm)          E182         89.27 %         99.0		RM	Passing (4.75mm)		E181	100 %	100	90.0	110		
RM Passing (0.5mm) — E181 100 % 100 90.0 110 — Cont Passing (0.CLot: 130039)  RM Passing (0.05mm) — E182 54.08 % 99.8 90.0 110 — RM Passing (0.05mm) — E182 67.14 % 100 90.8 109 — RM Passing (0.15mm) — E182 68.19 % 100.0 92.7 107 — RM Passing (0.15mm) — E182 68.19 % 100.0 92.7 107 — RM Passing (0.15mm) — E182 72.05 % 99.7 93.1 107 — RM Passing (0.125mm) — E182 82.27 % 99.0 94.1 106 — RM Passing (0.25mm) — E182 82.27 % 99.0 94.1 106 — RM Passing (0.25mm) — E182 82.27 % 99.0 94.1 106 — RM Passing (0.25mm) — E182 89.94 % 99.0 94.6 105 — RM Passing (0.50mm) — E182 91.15 % 99.1 94.7 105 — RM Passing (0.50mm) — E182 95.64 % 99.4 94.9 105 — RM Passing (0.50mm) — E182 95.64 % 99.4 94.9 105 — RM Passing (0.05mm) — E182 96.31 % 99.5 94.9 105 — RM Passing (0.05mm) — E182 96.31 % 99.5 94.9 105 — RM Passing (0.05mm) — E182 96.31 % 99.5 94.9 105 — RM Passing (0.05mm) — E182 96.31 % 99.5 94.9 105 — RM Passing (0.05mm) — E183 24.64 % 84.2 76.0 124 — RM Passing (0.05mm) — E183 29.3 % 91.2 80.0 120 — RM Passing (0.05mm) — E183 29.3 % 91.2 80.0 120 — RM Passing (0.05mm) — E183 32.9 % 91.2 80.0 120 — RM Passing (0.05mm) — E183 32.7 % 94.1 87.0 113 — RM Passing (0.05mm) — E183 43.27 % 94.1 87.0 113 — RM Passing (0.05mm) — E183 43.27 % 94.1 87.0 113 — RM Passing (0.05mm) — E183 48.23 % 96.0 88.0 112 — RM		RM	Passing (50.8mm)		E181	100 %	100	90.0	110		
RM		RM	Passing (76.2mm)		E181	100 %	100	90.0	110		
RM       Passing (0.05mm)       —       E182       54.08 %       99.8       90.0       110       —         RM       Passing (0.063mm)       —       E182       57.14 %       100       90.8       109       —         RM       Passing (0.075mm)       —       E182       60.15 %       100       91.4       109       —         RM       Passing (0.125mm)       —       E182       68.19 %       100.0       92.7       107       —         RM       Passing (0.149mm)       —       E182       72.05 %       99.7       93.1       107       —         RM       Passing (0.250mm)       —       E182       82.27 %       99.0       94.1       106       —         RM       Passing (0.420mm)       —       E182       89.94 %       99.0       94.6       105       —         RM       Passing (0.420mm)       —       E182       99.4 %       99.0       94.6       105       —         RM       Passing (0.420mm)       —       E182       99.4 %       99.0       94.6       105       —         RM       Passing (0.841mm)       —       E182       95.64 %       99.4       94.9       105		RM	Passing (9.5mm)		E181	100 %	100	90.0	110		
RM Passing (0.063mm) E182 57.14 % 100 90.8 109 RM Passing (0.125mm) E182 68.19 % 100.0 91.4 109 RM Passing (0.125mm) E182 68.19 % 100.0 92.7 107 RM Passing (0.125mm) E182 72.05 % 99.7 93.1 107 RM Passing (0.250mm) E182 82.27 % 99.0 94.1 106 RM Passing (0.420mm) E182 89.94 % 99.0 94.1 106 RM Passing (0.420mm) E182 89.94 % 99.0 94.6 105 RM Passing (0.50mm) E182 91.15 % 99.1 94.7 105 RM Passing (0.420mm) E182 95.64 % 99.4 94.9 105 RM Passing (0.420mm) E182 95.64 % 99.5 94.9 105 RM Passing (0.420mm) E182 96.31 % 99.5 94.9 105 RM Passing (0.420mm) E182 96.31 % 99.5 94.9 105 RM Passing (0.420mm) E182 96.31 % 99.5 94.9 105 RM Passing (0.420mm) E183 24.64 % 84.2 76.0 124 RM Passing (0.440mm) E183 29.3 % 91.2 80.0 120 RM Passing (0.000mm) E183 31.16 % 92.6 82.0 118 RM Passing (0.000mm) E183 31.16 % 92.6 82.0 118 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.0000mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.0000mm) E183	Percent Passin	g (QCLot: 1300399)									
RM Passing (0.075mm) E182 60.15 % 100 91.4 109 RM Passing (0.125mm) E182 68.19 % 100.0 92.7 107 E182 68.19 % 100.0 92.7 107 E182 F182 F182 F182 F182 F182 F182 F182 F		RM	Passing (0.05mm)		E182	54.08 %	99.8	90.0	110		
RM Passing (0.125mm)		RM	Passing (0.063mm)		E182	57.14 %	100	90.8	109		
RM Passing (0.149mm)		RM	Passing (0.075mm)		E182	60.15 %	100	91.4	109		
RM Passing (0.250mm)		RM	Passing (0.125mm)		E182	68.19 %	100.0	92.7	107		
RM Passing (0.420mm) E182 89.94 99.0 94.6 105 RM Passing (0.50mm) E182 91.15 99.1 94.7 105 E182 95.64 99.4 94.9 105 E182 95.64 99.5 94.9 105 E182 96.31 99.5 94.9 105 E182 96.31 99.5 94.9 105 E182 PASSING (O.6000000000000000000000000000000000000		RM	Passing (0.149mm)		E182	72.05 %	99.7	93.1	107		
RM Passing (0.50mm) E182 91.15 % 99.1 94.7 105 E182 95.64 % 99.4 94.9 105 E182 96.31 % 99.5 94.9 105 E182 POS.50mm POS.50m		RM	Passing (0.250mm)		E182	82.27 %	99.0	94.1	106		
RM     Passing (0.841mm)      E182     95.64 %     99.4     94.9     105        RM     Passing (1.0mm)      E182     96.31 %     99.5     94.9     105        rcent Passing (QCLot: 1300400)       RM     Passing (0.002mm)      E183     24.64 %     84.2     76.0     124        RM     Passing (0.004mm)      E183     29.3 %     91.2     80.0     120        RM     Passing (0.005mm)      E183     31.16 %     92.6     82.0     118        RM     Passing (0.020mm)      E183     43.27 %     94.1     87.0     113        RM     Passing (0.0312mm)      E183     48.23 %     96.0     88.0     112		RM	Passing (0.420mm)		E182	89.94 %	99.0	94.6	105		
RM Passing (1.0mm) E182 96.31 % 99.5 94.9 105  recent Passing (QCLot: 1300400)  RM Passing (0.002mm) E183 24.64 % 84.2 76.0 124  RM Passing (0.004mm) E183 29.3 % 91.2 80.0 120  RM Passing (0.005mm) E183 31.16 % 92.6 82.0 118  RM Passing (0.002mm) E183 43.27 % 94.1 87.0 113  RM Passing (0.00312mm) E183 48.23 % 96.0 88.0 112		RM	Passing (0.50mm)		E182	91.15 %	99.1	94.7	105		
Recent Passing (QCLot: 1300400)       RM     Passing (0.002mm)      E183     24.64 %     84.2     76.0     124        RM     Passing (0.004mm)      E183     29.3 %     91.2     80.0     120        RM     Passing (0.005mm)      E183     31.16 %     92.6     82.0     118        RM     Passing (0.020mm)      E183     43.27 %     94.1     87.0     113        RM     Passing (0.0312mm)      E183     48.23 %     96.0     88.0     112		RM	Passing (0.841mm)		E182	95.64 %	99.4	94.9	105		
RM       Passing (0.002mm)        E183       24.64 %       84.2       76.0       124          RM       Passing (0.004mm)        E183       29.3 %       91.2       80.0       120          RM       Passing (0.005mm)        E183       31.16 %       92.6       82.0       118          RM       Passing (0.020mm)        E183       43.27 %       94.1       87.0       113          RM       Passing (0.0312mm)        E183       48.23 %       96.0       88.0       112		RM	Passing (1.0mm)		E182	96.31 %	99.5	94.9	105		
RM       Passing (0.002mm)        E183       24.64 %       84.2       76.0       124          RM       Passing (0.004mm)        E183       29.3 %       91.2       80.0       120          RM       Passing (0.005mm)        E183       31.16 %       92.6       82.0       118          RM       Passing (0.020mm)        E183       43.27 %       94.1       87.0       113          RM       Passing (0.0312mm)        E183       48.23 %       96.0       88.0       112	Percent Passin	g (QCLot: 1300400)									
RM Passing (0.005mm) E183 31.16 % 92.6 82.0 118 RM Passing (0.020mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.0312mm) E183 48.23 % 96.0 88.0 112			Passing (0.002mm)		E183	24.64 %	84.2	76.0	124		
RM Passing (0.020mm) E183 43.27 % 94.1 87.0 113 RM Passing (0.0312mm) E183 48.23 % 96.0 88.0 112		RM	Passing (0.004mm)		E183	29.3 %	91.2	80.0	120		
RM Passing (0.0312mm) E183 48.23 % 96.0 88.0 112		RM	Passing (0.005mm)		E183	31.16 %	92.6	82.0	118		
O. 7		RM	Passing (0.020mm)		E183	43.27 %	94.1	87.0	113		
		RM	Passing (0.0312mm)		E183	48.23 %	96.0	88.0	112		
tals (QCLot: 1299637)	Metals (QCLot:	1299637)									

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 Work Order
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 :
 Lopers & Associates

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 :
 LOP23-029B\



Sub-Matrix:	Matrix:					Reference Material (RM) Report						
					RM Target	Recovery (%)	Recovery I	Limits (%)				
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier			
Metals (QCLot: 1	299637) - continued											
	RM	Calcium, soluble ion content	7440-70-2	E484	43.54 mg/L	103	70.0	130				
	RM	Magnesium, soluble ion content	7439-95-4	E484	15.24 mg/L	99.7	70.0	130				
	RM	Sodium, soluble ion content	17341-25-2	E484	33.47 mg/L	101	70.0	130				
Metals (QCLot: 1	299638)											
	RM	Boron, hot water soluble	7440-42-8	E487	1.366 mg/kg	95.9	60.0	140				
Metals (QCLot: 1	299639)											
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	103	70.0	130				
Metals (QCLot: 1	299640)											
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	85.4	70.0	130				
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	108	70.0	130				
	RM	Barium	7440-39-3	E440C	105 mg/kg	110	70.0	130				
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	98.3	70.0	130				
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	121	70.0	130				
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	103	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	105	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	102	70.0	130				
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	101	70.0	130				
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	105	70.0	130				
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	95.6	70.0	130				
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	88.2	70.0	130				
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	101	70.0	130				
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	103	70.0	130				
	RM	Zinc	7440-66-6	E440C	297 mg/kg	102	70.0	130				
Speciated Metals	(QCLot: 1299634)											
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	89.3	70.0	130				

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# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

ō Page

COC Number: 22

**Environmental Division** Waterloo



SUSPECTED HAZARD (see notes) A STATE OF THE PERSON OF THE P ☐ YES ☐ N/A EXTENDED STORAGE REQUIRED COOLING INITIATED SAMPLES ON HOLD Submission Comments Identified on Sample Receipt Notification: Telephone: +1 519 886 6910 Sample Custody Seals Intact: For all tests with rush TATs requested, please contact your AM to confirm availability MAL SHIPMENT RECEPTION (ALS use only) Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below SAMPLE RECEIPT DETAILS (ALS use only Cooling Method: . . . NONE . . . ICE . . I'CE PACKS . . FROZEN Analysis Request 3 day [P3] if received by 3pm M-F - 25% rush surcharge mi
2 day [P2] if received by 3pm M-F - 50% rush surcharge mi
1 day [E] if received by 3pm M-F - 100% rush surcharge mi
Same day [E2] if received by 10am M-S - 200% rush surcha Reoutine [R] if received by 3pm M-F - no surcharges apply 4 day [P4] if received by 3pm M-F - 20% rush surcharge mir Additional fees may apply to rush requests on weeke □YES 🚰 N/A Turnaround Time (TAT) Requested Date and Time Required for all E&P TATS: TURES °C Cooler Custody Seals Intact: Received by: OC/EJ-Ed BTEX/F1-F4 Time: ∠:≾° Aetals & Inorganics 92 илмвек оғ соитаіиека Tammy (notical) One: 8th /24 Sample Type Compare Results to Criteria on Report - provide details below if box checked INITIAL SHIPMENT RECEPTION (ALS use only) SOIL SOL SOL Select Report Format: 3 PDF 3 exce. DED (DIGITAL) Notes / Specify Limits for result evaluation by selecting from drop-down below ΕĀ Oil and Gas Required Fields (client use) ☐ MAIL ☐ FAX Routing Code: Select Invoice Distribution: 🗹 EMAIL 🔲 MAIL (hh:mm) Time Reports / Recipients Sampler: Invoice Recipients できた 2-12m-2 7- Jan 2 F-180 24 Email 1 or Fax Luke@Lopers.ca Email 1 or Fax Luke@Lopers.ca 75 M EMAIL Farassoglou (dd-mmm-bb) Costas Date Select Distribution: Aajor/Minor Code: AFE/Cost Center: ALS Lab Work Order # (ALS use only):  $\sqrt{|O|} > \sqrt{|O|} > \sqrt{|O|}$ ALS Contact: Received by: Requisitioner: .ocation: Email 2 Email 3 Email 2 Sample Identification and/or Coordinates (This description will appear on the report) Contact and company name below will appear on the final report LOPE100/WT2023LOPE1000002 PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION Company address below wili appear on the final report ✓ YES 🗆 NO ş SHIPMENT RELEASE (client use) Ϋ́ΕS -24-55 T OU. BH-24-539 LOPERS & ASSOCIATES - LOPE100 -24-58 Drinking Water (DW) Samples (Client use)  $\overline{\mathcal{D}}$ Project Information vre samples taken from a Regulated DW System? 01000 Copy of Invoice with Report re samples for human consumption/ use? なっているな Same as Report To 30 Lansfield Way 613-327-9073 LOP23-029B\ Luke Lopers Ottawa, ON ALS Account # / Quote #: ☐ YES ☐ NO ON LES IN IN K2G 3V8 ALS Sample # (ALS use only) City/Province: Postal Code: nvoice To Report To Company: Company: PO / AFE: Sontact: Confact: Street: Phone: Job #: S

Fallure 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

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

# **ALS Canada Ltd.**



# **CERTIFICATE OF ANALYSIS**

: 1 of 7

Work Order : WT2402708 Page

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo ON Canada N2V 2B8

 Telephone
 : 613 327 9073
 Telephone
 : 613 225 8279

 Project
 : LOP23-029B
 Date Samples Received
 : 05-Feb-2024 16:20

PO : --- Date Analysis Commenced : 07-Feb-2024

C-O-C number : --- Issue Date : 12-Feb-2024 14:26

Sampler : CLIENT Site .

Site :

Quote number : SOA 2024

No. of samples received : 2
No. of samples analysed : 2

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
- Surrogate Control Limits

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.

	VOC, Waterloo, Ontario
Andrea Armstrong Department Manager - Air Quality and Volatiles	
Andrea Armstrong Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jocelyn Kennedy Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Josphin Masihi Analyst	Centralized Prep, Waterloo, Ontario
Josphin Masihi Analyst	Centralized Prep, Waterloo, Ontario
Nik Perkio Inorganics Analyst	Inorganics, Waterloo, Ontario
Nik Perkio Inorganics Analyst	Metals, Waterloo, Ontario
Niki Goebel Inorganics Analyst	Metals, Waterloo, Ontario

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Work Order : WT2402708

Client : Lopers & Associates

Project : LOP23-029B



#### **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.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

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

<sup>&</sup>lt;: less than.

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

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

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

#### **Qualifiers**

Qualifier	Description
SUR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

<sup>&</sup>gt;: greater than.

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Soil/Solid			CI	ient sample ID	BH2-24-SS1	BH2-24-SS7	 	
(Matrix: Soil/Solid)								
			Client samp	ling date / time	05-Feb-2024 11:00	05-Feb-2024 13:00	 	
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2402708-001	WT2402708-002	 	
Physical Tests					Result	Result	 	
Physical Tests Conductivity (1:2 leachate)		E100-L/WT	0.00500	mS/cm	0.433		 	
Moisture		E144/WT	0.25	%	4.38	20.5	 	
pH (1:2 soil:CaCl2-aq)		E108A/WT	0.10	pH units	7.75		 	
Cyanides			0.10	pri dinto				
Cyanides Cyanide, weak acid dissociable		E336A/WT	0.050	mg/kg	<0.050		 	
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	E484/WT	0.50	mg/L	3.90		 	
Magnesium, soluble ion content	7439-95-4		0.50	mg/L	1.25		 	
Sodium, soluble ion content	17341-25-2		0.50	mg/L	67.0		 	
Sodium adsorption ratio [SAR]		E484/WT	0.10	-	7.56		 	
Metals								
Antimony	7440-36-0	E440C/WT	0.10	mg/kg	<0.10		 	
Arsenic	7440-38-2	E440C/WT	0.10	mg/kg	1.90		 	
Barium	7440-39-3	E440C/WT	0.50	mg/kg	124		 	
Beryllium	7440-41-7	E440C/WT	0.10	mg/kg	0.42		 	
Boron	7440-42-8	E440C/WT	5.0	mg/kg	7.0		 	
Boron, hot water soluble	7440-42-8	E487/WT	0.10	mg/kg	0.27		 	
Cadmium	7440-43-9	E440C/WT	0.020	mg/kg	0.067		 	
Chromium	7440-47-3	E440C/WT	0.50	mg/kg	32.4		 	
Cobalt	7440-48-4	E440C/WT	0.10	mg/kg	8.33		 	
Copper	7440-50-8	E440C/WT	0.50	mg/kg	19.2		 	
Lead	7439-92-1	E440C/WT	0.50	mg/kg	4.91		 	
Mercury	7439-97-6	E510C/WT	0.0050	mg/kg	0.0130		 	
Molybdenum	7439-98-7		0.10	mg/kg	1.62		 	
Nickel	7440-02-0		0.50	mg/kg	16.9		 	
Selenium	7782-49-2		0.20	mg/kg	<0.20		 	
Silver	7440-22-4		0.10	mg/kg	<0.10		 	
Thallium	7440-28-0		0.050	mg/kg	0.152		 	
Uranium	7440-61-1	E440C/WT	0.050	mg/kg	0.573		 	

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Lopers & Associates LOP23-029B Client

Project



Analytical Nesults			_					
Sub-Matrix: Soil/Solid		C	lient sample ID	BH2-24-SS1	BH2-24-SS7			
(Matrix: Soil/Solid)								
		Client samp	oling date / time	05-Feb-2024 11:00	05-Feb-2024 13:00			
Analyte	CAS Number Method/Lab	LOR	Unit	WT2402708-001	WT2402708-002			
				Result	Result			
Metals		0.00		44.0				
Vanadium	7440-62-2 E440C/WT	0.20	mg/kg	41.2				
Zinc	7440-66-6 E440C/WT	2.0	mg/kg	39.2				
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9 E532/WT	0.10	mg/kg	0.21				
Volatile Organic Compounds								
Acetone	67-64-1 E611D/WT	0.50	mg/kg		<0.50			
Benzene	71-43-2 E611A/WT	0.0050	mg/kg	0.0058				
Benzene	71-43-2 E611D/WT	0.0050	mg/kg		<0.0050			
Bromodichloromethane	75-27-4 E611D/WT	0.050	mg/kg		<0.050			
Bromoform	75-25-2 E611D/WT	0.050	mg/kg		<0.050			
Bromomethane	74-83-9 E611D/WT	0.050	mg/kg		<0.050			
Carbon tetrachloride	56-23-5 E611D/WT	0.050	mg/kg		<0.050			
Chlorobenzene	108-90-7 E611D/WT	0.050	mg/kg		<0.050			
Chloroform	67-66-3 E611D/WT	0.050	mg/kg		<0.050			
Dibromochloromethane	124-48-1 E611D/WT	0.050	mg/kg		<0.050			
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.050	mg/kg		<0.050			
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.050	mg/kg		<0.050			
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.050	mg/kg		<0.050			
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.050	mg/kg		<0.050			
Dichlorodifluoromethane	75-71-8 E611D/WT	0.050	mg/kg		<0.050			
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.050	mg/kg		<0.050			
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.050	mg/kg		<0.050			
Dichloroethylene, 1,1-	75-35-4 E611D/WT	0.050	mg/kg		<0.050			
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.050	mg/kg		<0.050			
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.050	mg/kg		<0.050			
Dichloromethane	75-09-2 E611D/WT	0.045	mg/kg		<0.045			
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.050	mg/kg		<0.050			
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.050	mg/kg		<0.050			
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.030	mg/kg		<0.030			
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.030	mg/kg		<0.030			
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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Soil/Solid		C	lient sample ID	BH2-24-SS1	BH2-24-SS7	 	
(Matrix: Soil/Solid)							
			oling date / time	05-Feb-2024 11:00	05-Feb-2024 13:00	 	
Analyte	CAS Number Method/Lab	LOR	Unit	WT2402708-001	WT2402708-002	 	
Volatile Organic Compounds				Result	Result	 	
Ethylbenzene	100-41-4 E611A/WT	0.015	mg/kg	<0.015		 	
Ethylbenzene	100-41-4 E611D/WT	0.015	mg/kg		<0.015	 	
Hexane, n-	110-54-3 E611D/WT	0.050	mg/kg		<0.050	 	
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT	0.50	mg/kg		<0.50	 	
Methyl isobutyl ketone [MIBK]	108-10-1 E611D/WT	0.50	mg/kg		<0.50	 	
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.040	mg/kg		<0.040	 	
Styrene	100-42-5 E611D/WT	0.050	mg/kg		<0.050	 	
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.050	mg/kg		<0.050	 	
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.050	mg/kg		<0.050	 	
Tetrachloroethylene	127-18-4 E611D/WT	0.050	mg/kg		<0.050	 	
Toluene	108-88-3 E611A/WT	0.050	mg/kg	<0.050		 	
Toluene	108-88-3 E611D/WT	0.050	mg/kg		<0.050	 	
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.050	mg/kg		<0.050	 	
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.050	mg/kg		<0.050	 	
Trichloroethylene	79-01-6 E611D/WT	0.010	mg/kg		<0.010	 	
Trichlorofluoromethane	75-69-4 E611D/WT	0.050	mg/kg		<0.050	 	
Vinyl chloride	75-01-4 E611D/WT	0.020	mg/kg		<0.020	 	
Xylene, m+p-	179601-23-1 E611A/WT	0.030	mg/kg	<0.030		 	
Xylene, m+p-	179601-23-1 E611D/WT	0.030	mg/kg		<0.030	 	
Xylene, o-	95-47-6 E611A/WT	0.030	mg/kg	<0.030		 	
Xylene, o-	95-47-6 E611D/WT	0.030	mg/kg		<0.030	 	
Xylenes, total	1330-20-7 E611A/WT	0.050	mg/kg	<0.050		 	
Xylenes, total	1330-20-7 E611D/WT	0.050	mg/kg		<0.050	 	
BTEX, total	E611A/WT	0.10	mg/kg	<0.10		 	
BTEX, total	E611D/WT	0.10	mg/kg		<0.10	 	
Hydrocarbons							
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<5.0	<5.0	 	
F2 (C10-C16)	E601.SG-L/W T	10	mg/kg	<10	<10	 	

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Client : Lopers & Associates

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Sub-Matrix: Soil/Solid		C	lient sample ID	BH2-24-SS1	BH2-24-SS7	 	
(Matrix: Soil/Solid)							
		Client samp	oling date / time	05-Feb-2024 11:00	05-Feb-2024 13:00	 	
Analyte	CAS Number Method/Lab	LOR	Unit	WT2402708-001	WT2402708-002	 	
				Result	Result	 	
Hydrocarbons							
F3 (C16-C34)	E601.SG-L/W	50	mg/kg	<50	<50	 	
F4 (C34-C50)	E601.SG-L/W	50	mg/kg	<50	<50	 	
F1-BTEX	EC580/WT	5.0	mg/kg	<5.0	<5.0	 	
Hydrocarbons, total (C6-C50)	n/a EC581/WT	80	mg/kg	<80	<80	 	
Chromatogram to baseline at nC50	n/a E601.SG-L/W	-	-	YES	YES	 	
Hydrocarbons Surrogates							
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E601.SG-L/W	1.0	%	97.0	103	 	
	Т						
Dichlorotoluene, 3,4-	95-75-0 E581.F1/WT	1.0	%	57.5 SUR-ND	95.0	 	
Volatile Organic Compounds Surrogates							
Bromofluorobenzene, 4-	460-00-4 E611A/WT	0.10	%	91.9		 	
Bromofluorobenzene, 4-	460-00-4 E611D/WT	0.10	%		92.2	 	
Difluorobenzene, 1,4-	540-36-3 E611A/WT	0.10	%	105		 	
Difluorobenzene, 1,4-	540-36-3 E611D/WT	0.10	%		96.2	 	
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	83-32-9 E641A/WT	0.050	mg/kg	<0.050		 	
Acenaphthylene	208-96-8 E641A/WT	0.050	mg/kg	<0.050		 	
Anthracene	120-12-7 E641A/WT	0.050	mg/kg	<0.050		 	
Benz(a)anthracene	56-55-3 E641A/WT	0.050	mg/kg	<0.050		 	
Benzo(a)pyrene	50-32-8 E641A/WT	0.050	mg/kg	<0.050		 	
Benzo(b+j)fluoranthene	n/a E641A/WT	0.050	mg/kg	<0.050		 	
Benzo(g,h,i)perylene	191-24-2 E641A/WT	0.050	mg/kg	<0.050		 	
Benzo(k)fluoranthene	207-08-9 E641A/WT	0.050	mg/kg	<0.050		 	
Chrysene	218-01-9 E641A/WT	0.050	mg/kg	<0.050		 	
Dibenz(a,h)anthracene	53-70-3 E641A/WT	0.050	mg/kg	<0.050		 	
Fluoranthene	206-44-0 E641A/WT	0.050	mg/kg	<0.050		 	
Fluorene	86-73-7 E641A/WT	0.050	mg/kg	<0.050		 	
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A/WT	0.050	mg/kg	<0.050		 	

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# Analytical Results

Sub-Matrix: Soil/Solid			Cli	ient sample ID	BH2-24-SS1	BH2-24-SS7	 	
(Matrix: Soil/Solid)								
		Client sampling date / time (		05-Feb-2024 11:00	05-Feb-2024 13:00	 		
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2402708-001	WT2402708-002	 	
					Result	Result	 	
Polycyclic Aromatic Hydrocarbons								
Methylnaphthalene, 1-	90-12-0	E641A/WT	0.030	mg/kg	<0.030		 	
Methylnaphthalene, 1+2-		E641A/WT	0.050	mg/kg	<0.050		 	
Methylnaphthalene, 2-	91-57-6	E641A/WT	0.030	mg/kg	<0.030		 	
Naphthalene	91-20-3	E641A/WT	0.010	mg/kg	<0.010		 	
Phenanthrene	85-01-8	E641A/WT	0.050	mg/kg	<0.050		 	
Pyrene	129-00-0	E641A/WT	0.050	mg/kg	<0.050		 	
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	E641A/WT	0.1	%	103		 	
Chrysene-d12	1719-03-5	E641A/WT	0.1	%	89.6		 	
Naphthalene-d8	1146-65-2	E641A/WT	0.1	%	100		 	
Phenanthrene-d10	1517-22-2	E641A/WT	0.1	%	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.



Waterloo, Ontario Canada N2V 2B8

# **QUALITY CONTROL INTERPRETIVE REPORT**

:WT2402708 **Work Order** Page : 1 of 11

Client Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers **Account Manager** : Costas Farassoglou Address

Address : 30 Lansfield Way : 60 Northland Road, Unit 1

:613 327 9073 Telephone : 613 225 8279

Project :LOP23-029B **Date Samples Received** : 05-Feb-2024 16:20

PO Issue Date : 12-Feb-2024 14:29 C-O-C number ٠\_\_\_\_

Sampler : CLIENT Site

Ottawa ON Canada K2G 3V8

Quote number :SOA 2024

No. of samples received :2 No. of samples analysed :2

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

Telephone

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.
- Test sample Surrogate recovery outliers exist for all regular sample matrices please see following pages for full details.

## 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.

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Client : Lopers & Associates
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#### Regular Sample Surrogates

Analyte Group	Laboratory sample ID Client/Ref		Analyte	CAS Number		Limits	Comment
Samples Submitted							
Hydrocarbons Surrogates	WT2402708-001	BH2-24-SS1	Dichlorotoluene, 3,4-	95-75-0	57.5 %	60.0-140	Recovery less than lower
						%	data quality objective

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# **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.

Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH2-24-SS1	E336A	05-Feb-2024	07-Feb-2024	14 days	2 days	✓	08-Feb-2024	14 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH2-24-SS7	E581.F1	05-Feb-2024	07-Feb-2024	14 days	2 days	✓	07-Feb-2024	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH2-24-SS1	E581.F1	05-Feb-2024	08-Feb-2024	14 days	3 days	✓	08-Feb-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH2-24-SS7	E601.SG-L	05-Feb-2024	07-Feb-2024	14 days	2 days	✓	08-Feb-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH2-24-SS1	E601.SG-L	05-Feb-2024	07-Feb-2024	14 days	3 days	✓	08-Feb-2024	40 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH2-24-SS1	E487	05-Feb-2024	09-Feb-2024	180 days	4 days	✓	09-Feb-2024	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP] BH2-24-SS1	E510C	05-Feb-2024	08-Feb-2024	28 days	3 days	1	09-Feb-2024	28 days	4 days	✓

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Client Lopers & Associates LOP23-029B Project



Matrix: Soil/Solid					Ev	/aluation: × =	Holding time exce	edance ; •	✓ = Within	Holding Ti
Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / P	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS1	E440C	05-Feb-2024	08-Feb-2024	180	3 days	✓	09-Feb-2024	180	4 days	✓
				days				days		ı
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										-
BH2-24-SS1	E484	05-Feb-2024	09-Feb-2024	180	4 days	✓	09-Feb-2024	180	0 days	✓
				days				days		ı
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS1	E100-L	05-Feb-2024	09-Feb-2024	30	4 days	✓	09-Feb-2024	30 days	4 days	✓
				days						ı
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS1	E144	05-Feb-2024					07-Feb-2024		2 days	ı
										ı
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS7	E144	05-Feb-2024					07-Feb-2024		2 days	ı
										ı
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS1	E108A	05-Feb-2024	07-Feb-2024	30	2 days	✓	08-Feb-2024	30 days	3 days	✓
				days						ı
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-24-SS1	E641A	05-Feb-2024	07-Feb-2024	60	3 days	✓	08-Feb-2024	40 days	0 days	✓
				days						ı
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]								T		
BH2-24-SS1	E532	05-Feb-2024	07-Feb-2024	30	2 days	✓	08-Feb-2024	7 days	1 days	✓
				days						ı
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
BH2-24-SS1	E611A	05-Feb-2024	08-Feb-2024	14	3 days	1	08-Feb-2024	40 days	0 days	1
				1 .''				1 ,-	,	

days

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Project : LOP23-029B



#### Matrix: Soil/Solid

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

Matrix Comcond						alaation.	Tiolaing aime exces	,		Tiolaing Time
Analyte Group : Analytical Method	Method	Sampling Date	Exti	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH2-24-SS7	E611D	05-Feb-2024	07-Feb-2024	14 days	2 days	✓	07-Feb-2024	40 days	0 days	✓

## **Legend & Qualifier Definitions**

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

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Client : Lopers & Associates
Project : LOP23-029B



# **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				ency outside spe	John Gation,		
Quality Control Sample Type				ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1325673	1	14	7.1	5.0	✓
BTEX by Headspace GC-MS	E611A	1326317	1	16	6.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1325867	2	30	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1325647	1	7	14.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1325671	1	14	7.1	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1325669	1	14	7.1	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1325674	1	14	7.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1325675	1	19	5.2	5.0	✓
Moisture Content by Gravimetry	E144	1325981	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1325648	1	6	16.6	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1325705	1	1	100.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1325670	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1325866	1	14	7.1	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1325655	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1325673	2	14	14.2	10.0	1
BTEX by Headspace GC-MS	E611A	1326317	1	16	6.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1325867	2	30	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1325647	1	7	14.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1325671	2	14	14.2	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1325669	2	14	14.2	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1325674	2	14	14.2	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1325675	2	19	10.5	10.0	✓
Moisture Content by Gravimetry	E144	1325981	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1325648	1	6	16.6	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1325705	1	1	100.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1325670	2	14	14.2	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1325866	1	14	7.1	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1325655	1	14	7.1	5.0	✓
Method Blanks (MB)							_
Boron-Hot Water Extractable by ICPOES	E487	1325673	1	14	7.1	5.0	1
BTEX by Headspace GC-MS	E611A	1326317	1	16	6.2	5.0	<b>√</b>
CCME PHC - F1 by Headspace GC-FID	E581.F1	1325867	2	30	6.6	5.0	<b>√</b>
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1325647	1	7	14.2	5.0	<b>✓</b>
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1325671	1	14	7.1	5.0	<b>√</b>

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Client : Lopers & Associates
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Matrix: Soil/Solid Evaluation: × = QC frequency outside specification; √ = QC frequency within specification.

Matrix: Soil/Solid											
Quality Control Sample Type			Co	ount		Frequency (%)					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation				
Method Blanks (MB) - Continued											
Hexavalent Chromium (Cr VI) by IC	E532	1325669	1	14	7.1	5.0	✓				
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1325674	1	14	7.1	5.0	✓				
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1325675	1	19	5.2	5.0	✓				
Moisture Content by Gravimetry	E144	1325981	1	20	5.0	5.0	✓				
PAHs by Hex:Ace GC-MS	E641A	1325648	1	6	16.6	5.0	✓				
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1325670	1	14	7.1	5.0	✓				
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1325866	1	14	7.1	5.0	✓				
WAD Cyanide (0.01M NaOH Extraction)	E336A	1325655	1	14	7.1	5.0	✓				
Matrix Spikes (MS)											
BTEX by Headspace GC-MS	E611A	1326317	1	16	6.2	5.0	✓				
CCME PHC - F1 by Headspace GC-FID	E581.F1	1325867	2	30	6.6	5.0	✓				
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1325647	1	7	14.2	5.0	✓				
PAHs by Hex:Ace GC-MS	E641A	1325648	1	6	16.6	5.0	✓				
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1325866	1	14	7.1	5.0	✓				
WAD Cyanide (0.01M NaOH Extraction)	E336A	1325655	1	14	7.1	5.0	✓				
		•									

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# **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 -	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
	Waterloo		,	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	Soil/Solid	MECP E3530	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C) and is carried out in accordance
	ALS Environmental - Waterloo			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	Soil/Solid	CCME PHC in Soil - Tier	This method is equivalent to ASTM D4972 and is acceptable for topsoil analysis.  Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is
	ALS Environmental - Waterloo		1	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	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.
	ALS Environmental - Waterloo			
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	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
	ALS Environmental - Waterloo			HCI.
				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	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
	ALS Environmental - Waterloo			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.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487	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.
	ALS Environmental -			
	Waterloo			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	Soil/Solid	EPA 200.2/1631	Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl, followed
			Appendix (mod)	by CVAAS analysis.
	ALS Environmental -			
Hexavalent Chromium (Cr VI) by IC	Waterloo E532	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
Trexavalent emornium (er vi) by 10	E332	GOII/GOIIG	74 11/1 0000-011 0	installental allaysis is performed by for officinatiography with 5 v detection.
	ALS Environmental -			
	Waterloo			
CCME PHC - F1 by Headspace GC-FID	E581.F1	Soil/Solid	CCME PHC in Soil - Tier	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in
			1	headspace vials and are heated and agitated on the headspace autosampler, causing
	ALS Environmental -			VOCs to partition between the aqueous phase and the headspace in accordance with
	Waterloo			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	Soil/Solid	CCME PHC in Soil - Tier	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID
, , , ,	2001.002		1	for CCME hydrocarbon fractions (F2-F4).
	ALS Environmental -			
	Waterloo			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	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS.
	A1 O F			Samples are prepared in headspace vials and are heated and agitated on the
	ALS Environmental -			headspace autosampler, causing VOCs to partition between the aqueous phase and
VOCa (Eastern Canada List) by Llandanas	Waterloo E611D	Soil/Solid	EPA 8260D (mod)	the headspace in accordance with Henry's law.
VOCs (Eastern Canada List) by Headspace GC-MS	FOLID	3011/3011u	LI A 0200D (IIIOU)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the
- GO-1010	ALS Environmental -			headspace autosampler, causing VOCs to partition between the aqueous phase and
	Waterloo			the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A	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
	ALS Environmental -			B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME
	Waterloo			PAH Soil Quality Guidelines fact sheet (2010) or ABT1.

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Analytical Methods

Method / Lab

Matrix

Method Reference

Method Descriptions

F1-BTEX

EC580

Soil/Solid

CCME PHC in Soil - Tier
1

ALS Environmental 
Which In Soil - Tier
1

ALS Environmental 
Which In Soil - Tier
1

ALS Environmental 
Which In Soil - Tier
1

EC580

Soil/Solid

CME PHC in Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
Which In Soil - Tier
1

EC580

ALS Environmental 
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	Waterloo			
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.

# **ALS Canada Ltd.**



# **QUALITY CONTROL REPORT**

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Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

**Account Manager** : Luke Lopers : Costas Farassoglou Address Address :30 Lansfield Way : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

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Telephone Telephone :613 225 8279

Project Date Samples Received :05-Feb-2024 16:20 :LOP23-029B

PO **Date Analysis Commenced** :07-Feb-2024 C-O-C number Issue Date

: 12-Feb-2024 14:32 Sampler : CLIENT

Site

Quote number : SOA 2024 : 2 No. of samples received

No. of samples analysed : 2

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

613 327 9073

Ottawa ON Canada K2G 3V8

- 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

Contact

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
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Waterloo Centralized Prep, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Waterloo Metals, 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.

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ALS

## 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	ıb-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: 1325671)													
WT2402700-002	Anonymous	Conductivity (1:2 leachate)		E100-L	10.0	μS/cm	0.0798 mS/cm	86.0	6.20	Diff <2x LOR				
Physical Tests (QC	Lot: 1325705)													
WT2402708-001	BH2-24-SS1	pH (1:2 soil:CaCl2-aq)		E108A	0.10	pH units	7.75	7.84	1.15%	5%				
Physical Tests (QC	Lot: 1325981)													
HA2400271-021	Anonymous	Moisture		E144	0.25	%	21.5	22.7	5.26%	20%				
Cyanides (QC Lot:	1325655)													
WT2402700-001	Anonymous	Cyanide, weak acid dissociable		E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR				
Metals (QC Lot: 13	25670)													
WT2402700-002	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	0.58	0.60	0.02	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	1.27	1.28	0.01	Diff <2x LOR				
Metals (QC Lot: 13	25673)													
WT2402700-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR				
Metals (QC Lot: 132	25674)													
WT2402700-001	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0051	0.0050	0.00009	Diff <2x LOR				
Metals (QC Lot: 132	25675)													
WT2402700-001	Anonymous	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	0.63	0.60	0.03	Diff <2x LOR				
		Barium	7440-39-3	E440C	0.50	mg/kg	104	103	1.11%	40%				
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.19	0.22	0.03	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	0.052	0.050	0.001	Diff <2x LOR				
		Chromium	7440-47-3	E440C	0.50	mg/kg	17.0	17.7	4.05%	30%				
		Cobalt	7440-48-4	E440C	0.10	mg/kg	8.17	8.27	1.21%	30%				
		Copper	7440-50-8	E440C	0.50	mg/kg	20.1	20.9	4.04%	30%				
		Lead	7439-92-1	E440C	0.50	mg/kg	1.95	1.96	0.02	Diff <2x LOR				
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.84	0.81	3.91%	40%				
		Nickel	7440-02-0	E440C	0.50	mg/kg	10.8	11.4	4.74%	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				

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Sub-Matrix: Soil/Solid							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
Metals (QC Lot: 132	25675) - continued										
WT2402700-001	Anonymous	Thallium	7440-28-0	E440C	0.050	mg/kg	0.107	0.111	0.004	Diff <2x LOR	
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.513	0.584	13.0%	30%	
		Vanadium	7440-62-2	E440C	0.20	mg/kg	54.4	55.3	1.52%	30%	
		Zinc	7440-66-6	E440C	2.0	mg/kg	41.4	41.9	1.28%	30%	
Speciated Metals (0	QC Lot: 1325669)										
WT2402700-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.13	0.13	0.005	Diff <2x LOR	
olatile Organic Co	mpounds (QC Lot: 13	325866)									
VT2402774-001	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	0.0406	0.0406	0.00%	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	
		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, dis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	
		Ethylbenzene	100-41-4	E611D	0.030	mg/kg	0.043	0.042	0.0004	Diff <2x LOR	
		Hexane, n-	110-54-3	E611D	0.013	mg/kg	0.043	0.042	0.0004	Diff <2x LOR	
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.050	mg/kg	<0.50	<0.50	0.001	Diff <2x LOR	
		ivietriyi etriyi ketorle [IVIEK]	108-10-1	LUTID	0.50	mg/kg	~0.50	~0.00		Diff <2x LOR	

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Difference Limits Result Result Volatile Organic Compounds (QC Lot: 1325866) - continued WT2402774-001 Diff <2x LOR Anonymous Methyl-tert-butyl ether [MTBE] 1634-04-4 E611D 0.040 mg/kg < 0.040 < 0.040 0 Styrene 100-42-5 E611D 0.050 mg/kg < 0.050 < 0.050 0 Diff <2x LOR 630-20-6 E611D 0.050 < 0.050 < 0.050 Diff <2x LOR Tetrachloroethane, 1,1,1,2mg/kg 0 79-34-5 E611D 0.050 < 0.050 Diff <2x LOR Tetrachloroethane, 1,1,2,2mg/kg < 0.050 0 Tetrachloroethylene 127-18-4 E611D 0.050 mg/kg < 0.050 < 0.050 0 Diff <2x LOR 108-88-3 E611D 0.050 0.424 0.422 0.501% 40% Toluene mg/kg E611D 0 Diff <2x LOR Trichloroethane, 1,1,1-71-55-6 0.050 mg/kg < 0.050 < 0.050 79-00-5 E611D 0.050 < 0.050 < 0.050 Diff <2x LOR Trichloroethane, 1,1,2mg/kg 0 79-01-6 E611D 0.010 < 0.010 < 0.010 0 Diff <2x LOR Trichloroethylene mg/kg \_\_\_\_ E611D 0.050 < 0.050 Diff <2x LOR Trichlorofluoromethane 75-69-4 mg/kg < 0.050 0 Vinyl chloride 75-01-4 E611D 0.020 mg/kg < 0.020 < 0.020 0 Diff <2x LOR 179601-23-1 E611D 0.030 0.182 0.182 0.194% 40% Xylene, m+pmg/kg 95-47-6 E611D 0.030 0.060 0.059 0.001 Diff <2x LOR Xylene, omg/kg Volatile Organic Compounds (QC Lot: 1326317) WT2402646-001 71-43-2 E611A 0.0050 0.0597 0.0590 1.23% 40% Anonymous Benzene mg/kg Ethylbenzene 100-41-4 E611A 0.015 mg/kg 5.19 5.27 1.49% 40% Toluene 108-88-3 E611A 0.050 mg/kg 2.41 2.45 1.93% 40% E611A Xylene, m+p-179601-23-1 0.030 mg/kg 16.0 16.2 1.71% 40% 95-47-6 E611A 0.030 mg/kg 9.79 9.82 0.286% 40% Xylene, o-Hydrocarbons (QC Lot: 1325647) WT2402656-001 Anonymous E601.SG-L Diff <2x LOR F2 (C10-C16) 10 mg/kg <11 10 10 F3 (C16-C34) E601.SG-L 50 mg/kg 95 139 44 Diff <2x LOR E601.SG-L 40 Diff <2x LOR 50 68 109 F4 (C34-C50) mg/kg ----Hydrocarbons (QC Lot: 1325867) WT2402774-001 E581.F1 5.0 <5.0 <5.0 Diff <2x LOR Anonymous F1 (C6-C10) mg/kg 0 Hydrocarbons (QC Lot: 1326318) WT2402646-001 E581.F1 252 285 12.4% Anonymous F1 (C6-C10) 5.8 mg/kg 30% ----Polycyclic Aromatic Hydrocarbons (QC Lot: 1325648) WT2402656-001 Anonymous 83-32-9 E641A 0.050 Diff <2x LOR < 0.050 0.054 0.004 Acenaphthene mg/kg J Acenaphthylene 208-96-8 E641A 0.050 mg/kg < 0.050 < 0.050 0 Diff <2x LOR 120-12-7 E641A 0.050 mg/kg 0.117 0.155 0.038 Diff <2x LOR Anthracene 0.212 56-55-3 E641A 0.050 0.286 29.6% 50% Benz(a)anthracene mg/kg E641A Benzo(a)pyrene 50-32-8 0.050 mg/kg 0.230 0.317 31.7% 50% Benzo(b+j)fluoranthene n/a E641A 0.050 mg/kg 0.335 0.435 25.9% 50%

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID CAS Number | Method LOR Unit Analyte Original **Duplicate** RPD(%) or **Duplicate** Qualifier Result Result Difference Limits Polycyclic Aromatic Hydrocarbons (QC Lot: 1325648) - continued WT2402656-001 Anonymous 191-24-2 E641A Diff <2x LOR Benzo(g,h,i)perylene 0.050 mg/kg 0.154 0.204 0.050 Diff <2x LOR E641A 0.167 Benzo(k)fluoranthene 207-08-9 0.050 mg/kg 0.123 0.044 Chrysene 218-01-9 E641A 0.050 mg/kg 0.233 0.288 21.0% 50% E641A Diff <2x LOR Dibenz(a,h)anthracene 53-70-3 0.050 mg/kg < 0.050 < 0.050 0 Fluoranthene 206-44-0 E641A 0.050 mg/kg 0.557 0.744 28.8% 50% Fluorene 86-73-7 E641A 0.050 mg/kg 0.054 0.068 0.014 Diff <2x LOR J 193-39-5 E641A 0.050 0.170 0.237 32.5% 50% Indeno(1,2,3-c,d)pyrene mg/kg Diff <2x LOR Methylnaphthalene, 1-90-12-0 E641A 0.030 mg/kg < 0.030 < 0.030 0 91-57-6 E641A 0.030 < 0.030 < 0.030 Diff <2x LOR Methylnaphthalene, 2mg/kg 0 ----91-20-3 E641A 0.010 0.020 0.023 0.003 Diff <2x LOR Naphthalene mg/kg J E641A Phenanthrene 85-01-8 0.050 mg/kg 0.402 0.556 32.0% 50% Pyrene 129-00-0 E641A 0.050 mg/kg 0.440 0.580 27.6% 50%

## **Qualifiers**

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Qualifier Description

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

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# 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.

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1325671)					
Conductivity (1:2 leachate)	E100-L	5	μS/cm	<5.00	
Physical Tests (QCLot: 1325981)					
Moisture	E144	0.25	%	<0.25	
Cyanides (QCLot: 1325655)					
Cyanide, weak acid dissociable	E336A	0.05	mg/kg	<0.050	
letals (QCLot: 1325670)					
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: 1325673)					
Boron, hot water soluble	7440-42-8 E487	0.1	mg/kg	<0.10	
Metals (QCLot: 1325674)					
Mercury	7439-97-6 E510C	0.005	mg/kg	<0.0050	
letals (QCLot: 1325675)					
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	

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Analyte	CAS Number	Method	 LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 1325669)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	
Volatile Organic Compounds (QCLot	: 1325866)					
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QC	Lot: 1325866) - 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	
/olatile Organic Compounds (QC	Lot: 1326317)					
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: 1325647)						
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: 1325867)						
F1 (C6-C10)		E581.F1	5	mg/kg	<5.0	
Hydrocarbons (QCLot: 1326318)						
F1 (C6-C10)		E581.F1	5	mg/kg	<5.0	
Polycyclic Aromatic Hydrocarbon						
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	

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# 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			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1325671)									
Conductivity (1:2 leachate)		E100-L	5	μS/cm	1409 μS/cm	99.0	90.0	110	
Physical Tests (QCLot: 1325705)									
pH (1:2 soil:CaCl2-aq)		E108A		pH units	7 pH units	101	98.0	102	
Physical Tests (QCLot: 1325981)									
Moisture		E144	0.25	%	50 %	100	90.0	110	
Cyanides (QCLot: 1325655)									
Cyanide, weak acid dissociable		E336A	0.05	mg/kg	1.25 mg/kg	93.5	80.0	120	
Metals (QCLot: 1325670)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	108	80.0	120	
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	104	80.0	120	
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	104	80.0	120	
Metals (QCLot: 1325673)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	106	70.0	130	
Metals (QCLot: 1325674)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	110	80.0	120	
Metals (QCLot: 1325675)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	115	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	108	80.0	120	
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	104	80.0	120	
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	104	80.0	120	
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	105	80.0	120	
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	104	80.0	120	
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	103	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	104	80.0	120	
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	112	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	103	80.0	120	
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	103	80.0	120	
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	102	80.0	120	

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Sub-Matrix: Soil/Solid						Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery				
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie		
Metals (QCLot: 1325675) - continued											
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	105	80.0	120			
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	106	80.0	120			
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	102	80.0	120			
Speciated Metals (QCLot: 1325669)											
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	99.0	80.0	120			
Volatile Organic Compounds (QCLot: 132	5866)										
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	112	60.0	140			
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	106	70.0	130			
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	109	50.0	140			
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	97.8	70.0	130			
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	110	50.0	140			
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	114	70.0	130			
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	105	70.0	130			
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	111	70.0	130			
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130			
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	103	70.0	130			
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130			
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130			
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	109	70.0	130			
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	66.0	50.0	140			
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	105	60.0	130			
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	105	60.0	130			
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130			
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	104	70.0	130			
Dichloroethylene, trans-1,2-	156-60-5		0.05	mg/kg	3.475 mg/kg	107	60.0	130			
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	115	70.0	130			
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	101	70.0	130			
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	92.9	70.0	130			
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	88.2	70.0	130			
Ethylbenzene	100-41-4		0.015	mg/kg	3.475 mg/kg	104	70.0	130			
Hexane, n-	110-54-3		0.05	mg/kg	3.475 mg/kg	104	70.0	130			
Methyl ethyl ketone [MEK]	78-93-3		0.5	mg/kg	3.475 mg/kg	106	60.0	140			
Methyl isobutyl ketone [MIBK]			0.5	mg/kg	3.475 mg/kg	94.8	60.0	140			
Methyl-tert-butyl ether [MTBE]	1634-04-4		0.04	mg/kg	3.475 mg/kg	104	70.0	130			

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Benz(a)anthracene

Benzo(b+j)fluoranthene

Benzo(g,h,i)perylene

Benzo(a)pyrene



LOP23-029B Project Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Volatile Organic Compounds (QCLot: 1325866) - continued 100-42-5 E611D 0.05 3.475 mg/kg 70.0 130 mg/kg 102 630-20-6 E611D 0.05 mg/kg 60.0 130 Tetrachloroethane, 1,1,1,2-3.475 mg/kg 108 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 0.05 mg/kg 3.475 mg/kg 117 60.0 130 Tetrachloroethylene 127-18-4 E611D 0.05 mg/kg 3.475 mg/kg 112 60.0 130 108-88-3 E611D 0.05 Toluene mg/kg 3.475 mg/kg 104 70.0 130 Trichloroethane, 1,1,1-71-55-6 E611D 0.05 mg/kg 3.475 mg/kg 108 60.0 130 79-00-5 E611D 0.05 Trichloroethane, 1,1,2mg/kg 3.475 mg/kg 105 60.0 130 79-01-6 E611D 0.01 mg/kg 116 60.0 130 Trichloroethylene 3.475 mg/kg 75-69-4 E611D 0.05 50.0 140 mg/kg Trichlorofluoromethane 3.475 mg/kg 107 Vinyl chloride 75-01-4 E611D 0.02 60.0 140 mg/kg 3.475 mg/kg 96.9 179601-23-1 E611D 0.03 70.0 130 Xylene, m+pmg/kg 6.95 mg/kg 110 Xylene, o-95-47-6 E611D 0.03 mg/kg 3.475 mg/kg 104 70.0 130 Volatile Organic Compounds (QCLot: 1326317) 71-43-2 E611A Benzene 0.005 70.0 130 mg/kg 3.475 mg/kg 98.6 Ethylbenzene 100-41-4 E611A 0.015 mg/kg 109 70.0 130 3.475 mg/kg Toluene 108-88-3 E611A 0.05 mg/kg 3.475 mg/kg 111 70.0 130 179601-23-1 E611A 0.03 mg/kg 6.95 mg/kg 70.0 130 106 Xylene, m+p-95-47-6 E611A Xylene, o-0.03 mg/kg 3.475 mg/kg 108 70.0 130 Hydrocarbons (QCLot: 1325647) ---- E601.SG-L 10 70.0 130 F2 (C10-C16) mg/kg 98.9 671.175 mg/kg F3 (C16-C34) ---- E601.SG-L 50 mg/kg 70.0 130 1384.058 mg/kg 107 E601.SG-L 50 F4 (C34-C50) mg/kg 70.0 130 738.5 mg/kg 126 Hydrocarbons (QCLot: 1325867) F1 (C6-C10) ---- E581.F1 5 mg/kg 69.1875 mg/kg 93.9 80.0 120 Hydrocarbons (QCLot: 1326318) ---- E581.F1 5 80.0 120 F1 (C6-C10) mg/kg 69.1875 mg/kg 97.0 Polycyclic Aromatic Hydrocarbons (QCLot: 1325648) Acenaphthene 83-32-9 E641A 0.05 mg/kg 60.0 130 91.2 0.5 mg/kg 208-96-8 E641A 0.05 mg/kg 60.0 130 Acenaphthylene 0.5 mg/kg 93.8 120-12-7 E641A 0.05 mg/kg 99.3 60.0 130 Anthracene 0.5 mg/kg

0.05

0.05

0.05

0.05

mg/kg

mg/kg

mg/kg

mg/kg

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0.5 mg/kg

0.5 mg/kg

0.5 mg/kg

93.8

93.1

97.1

92.9

60.0

60.0

60.0

60.0

130

130

130

130

56-55-3 E641A

50-32-8 E641A

191-24-2 E641A

n/a E641A

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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 (Q	QCLot: 1325648) - continu	ed									
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	89.7	60.0	130			
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	81.4	60.0	130			
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	87.1	60.0	130			
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	94.8	60.0	130			
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	96.0	60.0	130			
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	95.3	60.0	130			
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	80.1	60.0	130			
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	88.0	60.0	130			
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	79.0	60.0	130			
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	91.0	60.0	130			
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	91.4	60.0	130			

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# 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 (%)							
				Spi	Spike		Recovery Limits (%)						
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie			
yanides (QCLo	ot: 1325655)												
VT2402700-001	Anonymous	Cyanide, weak acid dissociable		E336A	1.14 mg/kg	1.25 mg/kg	91.5	70.0	130				
olatile Organic	Compounds (QCLo	t: 1325866)											
WT2402774-001 Anonymous	Acetone	67-64-1	E611D	3.79 mg/kg	3.125 mg/kg	113	50.0	140					
		Benzene	71-43-2	E611D	3.50 mg/kg	3.125 mg/kg	105	50.0	140				
		Bromodichloromethane	75-27-4	E611D	3.60 mg/kg	3.125 mg/kg	108	50.0	140				
		Bromoform	75-25-2	E611D	3.31 mg/kg	3.125 mg/kg	99.0	50.0	140				
		Bromomethane	74-83-9	E611D	4.15 mg/kg	3.125 mg/kg	124	50.0	140				
		Carbon tetrachloride	56-23-5	E611D	3.67 mg/kg	3.125 mg/kg	110	50.0	140				
		Chlorobenzene	108-90-7	E611D	3.40 mg/kg	3.125 mg/kg	101	50.0	140				
		Chloroform	67-66-3	E611D	3.66 mg/kg	3.125 mg/kg	109	50.0	140				
	Dibromochloromethane	124-48-1	E611D	3.64 mg/kg	3.125 mg/kg	109	50.0	140					
	Dibromoethane, 1,2-	106-93-4	E611D	3.50 mg/kg	3.125 mg/kg	104	50.0	140					
	Dichlorobenzene, 1,2-	95-50-1	E611D	3.48 mg/kg	3.125 mg/kg	104	50.0	140					
	Dichlorobenzene, 1,3-	541-73-1	E611D	3.40 mg/kg	3.125 mg/kg	102	50.0	140					
		Dichlorobenzene, 1,4-	106-46-7	E611D	3.47 mg/kg	3.125 mg/kg	104	50.0	140				
		Dichlorodifluoromethane	75-71-8	E611D	4.06 mg/kg	3.125 mg/kg	121	50.0	140				
		Dichloroethane, 1,1-	75-34-3	E611D	3.51 mg/kg	3.125 mg/kg	105	50.0	140				
		Dichloroethane, 1,2-	107-06-2	E611D	3.56 mg/kg	3.125 mg/kg	106	50.0	140				
		Dichloroethylene, 1,1-	75-35-4	E611D	3.56 mg/kg	3.125 mg/kg	106	50.0	140				
		Dichloroethylene, cis-1,2-	156-59-2	E611D	3.45 mg/kg	3.125 mg/kg	103	50.0	140				
		Dichloroethylene, trans-1,2-	156-60-5	E611D	3.54 mg/kg	3.125 mg/kg	106	50.0	140				
		Dichloromethane	75-09-2	E611D	3.90 mg/kg	3.125 mg/kg	116	50.0	140				
		Dichloropropane, 1,2-	78-87-5	E611D	3.36 mg/kg	3.125 mg/kg	100	50.0	140				
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	3.03 mg/kg	3.125 mg/kg	90.5	50.0	140				
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.85 mg/kg	3.125 mg/kg	85.3	50.0	140				
		Ethylbenzene	100-41-4	E611D	3.30 mg/kg	3.125 mg/kg	98.8	50.0	140				
		Hexane, n-	110-54-3	E611D	3.57 mg/kg	3.125 mg/kg	107	50.0	140				
		Methyl ethyl ketone [MEK]	78-93-3	E611D	3.57 mg/kg	3.125 mg/kg	107	50.0	140				
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	3.18 mg/kg	3.125 mg/kg	94.9	50.0	140				
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	3.42 mg/kg	3.125 mg/kg	102	50.0	140				
	I	Styrene	100-42-5	E611D	3.32 mg/kg	3.125 mg/kg	99.3	50.0	140	1			

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Matrix Spike (MS) Report Sub-Matrix: Soil/Solid Recovery (%) Recovery Limits (%) Spike Laboratory sample Client sample ID Analyte **CAS Number** Method Concentration Target MS Low High Qualifier Volatile Organic Compounds (QCLot: 1325866) - continued WT2402774-001 Anonymous Tetrachloroethane, 1,1,1,2-630-20-6 E611D 3.54 mg/kg 3.125 mg/kg 106 50.0 140 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 3.99 mg/kg 3.125 mg/kg 119 50.0 140 Tetrachloroethylene 127-18-4 E611D 3.52 mg/kg 3.125 mg/kg 105 50.0 140 Toluene 108-88-3 E611D 3.26 mg/kg 3.125 mg/kg 97.5 50.0 140 Trichloroethane, 1,1,1-71-55-6 E611D 3.47 mg/kg 3.125 mg/kg 104 50.0 140 Trichloroethane, 1,1,2-79-00-5 E611D 3.53 mg/kg 3.125 mg/kg 106 50.0 140 Trichloroethylene E611D 79-01-6 3.71 mg/kg 3.125 mg/kg 111 50.0 140 Trichlorofluoromethane 75-69-4 E611D 3.81 mg/kg 3.125 mg/kg 114 50.0 140 Vinyl chloride E611D 75-01-4 3.95 mg/kg 3.125 mg/kg 118 50.0 140 Xylene, m+p-179601-23-1 E611D 103 50.0 140 6.91 mg/kg 6.25 mg/kg Xylene, o-95-47-6 E611D 3.30 mg/kg 3.125 mg/kg 98.6 50.0 140 Volatile Organic Compounds (QCLot: 1326317) WT2402646-001 Anonymous Benzene 71-43-2 E611A 2.26 mg/kg 3.125 mg/kg 96.5 140 60.0 Ethylbenzene 100-41-4 E611A 140 MS-B ND mg/kg 3.125 mg/kg ND 60.0 Toluene 108-88-3 E611A 2.32 mg/kg 3.125 mg/kg 99.1 60.0 140 \_\_\_\_ Xylene, m+p-E611A 179601-23-1 ND mg/kg 6.25 mg/kg ND 60.0 140 MS-B Xylene, o-95-47-6 E611A ND mg/kg 3.125 mg/kg ND 60.0 140 MS-B Hydrocarbons (QCLot: 1325647) WT2402656-001 Anonymous F2 (C10-C16) E601.SG-L 547 mg/kg 671.175 mg/kg 94.5 60.0 140 F3 (C16-C34) E601.SG-L 1160 mg/kg 1384.058 mg/kg 97.7 60.0 140 ----F4 (C34-C50) E601.SG-L 738.5 mg/kg 83.5 60.0 140 532 mg/kg ----Hydrocarbons (QCLot: 1325867) WT2402774-001 Anonymous F1 (C6-C10) E581.F1 57.2 mg/kg 62.5 mg/kg 85.5 60.0 140 ----\_\_\_\_ Hydrocarbons (QCLot: 1326318) WT2402646-001 Anonymous F1 (C6-C10) E581.F1 ND mg/kg 62.5 mg/kg ND 60.0 140 MS-B Polycyclic Aromatic Hydrocarbons (QCLot: 1325648) WT2402656-001 Anonymous Acenaphthene E641A 83-32-9 0.395 mg/kg 0.5 mg/kg 98.0 50.0 140 Acenaphthylene 208-96-8 E641A 0.402 mg/kg 0.5 mg/kg 99.7 50.0 140 Anthracene 120-12-7 E641A 0.451 mg/kg 0.5 mg/kg 112 50.0 140 Benz(a)anthracene 56-55-3 E641A 0.414 mg/kg 0.5 mg/kg 102 50.0 140 Benzo(a)pyrene E641A 50-32-8 0.425 mg/kg 0.5 mg/kg 105 50.0 140 Benzo(b+j)fluoranthene n/a E641A 0.421 mg/kg 104 50.0 140 0.5 mg/kg Benzo(g,h,i)perylene 191-24-2 E641A 0.391 mg/kg 0.5 mg/kg 97.0 50.0 140 Benzo(k)fluoranthene 207-08-9 E641A 0.404 mg/kg 0.5 mg/kg 100 50.0 140

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Sub-Matrix: Soil/Soli	d						Matrix Spil	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aroma	tic Hydrocarbons (QCL	ot: 1325648) - continued								
WT2402656-001	Anonymous	Chrysene	218-01-9	E641A	0.311 mg/kg	0.5 mg/kg	77.1	50.0	140	
		Dibenz(a,h)anthracene	53-70-3	E641A	0.355 mg/kg	0.5 mg/kg	88.0	50.0	140	
		Fluoranthene	206-44-0	E641A	0.394 mg/kg	0.5 mg/kg	97.6	50.0	140	
		Fluorene	86-73-7	E641A	0.408 mg/kg	0.5 mg/kg	101	50.0	140	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.433 mg/kg	0.5 mg/kg	107	50.0	140	
		Methylnaphthalene, 1-	90-12-0	E641A	0.359 mg/kg	0.5 mg/kg	89.1	50.0	140	
		Methylnaphthalene, 2-	91-57-6	E641A	0.399 mg/kg	0.5 mg/kg	98.8	50.0	140	
		Naphthalene	91-20-3	E641A	0.378 mg/kg	0.5 mg/kg	93.7	50.0	140	
		Phenanthrene	85-01-8	E641A	0.413 mg/kg	0.5 mg/kg	102	50.0	140	
		Pyrene	129-00-0	E641A	0.389 mg/kg	0.5 mg/kg	96.4	50.0	140	

### **Qualifiers**

Qualifier Description

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. 

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# 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).

ub-Matrix:						Refere	nce Material (RM) Re	port	
					RM Target	Recovery (%)	Recovery L	imits (%)	
aboratory ample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
hysical Tests	(QCLot: 1325671)								
	RM	Conductivity (1:2 leachate)		E100-L	1384 μS/cm	100	70.0	130	
letals (QCLot:	1325670)								
	RM	Calcium, soluble ion content	7440-70-2	E484	43.54 mg/L	103	70.0	130	
	RM	Magnesium, soluble ion content	7439-95-4	E484	15.24 mg/L	102	70.0	130	
	RM	Sodium, soluble ion content	17341-25-2	E484	33.47 mg/L	102	70.0	130	
etals (QCLot:	1325673)								
	RM	Boron, hot water soluble	7440-42-8	E487	1.366 mg/kg	109	60.0	140	
etals (QCLot:	1325674)								
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	110	70.0	130	
letals (QCLot:	1325675)								
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	99.4	70.0	130	
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	100	70.0	130	
	RM	Barium	7440-39-3	E440C	105 mg/kg	114	70.0	130	
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	114	70.0	130	
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	126	70.0	130	
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	109	70.0	130	
	RM	Chromium	7440-47-3	E440C	101 mg/kg	106	70.0	130	
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	106	70.0	130	
	RM	Copper	7440-50-8	E440C	123 mg/kg	107	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	111	70.0	130	
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	105	70.0	130	
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	120	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	102	70.0	130	
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	107	70.0	130	
	RM	Zinc	7440-66-6	E440C	297 mg/kg	103	70.0	130	

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Sub-Matrix:						Refere	nce Material (RM) Re	port	
					RM Target	Recovery (%)	Recovery L	imits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals	(QCLot: 1325669) - co	ntinued							
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	95.1	70.0	130	



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Report To	Contact and company name below will appear on the final report	on the final report	Reports / Recipients	lecipients			_	urnar	ma.	Turnaround Time (TAT) Requested	T) Re	ueste	ă					
Company:	LOPERS & ASSOCIATES - LOPE100		Select Report Format:	☑ EXCEL ☐ EDD (DIGITAL)		Routine	[R] if n	eceived	by 3pr	Routine [R] if received by 3pm M-F -	no surcharges apply	arges	apply	1	Environmental Division	Jivi	ion	100
Contact:	Luke Lopers	Merge Q	ts with CO/			4 day [I	4] if re	ceived	у Зрт	4 day [P4] if received by 3pm M-F - 20% rush surcharge minir	0% rust	surcha	arge mi	inir	Misterion		0.00	30
Phone:	613-327-9073	☐ Compa	Compare Results to Criteria on Report - provide details below if box checked	- provide details below if box c		3 day [	P3] If re	ceived	by 3pn	3 day [P3] if received by 3pm M-F - 25% rush surcharge mini	5% rus	h surch	arge m	5	Work Order Ref	erenc	ĕ	
	Company address below will appear on the final report	60	Select Distribution:	☐ MAIL ☐ FAX		2 day [	P2] if re	ceived	by 3pn	2 day [P2] if received by 3pm M-F - 50% rush surcharge minit	0% rus	h surch	arge m	lini.	WT2402708	ソフ	$\widetilde{\mathbb{Z}}$	ند
Street:	30 Lansfield Way	Email 1 or Fax	r Fax Luke@Lopers.ca			Same d	[E2]	if rece	ved by	Same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharge mining the same day [E2] if received by 10am M-S - 200% rush surcharg	S - 200	n surcin	n surch	arg	A 1 1 1 0	Ĺ	5	(
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ALS Sample #	Sample Identification and/or Coordinates	d/or Coordinates	Date	Time	ME		VF1-	/F1-F					_			IPL		
(ALS use only)	(This description will appear on the report)	ear on the report)	(dd-mmm-yy)		Sample Type		BTE	voc	PAH			_				SAN		
	D+2-24-SSI		05-FEB-24	y	SOIL 5	\ . I	V.	M	X		4	4	4	1		1	+	-
	BH2-24-SS7		05-FEB-24		SOIL 3		X	X			-	-	_			+	1	+
					SOIL							-	-	-		1		+
				SC	SOIL						4	-	-					+
				SOIL	)[						-	+	-	-				+
				SOIL	)L						+	-	-					+
				SOIL	)IL						+	+	-	-			1	7
				SOIL	)IL							-	-	-				1
				SOIL	OIL III								-					
				SOIL	)E							-	-					
				SOIL	Ĭ.						_		-					
				SOIL	)IL							-	-	-				
Drinking	Drinking Water (DW) Samples¹ (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below	sult evaluation by selecting	g from drop-down below				ш		SAMPL	E REC	EIPT	DET.	AILS	SAMPLE RECEIPT DETAILS (ALS use only)			1
Are samples tak	Are samples taken from a Regulated DW System?		(Excel COC Olly)		Coo	Cooling Method:	thod:		NONE	NICE.	9	ICE	☐ ICE PACKS		FROZEN COOLING INITIATED	G INITE	ATED	
	☐ YES ☐ NO				Subr	nissio	Com	ment	iden	tified or	Sam	ole Re	ceipt	Notifi		ONO		
Are samples for	Are samples for human consumption/ use?				000	INIITIAL COOLER TEMP	tody S	COOLE	R TEM	ERAT	URES °C	N/A		ample	Sample Custody Seals Intact: YES	URES O	☐ YES ☐ N/A	N/A
_ Y	YES NO					3.6								>	2.6			
Released by:	SHIPMENT RELEASE (client use)	_	100	INITIAL SHIPMENT RECEPTION (ALS use only)	1					FIN	AL SH	PME	NT R	ECEF	FINAL SHIPMENT RECEPTION (ALS use only)			1
M.		2024 Ime: Received by:	sup.	Date: 5/2/2024		Time:	Rece	Received by:	ý.	X	0	,D	一道	10		23	3	~
Failure to complete a	WHITE - LABORATORY COPY YELLO 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	HORMATION his form LEGIBLY. By the use of this form	WHIT orm the user acknowledges and	WHITE - LABORATORY COPY s and agrees with the Terms and Co	YELLOW - CLIENT COPY nditions as specified on the back	CLIEN	T COP	ж раде	of the	SPECIFICAT COPY Specified on the back page of the white - report copy.	port cor		^	1	SAI 189	-	FEB 201	22 FRO
	Tones (PAT) System, preses surinit using an Authorized DW COC TORM.	yswin, piedse subiliti using an Author	ized DW COC form.					0	3				= (	? 7				
								,	10				<	VY- III	=			

## **ALS Canada Ltd.**



## **CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)**

**Work Order** : WT2405697 Page : 1 of 14

Client Laboratory : ALS Environmental - Waterloo : Lopers & Associates

Contact : Luke Lopers **Account Manager** : Costas Farassoglou

> Address : 60 Northland Road, Unit 1 : 30 Lansfield Way

> > Waterloo, Ontario Canada N2V 2B8

Telephone : 613 327 9073 Telephone : 613 225 8279 Project **Date Samples Received** : LOP23-029B : 13-Mar-2024 14:00

**Date Analysis Commenced** : 15-Mar-2024 C-O-C number Issue Date : 20-Mar-2024 16:26

Sampler : Client

Site Quote number : SOA 2024

No. of samples received : 2 No. of samples analysed : 2

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:

Ottawa ON Canada K2G 3V8

- 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**

Address

PO

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
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Kelly Fischer	Technical Specialist	Inorganics, Waterloo, Ontario
Melissa Freeman		Metals, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Metals, Waterloo, Ontario
Robert Braun	Soils Team Supervisor	Inorganics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario
Tristan Stapells		Inorganics, Waterloo, Ontario
		-

Page : 2 of 14 Work Order : WT2405697

Client : Lopers & Associates

Project : LOP23-029B



#### 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
pH units	pH units

<sup>&</sup>gt;: 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.

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Lopers & Associates LOP23-029B Client

Project



## Sample Comments

Sample	Client Id	Comment
WT2405697-002	mSPLP-24-01	RRQC/RRR: Recovery is outside ALS control limits. Associated non-detect sample results have not been affected.

## Qualifiers

Qualifier	Description
RRR	Refer to report comments for issues regarding this analysis.
SUR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

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Lopers & Associates LOP23-029B Client

Project



Matrix: Soil		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
Watti. 301		Sampling	date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
			Sub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number	Method/Lab	Unit	WT2405697-001	WT2405697-002	 	 	
TCLP Anions & Nutrients								
Fluoride, TCLP	16984-48-8	E240.F/WT	mg/L	<10		 	 	
Nitrate (as N), TCLP	14797-55-8	E240.NO3/WT	mg/L	<5.0		 	 	
Nitrite (as N), TCLP	14797-65-0	E240.NO2/WT	mg/L	<5.0		 	 	
Nitrate + Nitrite (as N), TCLP		EC240.N+N/WT	mg/L	<7.50		 	 	
TCLP Extractables								
Aldrin + Dieldrin, TCLP		E661B/WT	mg/L	<0.00015		 	 	
Aldrin, TCLP	309-00-2	E661B/WT	mg/L	<0.00010		 	 	
Aroclor 1016, TCLP	12674-11-2	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1221, TCLP	11104-28-2	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1232, TCLP	11141-16-5	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1242, TCLP	53469-21-9	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1248, TCLP	12672-29-6	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1254, TCLP	11097-69-1	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1260, TCLP	11096-82-5	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1262, TCLP	37324-23-5	E688A/WT	mg/L	<0.00020		 	 	
Aroclor 1268, TCLP	11100-14-4	E688A/WT	mg/L	<0.00020		 	 	
Benzo(a)pyrene, TCLP	50-32-8	E644/WT	mg/L	<0.00050		 	 	
Chlordane, cis- (alpha), TCLP	5103-71-9	E661B/WT	mg/L	<0.00010		 	 	
Chlordane, total, TCLP	57-74-9	E661B/WT	mg/L	<0.00015		 	 	
Chlordane, trans- (gamma), TCLP	5103-74-2	E661B/WT	mg/L	<0.00010		 	 	
Cyanide, weak acid dissociable, TCLP		E337A/WT	mg/L	<0.10		 	 	
DDD, 2,4'-, TCLP	53-19-0	E661B/WT	mg/L	<0.00010		 	 	
DDD, 4,4'-, TCLP	72-54-8	E661B/WT	mg/L	<0.00010		 	 	
DDE, 2,4'-, TCLP	3424-82-6	E661B/WT	mg/L	<0.00010		 	 	
DDE, 4,4'-, TCLP	72-55-9	E661B/WT	mg/L	<0.00010		 	 	
DDT + metabolites, total, TCLP		E661B/WT	mg/L	<0.00025		 	 	
DDT, 2,4'-, TCLP	789-02-6	E661B/WT	mg/L	<0.00010		 	 	
DDT, 4,4'-, TCLP	50-29-3	E661B/WT	mg/L	<0.00010		 	 	

Lopers & Associates LOP23-029B Client

Project



		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
Matrix: Soil								
		Sampling	date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
		5	Sub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number	Method/Lab	Unit	WT2405697-001	WT2405697-002	 	 	
TCLP Extractables								
Dieldrin, TCLP	60-57-1	E661B/WT	mg/L	<0.00010		 	 	
Endrin, TCLP	72-20-8	E661B/WT	mg/L	<0.00010		 	 	
Heptachlor + Heptachlor epoxide, TCLP		E661B/WT	mg/L	<0.00015		 	 	
Heptachlor epoxide, TCLP	1024-57-3	E661B/WT	mg/L	<0.00010		 	 	
Heptachlor, TCLP	76-44-8	E661B/WT	mg/L	<0.00010		 	 	
Hexachlorocyclohexane, gamma-, TCLP	58-89-9	E661B/WT	mg/L	<0.00010		 	 	
Methoxychlor, TCLP	72-43-5	E661B/WT	mg/L	<0.00010		 	 	
Oxychlordane, TCLP	27304-13-8	E661B/WT	mg/L	<0.00010		 	 	
Decachlorobiphenyl, TCLP	2051-24-3	E688A/WT	%	84.7		 	 	
Tetrachloro-m-xylene, TCLP	877-09-8	E688A/WT	%	97.9		 	 	
TCLP Extractables Surrogates								
Chrysene-d12, TCLP	1719-03-5	E644/WT	%	133 SUR-ND		 	 	
Decachlorobiphenyl, TCLP	2051-24-3	E661B/WT	%	123		 	 	
Naphthalene-d8, TCLP	1146-65-2	E644/WT	%	104		 	 	
Phenanthrene-d10, TCLP	1517-22-2	E644/WT	%	118		 	 	
Tetrachloro-m-xylene, TCLP	877-09-8	E661B/WT	%	80.8		 	 	
TCLP Metals								
Arsenic, TCLP	7440-38-2	E444/WT	mg/L	<1.0		 	 	
pH, TCLP 1st preliminary		EPP444/WT	pH units	9.40		 	 	
pH, TCLP 2nd preliminary		EPP444/WT	pH units	5.48		 	 	
pH, TCLP extraction fluid initial		EPP444/WT	pH units	2.90		 	 	
pH, TCLP final		EPP444/WT	pH units	6.08		 	 	
Barium, TCLP	7440-39-3	E444/WT	mg/L	<2.5		 	 	
Boron, TCLP	7440-42-8	E444/WT	mg/L	<0.50		 	 	
Cadmium, TCLP	7440-43-9	E444/WT	mg/L	<0.050		 	 	
Chromium, TCLP	7440-47-3	E444/WT	mg/L	<0.25		 	 	
Lead, TCLP	7439-92-1	E444/WT	mg/L	<0.25		 	 	
Selenium, TCLP	7782-49-2	E444/WT	mg/L	<0.10		 	 	

Lopers & Associates LOP23-029B Client

Project



Motrice Cail		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
Matrix: Soil		Sampling	date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
		S	ub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number		Unit	WT2405697-001	WT2405697-002	 	 	
TCLP Metals								
Silver, TCLP	7440-22-4	E444/WT	mg/L	<0.050		 	 	
Uranium, TCLP	7440-61-1		mg/L	<0.20		 	 	
Mercury, TCLP	7439-97-6	E512/WT	mg/L	<0.0010		 	 	
TCLP VOCs								
Benzene, TCLP	71-43-2	E615B/WT	mg/L	<0.0050		 	 	
Carbon tetrachloride, TCLP		E615B/WT	mg/L	<0.025		 	 	
Chlorobenzene, TCLP	108-90-7	E615B/WT	mg/L	<0.025		 	 	
Chloroform, TCLP		E615B/WT	mg/L	<0.10		 	 	
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B/WT	mg/L	<0.025		 	 	
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B/WT	mg/L	<0.025		 	 	
Dichloroethane, 1,2-, TCLP	107-06-2	E615B/WT	mg/L	<0.025		 	 	
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B/WT	mg/L	<0.025		 	 	
Dichloromethane, TCLP	75-09-2	E615B/WT	mg/L	<0.10		 	 	
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B/WT	mg/L	<0.10		 	 	
Tetrachloroethylene, TCLP	127-18-4	E615B/WT	mg/L	<0.025		 	 	
Trichloroethylene, TCLP	79-01-6	E615B/WT	mg/L	<0.025		 	 	
Vinyl chloride, TCLP	75-01-4	E615B/WT	mg/L	<0.050		 	 	
TCLP VOCs Surrogates								
Bromofluorobenzene, 4-, TCLP	460-00-4	E615B/WT	%	100		 	 	
Difluorobenzene, 1,4-, TCLP	540-36-3	E615B/WT	%	96.6		 	 	
ON mSPLP Extractables (target pH= 5)								
bis(2-Chloro-1-methylethyl) ether mSPLP	108-60-1	E657B/WT	μg/L		<0.40	 	 	
bis(2-Chloroethyl) ether, mSPLP	111-44-4	E657B/WT	μg/L		<0.40	 	 	
Chloroaniline, 4-, mSPLP	106-47-8	E657B/WT	μg/L		<0.40 RRR	 	 	
Dichlorobenzidine, 3,3'-, mSPLP	91-94-1	E657B/WT	μg/L		<0.40	 	 	
Diethyl phthalate, mSPLP	84-66-2	E657B/WT	μg/L		0.25	 	 	
Dimethyl phthalate, mSPLP	131-11-3	E657B/WT	μg/L		<0.20	 	 	
Dinitrophenol, 2,4-, mSPLP	51-28-5	E657B/WT	μg/L		<1.0	 	 	

Lopers & Associates LOP23-029B Client

Project



		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
Matrix: Soil								
		Sampling	ı date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
			Sub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number	Method/Lab	Unit	WT2405697-001	WT2405697-002	 	 	
ON mSPLP Extractables (target pH= 5)								
Dinitrotoluene, 2,4 + 2,6-, mSPLP	n/a	E657B/WT	μg/L		<0.57	 	 	
Dinitrotoluene, 2,4-, mSPLP	121-14-2	E657B/WT	μg/L		<0.40 RRR	 	 	
Dinitrotoluene, 2,6-, mSPLP	606-20-2	E657B/WT	μg/L		<0.40 RRR	 	 	
Trichlorophenol, 2,4,6-, mSPLP	88-06-2	E657B/WT	μg/L		<0.50	 	 	
ON mSPLP Extractables Surrogates (ta	rget pH= 5)							
Fluorobiphenyl, 2-, mSPLP	321-60-8	E657B/WT	%		86.0	 	 	
Nitrobenzene-d5, mSPLP	4165-60-0	E657B/WT	%		97.4	 	 	
Terphenyl-d14, p-, mSPLP	1718-51-0	E657B/WT	%		89.5	 	 	
Tribromophenol, 2,4,6-, mSPLP	118-79-6	E657B/WT	%		116	 	 	
ON mSPLP Metal (target pH= 5)								
Antimony, mSPLP	7440-36-0	E443/WT	μg/L		<0.50	 	 	
Arsenic, mSPLP	7440-38-2	E443/WT	μg/L		<1.0	 	 	
Barium, mSPLP	7440-39-3	E443/WT	μg/L		27	 	 	
Beryllium, mSPLP	7440-41-7	E443/WT	μg/L		<0.50	 	 	
Boron, mSPLP	7440-42-8	E443/WT	μg/L		10	 	 	
Cadmium, mSPLP	7440-43-9	E443/WT	μg/L		<0.10	 	 	
Chromium, mSPLP	7440-47-3	E443/WT	μg/L		<5.0	 	 	
Cobalt, mSPLP	7440-48-4	E443/WT	μg/L		<1.0	 	 	
Copper, mSPLP	7440-50-8	E443/WT	μg/L		<5.0	 	 	
Lead, mSPLP	7439-92-1	E443/WT	μg/L		<1.0	 	 	
Molybdenum, mSPLP	7439-98-7	E443/WT	μg/L		2.91	 	 	
Nickel, mSPLP	7440-02-0	E443/WT	μg/L		<1.0	 	 	
pH, mSPLP final	n/a	EPP443/WT	pH units		9.61	 	 	
pH, mSPLP initial	n/a	EPP443/WT	pH units		9.67	 	 	
Selenium, mSPLP	7782-49-2	E443/WT	μg/L		<1.0	 	 	
Silver, mSPLP	7440-22-4	E443/WT	μg/L		<0.25	 	 	
Thallium, mSPLP	7440-28-0	E443/WT	μg/L		<0.50	 	 	
Uranium, mSPLP	7440-61-1	E443/WT	μg/L		<2.0	 	 	

Lopers & Associates LOP23-029B Client

Project



Matrix: Soil		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
Matrix. 30II		Sampling	date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
		S	Sub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number	Method/Lab	Unit	WT2405697-001	WT2405697-002	 	 	
ON mSPLP Metal (target pH= 5)								
Vanadium, mSPLP	7440-62-2	E443/WT	μg/L		4.60	 	 	
Zinc, mSPLP	7440-66-6	E443/WT	μg/L		<5.0	 	 	
ON mSPLP OCP (target pH= 5)								
Dieldrin, mSPLP	60-57-1	E662A/WT	μg/L		<0.0080	 	 	
Endrin, mSPLP	72-20-8	E662A/WT	μg/L		<0.010	 	 	
Heptachlor epoxide, mSPLP	1024-57-3	E662A/WT	μg/L		<0.0080	 	 	
Heptachlor, mSPLP	76-44-8	E662A/WT	μg/L		<0.0080	 	 	
ON mSPLP OCPs Surrogates (target pH=	5)							
Decachlorobiphenyl, mSPLP	2051-24-3	E662A/WT	%		73.3	 	 	
Tetrachloro-m-xylene, mSPLP	877-09-8	E662A/WT	%		74.1	 	 	
mSPLP VOCs Surrogates								
Bromofluorobenzene, 4-, mSPLP	460-00-4	E619D/WT	%		113	 	 	
Difluorobenzene, 1,4-, mSPLP	540-36-3	E619D/WT	%		102	 	 	
ON mSPLP VOC (reagent water)								
Bromomethane, mSPLP	74-83-9	E619D/WT	μg/L		<0.50	 	 	
Carbon tetrachloride, mSPLP	56-23-5	E619D/WT	μg/L		<0.20	 	 	
Chloroform, mSPLP	67-66-3	E619D/WT	μg/L		<1.00	 	 	
Dibromoethane, 1,2-, mSPLP	106-93-4	E619D/WT	μg/L		<0.20	 	 	
Dichlorobenzene, 1,2-, mSPLP	95-50-1	E619D/WT	μg/L		<0.50	 	 	
Dichlorobenzene, 1,4-, mSPLP	106-46-7	E619D/WT	μg/L		<0.50	 	 	
Dichloroethane, 1,1-, mSPLP	75-34-3	E619D/WT	μg/L		<0.50	 	 	
Dichloroethane, 1,2-, mSPLP	107-06-2	E619D/WT	μg/L		<0.50	 	 	
Dichloroethylene, 1,1-, mSPLP	75-35-4	E619D/WT	μg/L		<0.50	 	 	
Dichloroethylene, cis-1,2-, mSPLP	156-59-2	E619D/WT	μg/L		<0.50	 	 	
Dichloroethylene, trans-1,2-, mSPLP	156-60-5	E619D/WT	μg/L		<0.50	 	 	
Dichloropropane, 1,2-, mSPLP	78-87-5	E619D/WT	μg/L		<0.50	 	 	
Dichloropropylene, cis+trans-1,3-, mSPLP	542-75-6	E619D/WT	μg/L		<0.30	 	 	
Dichloropropylene, cis-1,3-, mSPLP	10061-01-5	E619D/WT	μg/L		<0.20	 	 	

Page : 9 of 14 Work Order : WT2405697

Client : Lopers & Associates

Project : LOP23-029B



## Analytical Results Evaluation

Matrix: Soil		Client	sample ID	TCLP-24-01	mSPLP-24-01	 	 	
		Sampling	date/time	13-Mar-2024 00:00	13-Mar-2024 00:00	 	 	
		S	Sub-Matrix	Soil	Soil	 	 	
Analyte	CAS Number	Method/Lab	Unit	WT2405697-001	WT2405697-002	 	 	
ON mSPLP VOC (reagent water)								
Dichloropropylene, trans-1,3-, mSPLP	10061-02-6	E619D/WT	μg/L		<0.20	 	 	
Dioxane, 1,4-, mSPLP	123-91-1	E619D/WT	μg/L		<2.0	 	 	
Extraction fluid		EPP584/WT	-		fluid #3	 	 	
Tetrachloroethane, 1,1,1,2-, mSPLP	630-20-6	E619D/WT	μg/L		<0.50	 	 	
Tetrachloroethane, 1,1,2,2-, mSPLP	630-20-6	E619D/WT	μg/L		<0.50	 	 	
Tetrachloroethylene, mSPLP	127-18-4	E619D/WT	μg/L		<0.50	 	 	
Trichloroethane, 1,1,2-, mSPLP	79-00-5	E619D/WT	μg/L		<0.50	 	 	
Trichloroethylene, mSPLP	79-01-6	E619D/WT	μg/L		<0.50	 	 	
Polychlorinated Biphenyls								
Polychlorinated biphenyls [PCBs], total, TCLP		E688A/WT	mg/L	<0.00060		 	 	

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.

Client Lopers & Associates LOP23-029B

Project



## **Summary of Guideline Limits**

Analyte	CAS Number	Unit	ON406(LSL)	ON406(LSL)	ON406(LSL)	ON406(LSL)	ON406(LSL)	ONWCR	
			T1-LSL-RPIIC C	T2.1-LSL-ICC	T2.1-LSL-RPI	T4.1-LSL-SSS -ICC	T4.1-LSL-SSS -RPI	Sch. 4	
TCLP Anions & Nutrients									
Fluoride, TCLP	16984-48-8	mg/L						150 mg/L	
Nitrate (as N), TCLP	14797-55-8	mg/L							
Nitrate + Nitrite (as N), TCLP		mg/L						1000 mg/L	
Nitrite (as N), TCLP	14797-65-0	mg/L							
TCLP Extractables									
Aldrin + Dieldrin, TCLP		mg/L						0.07 mg/L	
Aldrin, TCLP	309-00-2	mg/L							
Aroclor 1016, TCLP	12674-11-2	mg/L							
Aroclor 1221, TCLP	11104-28-2	mg/L							
Aroclor 1232, TCLP	11141-16-5	mg/L							
Aroclor 1242, TCLP	53469-21-9	mg/L							
Aroclor 1248, TCLP	12672-29-6	mg/L							
Aroclor 1254, TCLP	11097-69-1	mg/L							
Aroclor 1260, TCLP	11096-82-5	mg/L							
Aroclor 1262, TCLP	37324-23-5	mg/L							
Aroclor 1268, TCLP	11100-14-4	mg/L							
Benzo(a)pyrene, TCLP	50-32-8	mg/L						0.001 mg/L	
Chlordane, cis- (alpha), TCLP	5103-71-9	mg/L							
Chlordane, total, TCLP	57-74-9	mg/L						0.7 mg/L	
Chlordane, trans- (gamma), TCLP	5103-74-2	mg/L							
Cyanide, weak acid dissociable, TCLP		mg/L							
DDD, 2,4'-, TCLP	53-19-0	mg/L							
DDD, 4,4'-, TCLP	72-54-8	mg/L							
DDE, 2,4'-, TCLP	3424-82-6	mg/L							
DDE, 4,4'-, TCLP	72-55-9	mg/L							
DDT + metabolites, total, TCLP		mg/L						3 mg/L	
DDT, 2,4'-, TCLP	789-02-6	mg/L							
DDT, 4,4'-, TCLP	50-29-3	mg/L							
Decachlorobiphenyl, TCLP	2051-24-3	%							
Dieldrin, TCLP	60-57-1	mg/L							
Endrin, TCLP	72-20-8	mg/L						0.02 mg/L	
Heptachlor + Heptachlor epoxide, TCLP		mg/L						0.3 mg/L	
Heptachlor epoxide, TCLP	1024-57-3	mg/L							
Heptachlor, TCLP	76-44-8	mg/L							
Hexachlorocyclohexane, gamma-, TCLP	58-89-9	mg/L						0.4 mg/L	
Methoxychlor, TCLP	72-43-5	mg/L						90 mg/L	

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Lopers & Associates LOP23-029B Client

Project



Project : LOP23-029B		11. 2							
Analyte	CAS Number	Unit	ON406(LSL) T1-LSL-RPIIC C	ON406(LSL) T2.1-LSL-ICC	ON406(LSL) T2.1-LSL-RPI	ON406(LSL) T4.1-LSL-SSS -ICC	ON406(LSL) T4.1-LSL-SSS -RPI	ONWCR Sch. 4	
TCLP Extractables - Continued						400	-10.1		
Oxychlordane, TCLP	27304-13-8	mg/L							
Tetrachloro-m-xylene, TCLP	877-09-8	%							
TCLP Extractables Surrogates									
Chrysene-d12, TCLP	1719-03-5	%							
Decachlorobiphenyl, TCLP	2051-24-3	%							
Naphthalene-d8, TCLP	1146-65-2	%							
Phenanthrene-d10, TCLP	1517-22-2	%							
Tetrachloro-m-xylene, TCLP	877-09-8	%							
CLP Metals									
Arsenic, TCLP	7440-38-2	mg/L						2.5 mg/L	
Barium, TCLP	7440-39-3	mg/L						100 mg/L	
Boron, TCLP	7440-42-8	mg/L						500 mg/L	
Cadmium, TCLP	7440-43-9	mg/L						0.5 mg/L	
Chromium, TCLP	7440-47-3	mg/L						5 mg/L	
Lead, TCLP	7439-92-1	mg/L						5 mg/L	
Mercury, TCLP	7439-97-6	mg/L						0.1 mg/L	
pH, TCLP 1st preliminary		pH units							
pH, TCLP 2nd preliminary		pH units							
pH, TCLP extraction fluid initial		pH units							
pH, TCLP final		pH units							
Selenium, TCLP	7782-49-2	mg/L						1 mg/L	
Silver, TCLP	7440-22-4	mg/L						5 mg/L	
Uranium, TCLP	7440-61-1	mg/L						10 mg/L	
CLP VOCs									
Benzene, TCLP	71-43-2	mg/L						0.5 mg/L	
Carbon tetrachloride, TCLP	56-23-5	mg/L						0.5 mg/L	
Chlorobenzene, TCLP	108-90-7	mg/L						8 mg/L	
Chloroform, TCLP	67-66-3	mg/L						10 mg/L	
Dichlorobenzene, 1,2-, TCLP	95-50-1	mg/L						20 mg/L	
Dichlorobenzene, 1,4-, TCLP	106-46-7	mg/L						0.5 mg/L	
Dichloroethane, 1,2-, TCLP	107-06-2	mg/L						0.5 mg/L	
Dichloroethylene, 1,1-, TCLP	75-35-4	mg/L						1.4 mg/L	
Dichloromethane, TCLP	75-09-2	mg/L						5 mg/L	
Methyl ethyl ketone [MEK], TCLP	78-93-3	mg/L						200 mg/L	
Tetrachloroethylene, TCLP	127-18-4	mg/L						3 mg/L	
Trichloroethylene, TCLP	79-01-6	mg/L						5 mg/L	
Vinyl chloride, TCLP	75-01-4	mg/L						0.2 mg/L	
Bromofluorobenzene, 4-, TCLP	460-00-4	%							

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Lopers & Associates LOP23-029B Client

Project



Project : LOP23-029B  Analyte	CASAtions	Unit							I
Analyte	CAS Number	Unit	ON406(LSL) T1-LSL-RPIIC C	ON406(LSL) T2.1-LSL-ICC	ON406(LSL) T2.1-LSL-RPI	ON406(LSL) T4.1-LSL-SSS -ICC	ON406(LSL) T4.1-LSL-SSS -RPI	ONWCR Sch. 4	
TCLP VOCs Surrogates - Continued			C			-100	-KFI		
Difluorobenzene, 1,4-, TCLP	540-36-3	%							I
ON mSPLP Extractables (target pH= 5)									
bis(2-Chloro-1-methylethyl) ether mSPLP	108-60-1	μg/L	4 μg/L	4 μg/L	4 μg/L	4 μg/L	4 μg/L		
bis(2-Chloroethyl) ether, mSPLP	111-44-4	μg/L	5 μg/L	5 μg/L	5 μg/L	5 μg/L	5 μg/L		
Chloroaniline, 4-, mSPLP	106-47-8	μg/L	10 μg/L	10 μg/L	10 μg/L	10 μg/L	10 μg/L		
Dichlorobenzidine, 3,3'-, mSPLP	91-94-1	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Diethyl phthalate, mSPLP	84-66-2	μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L		
Dimethyl phthalate, mSPLP	131-11-3	μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L		
Dinitrophenol, 2,4-, mSPLP	51-28-5	μg/L	10 μg/L	10 μg/L	10 μg/L	10 μg/L	10 μg/L		
Dinitrotoluene, 2,4 + 2,6-, mSPLP	n/a	μg/L	5 μg/L	5 μg/L	5 μg/L	5 μg/L	5 μg/L		
Dinitrotoluene, 2,4-, mSPLP	121-14-2	μg/L							
Dinitrotoluene, 2,6-, mSPLP	606-20-2	μg/L							
Trichlorophenol, 2,4,6-, mSPLP	88-06-2	μg/L	0.75 μg/L	0.75 μg/L	0.75 μg/L	0.75 μg/L	0.75 μg/L		
ON mSPLP Extractables Surrogates (target pH= 5)		10				1,0			
Fluorobiphenyl, 2-, mSPLP	321-60-8	%							
Nitrobenzene-d5, mSPLP	4165-60-0	%							
Terphenyl-d14, p-, mSPLP	1718-51-0	%							
Tribromophenol, 2,4,6-, mSPLP	118-79-6	%							
ON mSPLP Metal (target pH= 5)									
Antimony, mSPLP	7440-36-0	μg/L		6 μg/L	6 μg/L	6 μg/L	6 μg/L		
Arsenic, mSPLP	7440-38-2	μg/L				13 μg/L			
Barium, mSPLP	7440-39-3	μg/L		1000 μg/L	1000 μg/L	1000 μg/L	1000 μg/L		
Beryllium, mSPLP	7440-41-7	μg/L		4 μg/L	4 μg/L	4 μg/L	4 μg/L		
Boron, mSPLP	7440-42-8	μg/L		5000 μg/L	5000 μg/L	5000 μg/L	5000 μg/L		
Cadmium, mSPLP	7440-43-9	μg/L		0.5 μg/L		0.5 μg/L	0.5 μg/L		
Chromium, mSPLP	7440-47-3	μg/L		50 μg/L	50 μg/L	50 μg/L	50 μg/L		
Cobalt, mSPLP	7440-48-4	μg/L		3.8 μg/L	3.8 µg/L	3.8 μg/L	3.8 μg/L		
Copper, mSPLP	7440-50-8	μg/L		14 μg/L	14 μg/L	14 μg/L	14 μg/L		
Lead, mSPLP	7439-92-1	μg/L				4 μg/L	4 μg/L		
Molybdenum, mSPLP	7439-98-7	μg/L	23 μg/L	23 μg/L	23 μg/L	23 μg/L	23 μg/L		
Nickel, mSPLP	7440-02-0	μg/L		78 μg/L	78 μg/L	78 μg/L	78 μg/L		
pH, mSPLP final	n/a	pH units							
pH, mSPLP initial	n/a	pH units							
Selenium, mSPLP	7782-49-2	μg/L		10 μg/L	10 μg/L	10 μg/L	10 μg/L		
Silver, mSPLP	7440-22-4	μg/L	0.3 μg/L	0.3 μg/L	0.3 μg/L	0.3 μg/L	0.3 μg/L		
Thallium, mSPLP	7440-28-0	μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L		
Uranium, mSPLP	7440-61-1	μg/L		20 μg/L	20 μg/L	20 μg/L	20 μg/L		
Vanadium, mSPLP	7440-62-2	μg/L				6.2 μg/L	6.2 μg/L		

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Client : Lopers & Associates

Project : LOP23-029B



Analyte	CAS Number	Unit	ON406(LSL) T1-LSL-RPIIC C	ON406(LSL) T2.1-LSL-ICC	ON406(LSL) T2.1-LSL-RPI	ON406(LSL) T4.1-LSL-SSS -ICC	ON406(LSL) T4.1-LSL-SSS -RPI	ONWCR Sch. 4	
ON mSPLP Metal (target pH= 5) - Continued									
Zinc, mSPLP	7440-66-6	μg/L		180 μg/L	180 μg/L	180 μg/L	180 μg/L		
ON mSPLP OCP (target pH= 5)									
Dieldrin, mSPLP	60-57-1	μg/L	0.095 μg/L	0.097 μg/L	0.097 μg/L	0.097 μg/L	0.097 μg/L		
Endrin, mSPLP	72-20-8	μg/L	0.061 μg/L	0.062 μg/L	0.062 μg/L	0.062 μg/L	0.062 μg/L		
Heptachlor epoxide, mSPLP	1024-57-3	μg/L	0.01 μg/L	0.01 μg/L	0.01 μg/L	0.01 μg/L	0.01 μg/L		
Heptachlor, mSPLP	76-44-8	μg/L	0.01 μg/L						
ON mSPLP OCPs Surrogates (target pH= 5)									
Decachlorobiphenyl, mSPLP	2051-24-3	%							
Tetrachloro-m-xylene, mSPLP	877-09-8	%							
nSPLP VOCs Surrogates									
Bromofluorobenzene, 4-, mSPLP	460-00-4	%							
Difluorobenzene, 1,4-, mSPLP	540-36-3	%							
Bromomethane, mSPLP	74-83-9	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Carbon tetrachloride, mSPLP	56-23-5	μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L		
Chloroform, mSPLP	67-66-3	μg/L	1 μg/L						
Dibromoethane, 1,2-, mSPLP	106-93-4	μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L	0.2 μg/L		
Dichlorobenzene, 1,2-, mSPLP	95-50-1	μg/L	0.55 μg/L	0.55 μg/L	0.55 μg/L	0.55 μg/L	0.55 μg/L		
Dichlorobenzene, 1,4-, mSPLP	106-46-7	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloroethane, 1,1-, mSPLP	75-34-3	μg/L	0.5 μg/L						
Dichloroethane, 1,2-, mSPLP	107-06-2	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloroethylene, 1,1-, mSPLP	75-35-4	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloroethylene, cis-1,2-, mSPLP	156-59-2	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloroethylene, trans-1,2-, mSPLP	156-60-5	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloropropane, 1,2-, mSPLP	78-87-5	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Dichloropropylene, cis+trans-1,3-, mSPLP	542-75-6	μg/L	0.5 μg/L						
Dichloropropylene, cis-1,3-, mSPLP	10061-01-5	μg/L							
Dichloropropylene, trans-1,3-, mSPLP	10061-02-6	μg/L							
Dioxane, 1,4-, mSPLP	123-91-1	μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L	2 μg/L		
Extraction fluid		-							
Tetrachloroethane, 1,1,1,2-, mSPLP	630-20-6	μg/L	0.5 μg/L						
Tetrachloroethane, 1,1,2,2-, mSPLP	630-20-6	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Tetrachloroethylene, mSPLP	127-18-4	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Trichloroethane, 1,1,2-, mSPLP	79-00-5	μg/L	0.5 μg/L						
Trichloroethylene, mSPLP	79-01-6	μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L	0.5 μg/L		
Polychlorinated Biphenyls									
Polychlorinated biphenyls [PCBs], total, TCLP		mg/L						0.3 mg/L	

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

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Client : Lopers & Associates

Project : LOP23-029B



Key:

ON406(LSL) Ontario Regulation 406/19 - Excess Soils Leachate Screening Levels (LSL) (12-April-2022)

T1-LSL-RPIICC 406 T1 - Leachate Screening levels - Res/Park/Inst/Ind/Com/Commu Property Use

T2.1-LSL-ICC 406 T2.1 - Leachate Screening Levels - Ind/Com/Commu Property Use

T2.1-LSL-RPI 406 T2.1 - Leachate Screening Levels - Res/Park/Inst Property Use

T4.1-LSL-SSS-ICC 406 T4.1 - Leachate Screening Levels - Subsurface - Ind/Com/Commu Property Use

T4.1-LSL-SSS-RPI 406 T4.1 - Leachate Screening Levels - Subsurface - Res/Park/Inst Property Use

ONWCR Ontario MECP, General Waste Control Regulation No. 347/90,558/00

Sch. 4 Schedule 4 Leachate Quality Criteria



## **QUALITY CONTROL INTERPRETIVE REPORT**

Work Order : WT2405697 Page : 1 of 11

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers : Costas Farassoglou

Address : 30 Lansfield Way : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo, Ontario Canada N2V 2B8

 Telephone
 :613 327 9073
 Telephone
 :613 225 8279

 Project
 :LOP23-029B
 Date Samples Received
 : 13-Mar-2024 14:00

PO :---- Issue Date : 20-Mar-2024 16:26

Sampler : Client Site :

Quote number : SOA 2024

No. of samples received :2
No. of samples analysed :2

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.
- Laboratory Control Sample (LCS) outliers occur please see following pages for full details.
- Matrix Spike outliers occur please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices please see following pages for full details.

### 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.

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Client : Lopers & Associates
Project : LOP23-029B



## Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

### Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
TCLP Extractables	QC-MRG2-1370439 002		DDT, 4,4'-, TCLP	50-29-3	E661B	38.1 % LCS-L	50.0-150%	Recovery less than lower control limit
ON mSPLP OCP (target pH= 5)	QC-1370468-002		Endrin, mSPLP	72-20-8	E662A	45.1 % LCS-L	50.0-150%	Recovery less than lower control limit

### **Result Qualifiers**

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Matrix Spike (MS) Recoveries								
ON mSPLP Extractables (target pH=	Anonymous	Anonymous	Chloroaniline, 4-, mSPLP	106-47-8	E657B	38.8 % RRQC	50.0-140%	Recovery less than lower
5)								data quality objective
ON mSPLP Extractables (target pH=	Anonymous	Anonymous	Dinitrotoluene, 2,4-,	121-14-2	E657B	146 % RRQC	50.0-140%	Recovery greater than
5)			mSPLP					upper data quality
								objective
ON mSPLP Extractables (target pH=	Anonymous	Anonymous	Dinitrotoluene, 2,6-,	606-20-2	E657B	146 % RRQC	50.0-140%	Recovery greater than
5)			mSPLP					upper data quality
								objective

### **Result Qualifiers**

Qualifier	Description
RRQC	Refer to report comments for information regarding this QC result.

### Regular Sample Surrogates

### Sub-Matrix: Soil

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
TCLP Extractables Surrogates	WT2405697-001	TCLP-24-01	Chrysene-d12, TCLP	1719-03-5	133 %	60.0-130	Recovery greater than upper
						%	data quality objective

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Client : Lopers & Associates
Project : LOP23-029B

ALS

## **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					Ev	⁄aluation: <b>×</b> =	Holding time excee	edance ; •	= Within	Holding Tim
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pre	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
mSPLP VOCs : VOCs by Headspace GC-MS (ON mSPLP)										
Glass vial (sodium bisulfate) mSPLP-24-01	E619D	18-Mar-2024	19-Mar-2024	19 days	7 days	✓	19-Mar-2024	19 days	7 days	✓
ON mSPLP Extractables (target pH= 5) : BNA by GC-MS (mSPLP)										
Amber glass/Teflon lined cap mSPLP-24-01	E657B	17-Mar-2024	18-Mar-2024	11 days	6 days	✓	19-Mar-2024	40 days	1 days	✓
ON mSPLP Metal (target pH= 5) : Metals by CRC ICPMS (mSPLP)										
HDPE - total (lab preserved) mSPLP-24-01	E443	17-Mar-2024	18-Mar-2024	184 days	5 days	✓	18-Mar-2024	184 days	6 days	✓
ON mSPLP Metal (target pH= 5): mSPLP Leachate Preparation (Metals, Inorganics	, and SVOCs)									
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx) mSPLP-24-01	EPP443	13-Mar-2024	17-Mar-2024					14 days	4 days	✓
ON mSPLP OCP (target pH= 5) : OC Pesticides by GC-MS-MS (ON mSPLP)										
Amber glass/Teflon lined cap mSPLP-24-01	E662A	17-Mar-2024	18-Mar-2024	18 days	6 days	4	20-Mar-2024	18 days	8 days	✓
ON mSPLP VOC (reagent water) : mSPLP Leachate Preparation (VOCs and Cyanid	e)									
Lab Split - ZHE Leach 14 day HT(eg. CN BTEX) mSPLP-24-01	EPP584	13-Mar-2024	18-Mar-2024					14 days	5 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap TCLP-24-01	E688A	15-Mar-2024	18-Mar-2024	16 days	6 days	✓	19-Mar-2024	40 days	1 days	✓

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Lopers & Associates LOP23-029B Client Project



Matrix: Soil/Solid  Analyte Group : Analytical Method	Mathead	Campling Data	Ev	traction / Pr		/aluation: × =	Holding time exce	edance ; •  Analys		Holding Time
Container / Client Sample ID(s)	Method	Sampling Date			g Times	Eval	Analysis Date		Times	 Eval
Container / Cheric Cample 15(3)			Preparation Date	Rec	Actual	⊏vai	Analysis Date	Rec	Actual	⊏vai
TCLP Extractables : Fluoride by IC (TCLP)			Date	1100	11010101			1100		
HDPE [ON MECP]										
TCLP-24-01	E240.F	15-Mar-2024	18-Mar-2024	30 days	6 days	✓	18-Mar-2024	30 days	6 days	✓
TCLP Extractables : Nitrate by IC (TCLP)				uays						
HDPE [ON MECP]										
TCLP-24-01	E240.NO3	15-Mar-2024	18-Mar-2024	9 days	6 days	✓	18-Mar-2024	9 days	6 days	✓
TCLP Extractables : Nitrite by IC (TCLP)										
HDPE [ON MECP]										
TCLP-24-01	E240.NO2	15-Mar-2024	18-Mar-2024	9 days	6 days	✓	18-Mar-2024	9 days	6 days	✓
TCLP Extractables : OCPs by GC-MS-MS (TCLP)										
Amber glass/Teflon lined cap										
TCLP-24-01	E661B	15-Mar-2024	18-Mar-2024	9 days	6 days	✓	20-Mar-2024	40 days	2 days	✓
TCLP Extractables : PAHs by GC-MS (TCLP)										
Amber glass/Teflon lined cap (sodium bisulfate)										
TCLP-24-01	E644	15-Mar-2024	18-Mar-2024	16 days	6 days	✓	19-Mar-2024	40 days	1 days	✓
TCLP Extractables : PCB Aroclors by GC-MS (TCLP)										
Amber glass/Teflon lined cap										
TCLP-24-01	E688A	15-Mar-2024	18-Mar-2024	16 days	6 days	✓	19-Mar-2024	40 days	1 days	✓
TCLP Extractables : WAD Cyanide (TCLP)										
HDPE - total (sodium hydroxide)										
TCLP-24-01	E337A	15-Mar-2024	18-Mar-2024	16 days	6 days	✓	18-Mar-2024	16 days	6 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved)										
TCLP-24-01	E512	15-Mar-2024	18-Mar-2024	30 days	5 days	✓	18-Mar-2024	30 days	5 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved)										
TCLP-24-01	E444	15-Mar-2024	18-Mar-2024	182 days	5 days	✓	18-Mar-2024	182 days	5 days	✓
	•			•	•		•			

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Lopers & Associates

Client LOP23-029B Project



Matrix: Soil/Solid

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Watth, Composit						raidation.	Tiolaing time exces	,	***************************************	r riolaling in
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pr	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	Holding Times Eval		Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx)										
TCLP-24-01	EPP444	13-Mar-2024	15-Mar-2024					14 days	2 days	✓
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate)										
TCLP-24-01	E615B	15-Mar-2024	18-Mar-2024	16	6 days	✓	18-Mar-2024	16 days	6 days	✓
				days						

### **Legend & Qualifier Definitions**

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

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Client : Lopers & Associates
Project : LOP23-029B



## **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.

Quality Control Sample Type			Co	ount		hin specification	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%) Expected	Evaluation
Laboratory Duplicates (DUP)							
BNA by GC-MS (mSPLP)	E657B	1370540	1	4	25.0	5.0	1
Fluoride by IC (TCLP)	E240.F	1370160	1	6	16.6	5.0	1
Mercury by CVAAS (TCLP)	E512	1369909	1	12	8.3	5.0	1
Metals by CRC ICPMS (mSPLP)	E443	1370052	1	5	20.0	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1369801	1	16	6.2	5.0	1
Nitrate by IC (TCLP)	E240.NO3	1370158	1	6	16.6	5.0	1
Nitrite by IC (TCLP)	E240.NO2	1370159	1	6	16.6	5.0	1
OC Pesticides by GC-MS-MS (ON mSPLP)	E662A	1370468	1	3	33.3	5.0	1
OCPs by GC-MS-MS (TCLP)	E661B	1370439	1	1	100.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	1370416	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1370440	1	2	50.0	5.0	1
VOCs by Headspace GC-MS (ON mSPLP)	E619D	1371649	1	3	33.3	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1370207	1	8	12.5	5.0	✓
WAD Cyanide (TCLP)	E337A	1370375	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
BNA by GC-MS (mSPLP)	E657B	1370540	1	4	25.0	5.0	1
Fluoride by IC (TCLP)	E240.F	1370160	1	6	16.6	5.0	1
Mercury by CVAAS (TCLP)	E512	1369909	1	12	8.3	5.0	1
Metals by CRC ICPMS (mSPLP)	E443	1370052	1	5	20.0	5.0	1
Metals by CRC ICPMS (TCLP)	E444	1369801	1	16	6.2	5.0	1
Nitrate by IC (TCLP)	E240.NO3	1370158	1	6	16.6	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1370159	1	6	16.6	5.0	✓
OC Pesticides by GC-MS-MS (ON mSPLP)	E662A	1370468	1	3	33.3	5.0	✓
OCPs by GC-MS-MS (TCLP)	E661B	1370439	1	1	100.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	1370416	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1370440	1	2	50.0	5.0	✓
VOCs by Headspace GC-MS (ON mSPLP)	E619D	1371649	1	3	33.3	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1370207	1	8	12.5	5.0	✓
WAD Cyanide (TCLP)	E337A	1370375	1	6	16.6	5.0	✓
Method Blanks (MB)							
BNA by GC-MS (mSPLP)	E657B	1370540	1	4	25.0	5.0	1
Fluoride by IC (TCLP)	E240.F	1370160	1	6	16.6	5.0	1
Mercury by CVAAS (TCLP)	E512	1369909	1	12	8.3	5.0	1
Metals by CRC ICPMS (mSPLP)	E443	1370052	1	5	20.0	5.0	<b>√</b>
Metals by CRC ICPMS (TCLP)	E444	1369801	1	16	6.2	5.0	1

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Client : Lopers & Associates
Project : LOP23-029B



Matrix: Soil/Solid Evaluation: × = QC frequency outside specification: √ = QC frequency within specification.

Matrix: Soil/Solid	ency outside sp	ecification; 🗸 = 0	QC frequency wit	thin specificatior			
Quality Control Sample Type			Co	ount		)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Nitrate by IC (TCLP)	E240.NO3	1370158	1	6	16.6	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1370159	1	6	16.6	5.0	✓
OC Pesticides by GC-MS-MS (ON mSPLP)	E662A	1370468	1	3	33.3	5.0	✓
OCPs by GC-MS-MS (TCLP)	E661B	1370439	1	1	100.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	1370416	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1370440	1	2	50.0	5.0	✓
VOCs by Headspace GC-MS (ON mSPLP)	E619D	1371649	1	3	33.3	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1370207	1	8	12.5	5.0	✓
WAD Cyanide (TCLP)	E337A	1370375	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
BNA by GC-MS (mSPLP)	E657B	1370540	1	4	25.0	5.0	✓
Fluoride by IC (TCLP)	E240.F	1370160	1	6	16.6	5.0	✓
Mercury by CVAAS (TCLP)	E512	1369909	1	12	8.3	5.0	✓
Metals by CRC ICPMS (mSPLP)	E443	1370052	1	5	20.0	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	1369801	1	16	6.2	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	1370158	1	6	16.6	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	1370159	1	6	16.6	5.0	✓
OC Pesticides by GC-MS-MS (ON mSPLP)	E662A	1370468	1	3	33.3	5.0	✓
OCPs by GC-MS-MS (TCLP)	E661B	1370439	1	1	100.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	1370416	1	3	33.3	5.0	✓
PCB Aroclors by GC-MS (TCLP)	E688A	1370440	1	2	50.0	5.0	✓
VOCs by Headspace GC-MS (ON mSPLP)	E619D	1371649	1	3	33.3	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	1370207	1	8	12.5	5.0	✓
WAD Cyanide (TCLP)	E337A	1370375	1	6	16.6	5.0	✓

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Project : LOP23-029B



## **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
Fluoride by IC (TCLP)	E240.F	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by
	ALS Environmental -		(54)	Ion Chromatography with conductivity and/or UV detection.
	Waterloo			
Nitrite by IC (TCLP)	E240.NO2	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by
	ALS Environmental - Waterloo			Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (TCLP)	E240.NO3	Soil/Solid	EPA 1311/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311, which is then analyzed by
	ALS Environmental -		(mod)	Ion Chromatography with conductivity and/or UV detection.
	Waterloo			,
WAD Cyanide (TCLP)	E337A	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.
	ALS Environmental -			
	Waterloo			
Metals by CRC ICPMS (mSPLP)	E443	Soil/Solid	EPA 6020B (mod)	An extract produced by the modified Simulated Precipitation Leachate Procedure (mSPLP) as per E9003 (ON MECP), is analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental -			
	Waterloo			
Metals by CRC ICPMS (TCLP)	E444	Soil/Solid	EPA 1311/6020B (mod)	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental -			
	Waterloo			
Mercury by CVAAS (TCLP)	E512	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
	ALS Environmental -		LEACHATE	
	Waterloo			
VOCs by Headspace GC-MS (TCLP)	E615B	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
	ALS Environmental -			headspace autosampler, causing VOCs to partition between the aqueous phase and
	Waterloo			the headspace in accordance with Henry's law.
VOCs by Headspace GC-MS (ON mSPLP)	E619D	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
	ALS Environmental -			headspace autosampler, causing VOCs to partition between the aqueous phase and
	Waterloo			the headspace in accordance with Henry's law.
PAHs by GC-MS (TCLP)	E644	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
	ALS Environmental -			
	Waterloo			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
BNA by GC-MS (mSPLP)	E657B	Soil/Solid	EPA 8270E (mod)	BNA are analyzed by GC-MS.
	ALS Environmental -			
OCPs by GC-MS-MS (TCLP)	Waterloo	Soil/Solid	EPA 8270E (mod)	OCPs are analyzed by GC-MS-MS.
OCPS by GC-MS-MS (TCLP)	E661B	Soli/Solid	EPA 6270E (IIIOU)	OCPS are analyzed by GC-MS-MS.
	ALS Environmental -			
	Waterloo			
OC Pesticides by GC-MS-MS (ON mSPLP)	E662A	Soil/Solid	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS
	ALS Environmental -			
	Waterloo			
PCB Aroclors by GC-MS (TCLP)	E688A	Soil/Solid	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
	ALS Environmental -			
Nitrata and Nitrita (an Ni) (TOLD) (Calculation)	Waterloo	0-:1/0-1:-1	EDA 200 0	
Nitrate and Nitrite (as N), (TCLP) (Calculation)	EC240.N+N	Soil/Solid	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
	ALS Environmental -			, , , ,
	Waterloo			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis (TCLP)	EP582	Soil/Solid	EPA 5021A (mod)	Liquid obtained after the TCLP process is prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the
	ALS Environmental -			aqueous phase and the headspace in accordance with Henry's law.
VOC Burnettin fallen hann Andria	Waterloo	Soil/Solid	EPA 5021A (mod)	Unit this take a CDD and a few and a large and a second a second and a second a second and a second a second and a second a second and
VOCs Preparation for Headspace Analysis (mSPLP)	EP586	3011/3011u	EPA 302 IA (IIIOU)	Liquid obtained after the mSPLP process is prepared in headspace vials and are heated
				and agitated on the headenace autosampler causing VOCs to partition between the
(mor Er )	ALS Environmental -			and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
	ALS Environmental - Waterloo			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 Extraction (TCLP)		Soil/Solid	EPA 3511 (mod)	aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are
	Waterloo EP602	Soil/Solid	EPA 3511 (mod)	aqueous phase and the headspace in accordance with Henry's law.
	Waterloo	Soil/Solid	EPA 3511 (mod)	aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are
	Waterloo EP602  ALS Environmental -	Soil/Solid	EPA 3511 (mod)  EPA 3510C (mod)	aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are
PHCs and PAHs Extraction (TCLP)	Waterloo EP602  ALS Environmental - Waterloo			aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PHCs and PAHs Extraction (TCLP)	Waterloo EP602  ALS Environmental - Waterloo EP657B			aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PHCs and PAHs Extraction (TCLP)	Waterloo EP602  ALS Environmental - Waterloo EP657B  ALS Environmental -			aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
PHCs and PAHs Extraction (TCLP)  BNA Extraction (mSPLP)	Waterloo EP602  ALS Environmental - Waterloo EP657B  ALS Environmental - Waterloo EP661	Soil/Solid	EPA 3510C (mod)	aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.  SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
PHCs and PAHs Extraction (TCLP)  BNA Extraction (mSPLP)  Pesticides, PCB, and Neutral Extractable	Waterloo EP602  ALS Environmental - Waterloo EP657B  ALS Environmental - Waterloo	Soil/Solid	EPA 3510C (mod)	aqueous phase and the headspace in accordance with Henry's law.  Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.  SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.  Samples are extracted from aqueous sample using an organic solvent liquid-liquid

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction (mSPLP)	EP662A	Soil/Solid	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.
	ALS Environmental - Waterloo			
mSPLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP443	Soil/Solid	E9003	Preparation of the modified Synthetic Precipitation Leaching Procedure, ON MECP 2020.  A representative subsample of soil excluding stones and passed through a 9.5 mm
morganico, and o voce)	ALS Environmental -			sieve, (100 grams) is leached (18 ± 2 hours) with 2.0 liters of leaching fluid #2 (pH 5,
	Waterloo			60:40 weight mixture of H2SO4:HNO3). The resulting slurry is filtered through a 0.6 - 0.8
				um glass fiber filter for semi-volatile organics and for metals analysis, the leachate is
				filtered through a 0.45um metal free filter.
TCLP Leachate Preparation (Metals,	EPP444	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample
Inorganics, and SVOCs)				involves particle size reduction, homogenization, then determination of appropriate
	ALS Environmental -			extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle
	Waterloo			with the appropriate extraction fluid then tumbled in a rotary extractor for 18+/- 2 hours
				at 23 +/- 2 C. The liquid leachate is filtered to separate from solids then bottled and
				prepared for analytical tests.
TCLP Leachate Preparation (VOCs)	EPP582	Soil/Solid	EPA 1311	An extract produced by the Toxicity Characteristic Leaching Procedure (TCLP) as per EPA 1311.
	ALS Environmental -			
	Waterloo			
mSPLP Leachate Preparation (VOCs and	EPP584	Soil/Solid	E9003	The excess soil sample (25 grams) is leached in a Zero Headspace Extractor (ZHE)
Cyanide)				with 500 mL extraction fluid #3 (reagent water) for 18 ± 2 hours. Collect the filtered
	ALS Environmental -			extract (0.6 - 0.8 um glass fiber) from the ZHE device. The sample is transferred into
	Waterloo			PTFE-lined septum-capped glass vials (with no headspace) for analysis of VOCs. A
				minimum of 50 mL leachate is collected in a glass or plastic container, preserved with
				sodium hydroxide to a pH >12 at the time of collection and submitted for cyanide
				analysis.

## **ALS Canada Ltd.**



## **QUALITY CONTROL REPORT**

Work Order : WT2405697

Client : Lopers & Associates

Address : 30 Lansfield Way

...

Ottawa ON Canada K2G 3V8

: Luke Lopers

Telephone

Contact

Project : LOP23-029B

PO :----C-O-C number :----

Sampler : Client 613 327 9073

Site

Quote number : SOA 2024

No. of samples received : 2
No. of samples analysed : 2

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Laboratory ; ALS Environmental - Waterloo

Account Manager : Costas Farassoglou

Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

Telephone :613 225 8279

Date Samples Received : 13-Mar-2024 14:00

Date Analysis Commenced : 15-Mar-2024

Issue Date : 20-Mar-2024 16:13

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
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Kelly Fischer	Technical Specialist	Waterloo Inorganics, Waterloo, Ontario
Melissa Freeman		Waterloo Metals, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario
Robert Braun	Soils Team Supervisor	Waterloo Inorganics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Tristan Stapells		Waterloo Inorganics, Waterloo, Ontario

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Project : LOP23-029B



### **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.

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### 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	Qualifie		
TCLP Extractables	(QC Lot: 1370158)												
WT2405697-001	TCLP-24-01	Nitrate (as N), TCLP	14797-55-8	E240.NO3	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR			
TCLP Extractables	(QC Lot: 1370159)												
WT2405697-001	TCLP-24-01	Nitrite (as N), TCLP	14797-65-0	E240.NO2	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR			
TCLP Extractables	(QC Lot: 1370160)												
WT2405697-001	TCLP-24-01	Fluoride, TCLP	16984-48-8	E240.F	10	mg/L	<10	<10	0	Diff <2x LOR			
CLP Extractables	(QC Lot: 1370375)												
WT2405697-001	TCLP-24-01	Cyanide, weak acid dissociable, TCLP		E337A	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR			
CLP Extractables	(QC Lot: 1370416)												
WT2405988-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.50	μg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR			
CLP Extractables	(QC Lot: 1370439)												
VT2405697-001	TCLP-24-01	Aldrin, TCLP	309-00-2	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Chlordane, cis- (alpha), TCLP	5103-71-9	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Chlordane, trans- (gamma), TCLP	5103-74-2	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDD, 2,4'-, TCLP	53-19-0	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDD, 4,4'-, TCLP	72-54-8	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDE, 2,4'-, TCLP	3424-82-6	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDE, 4,4'-, TCLP	72-55-9	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDT, 2,4'-, TCLP	789-02-6	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		DDT, 4,4'-, TCLP	50-29-3	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Dieldrin, TCLP	60-57-1	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Endrin, TCLP	72-20-8	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Heptachlor epoxide, TCLP	1024-57-3	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			
		Heptachlor, TCLP	76-44-8	E661B	0.10	μg/L	<0.00010 mg/L	<0.10	0	Diff <2x LOR			

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number | Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Difference Limits Result Result TCLP Extractables (QC Lot: 1370439) - continued WT2405697-001 TCLP-24-01 58-89-9 E661B 0.10 < 0.10 0 Diff <2x LOR Hexachlorocyclohexane, gamma-, µg/L <0.00010 TCLP mg/L Methoxychlor, TCLP 72-43-5 E661B 0.10 µg/L < 0.00010 < 0.10 0 Diff <2x LOR mg/L E661B 0 Diff <2x LOR Oxychlordane, TCLP 27304-13-8 0.10 μg/L < 0.00010 < 0.10 mg/L TCLP Extractables (QC Lot: 1370440) WT2405697-001 TCLP-24-01 Aroclor 1016, TCLP 12674-11-2 E688A 0.20 < 0.20 0 Diff <2x LOR μq/L < 0.00020 mg/L Aroclor 1221, TCLP 11104-28-2 E688A 0.20 µg/L < 0.00020 < 0.20 0 Diff <2x LOR mg/L Aroclor 1232, TCLP 11141-16-5 E688A 0.20 µq/L < 0.00020 < 0.20 0 Diff <2x LOR mg/L Diff <2x LOR Aroclor 1242, TCLP 53469-21-9 E688A 0.20 µg/L < 0.00020 < 0.20 0 mg/L E688A Diff <2x LOR Aroclor 1248, TCLP 12672-29-6 0.20 µg/L < 0.00020 < 0.20 0 mg/L 11097-69-1 E688A 0 Diff <2x LOR Aroclor 1254, TCLP 0.20 µg/L < 0.00020 < 0.20 mg/L 11096-82-5 E688A 0.20 < 0.20 0 Diff <2x LOR Aroclor 1260, TCLP μg/L < 0.00020 mg/L 37324-23-5 E688A 0.20 <0.20 0 Diff <2x LOR Aroclor 1262, TCLP μg/L < 0.00020 mg/L 11100-14-4 E688A 0.20 < 0.00020 < 0.20 0 Diff <2x LOR Aroclor 1268, TCLP μg/L mg/L TCLP Metals (QC Lot: 1369801) WT2405697-001 TCLP-24-01 Arsenic, TCLP 7440-38-2 E444 1.0 mg/L <1.0 <1.0 0 Diff <2x LOR 7440-39-3 E444 2.5 <2.5 <2.5 0 Diff <2x LOR Barium, TCLP mg/L ----7440-42-8 E444 < 0.50 Diff <2x LOR Boron, TCLP 0.50 mg/L < 0.50 0 Cadmium, TCLP 7440-43-9 E444 0.050 mg/L < 0.050 < 0.050 0 Diff <2x LOR 7440-47-3 E444 0.25 <0.25 0 Diff <2x LOR Chromium, TCLP < 0.25 mg/L Diff <2x LOR Lead, TCLP 7439-92-1 E444 0.25 mg/L < 0.25 < 0.25 0 Selenium, TCLP 7782-49-2 E444 0.10 < 0.10 < 0.10 0 Diff <2x LOR ma/L 7440-22-4 E444 0.050 < 0.050 < 0.050 0 Diff <2x LOR Silver, TCLP mg/L 7440-61-1 E444 Diff <2x LOR Uranium, TCLP 0.20 mg/L < 0.20 < 0.20 0 TCLP Metals (QC Lot: 1369909) WT2405697-001 TCLP-24-01 Mercury, TCLP 7439-97-6 E512 0.0010 < 0.0010 < 0.0010 0 Diff <2x LOR mg/L TCLP VOCs (QC Lot: 1370207) WT2405988-001 Anonymous Benzene, TCLP 71-43-2 E615B 5.0 μg/L <0.0050 mg/L <5.0 0 Diff <2x LOR Carbon tetrachloride, TCLP 56-23-5 E615B 25 μg/L <0.025 mg/L <25 0 Diff <2x LOR <0.025 mg/L Chlorobenzene, TCLP 108-90-7 E615B 25 <25 0 Diff <2x LOR μg/L

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Difference Limits Result Result TCLP VOCs (QC Lot: 1370207) - continued WT2405988-001 Anonymous 67-66-3 E615B 100 <0.10 mg/L <100 0 Diff <2x LOR Chloroform, TCLP µg/L Dichlorobenzene, 1,2-, TCLP 95-50-1 E615B 25 µg/L <0.025 mg/L <25 0 Diff <2x LOR Dichlorobenzene, 1,4-, TCLP 106-46-7 E615B 25 µg/L <0.025 ma/L <25 0 Diff <2x LOR <0.025 mg/L 107-06-2 E615B 25 Diff <2x LOR Dichloroethane, 1,2-, TCLP μg/L <25 0 ----Dichloroethylene, 1,1-, TCLP 75-35-4 E615B 25 μg/L <0.025 mg/L <25 0 Diff <2x LOR Dichloromethane, TCLP 75-09-2 E615B 100 μg/L <0.10 mg/L <100 0 Diff <2x LOR 78-93-3 E615B 100 <0.10 mg/L <100 0 Diff <2x LOR Methyl ethyl ketone [MEK], TCLP µg/L 127-18-4 E615B 25 <0.025 mg/L 0 Diff <2x LOR Tetrachloroethylene, TCLP µg/L <25 79-01-6 E615B 25 μg/L <0.025 mg/L <25 0 Diff <2x LOR Trichloroethylene, TCLP 75-01-4 E615B 50 μg/L <0.050 mg/L <50 0 Diff <2x LOR Vinyl chloride, TCLP ON mSPLP Extractables (target pH= 5) (QC Lot: 1370540) WT2405618-005 Anonymous bis(2-Chloro-1-methylethyl) ether 108-60-1 E657B 0.40 μg/L < 0.40 < 0.40 0 Diff <2x LOR mSPLP μg/L bis(2-Chloroethyl) ether, mSPLP 111-44-4 E657B 0.40 < 0.40 < 0.40 0 Diff <2x LOR \_\_\_\_ 106-47-8 E657B Diff <2x LOR 0.40 µg/L < 0.40 < 0.40 0 Chloroaniline, 4-, mSPLP Dichlorobenzidine, 3.3'-, mSPLP 91-94-1 E657B 0.40 μq/L < 0.40 < 0.40 0 Diff <2x LOR Diethyl phthalate, mSPLP 84-66-2 E657B 0.20 < 0.20 < 0.20 0 Diff <2x LOR µg/L E657B Dimethyl phthalate, mSPLP 131-11-3 0.20 µg/L < 0.20 < 0.20 0 Diff <2x LOR Dinitrophenol, 2,4-, mSPLP 51-28-5 E657B 1.0 µg/L <1.0 <1.0 0 Diff <2x LOR E657B < 0.40 Diff <2x LOR Dinitrotoluene, 2.4-, mSPLP 121-14-2 0.40 µg/L < 0.40 0 Dinitrotoluene, 2.6-, mSPLP 606-20-2 E657B 0.40 μg/L < 0.40 < 0.40 0 Diff <2x LOR 88-06-2 E657B 0.50 µg/L < 0.50 < 0.50 0 Diff <2x LOR Trichlorophenol, 2,4,6-, mSPLP ON mSPLP Metal (target pH= 5) (QC Lot: 1370052) WT2405958-004 Anonymous Antimony, mSPLP 7440-36-0 E443 0.00050 mg/L <0.50 µg/L < 0.00050 0 Diff <2x LOR Arsenic, mSPLP 7440-38-2 E443 0.0010 mg/L <1.0 µg/L < 0.0010 0 Diff <2x LOR ----Barium, mSPLP 7440-39-3 E443 0.002 < 0.002 0 Diff <2x LOR mg/L <2 µg/L Bervllium, mSPLP 7440-41-7 E443 0.00050 mg/L <0.50 µg/L < 0.00050 0 Diff <2x LOR Boron, mSPLP 7440-42-8 E443 0.010 mg/L <10 µg/L < 0.010 0 Diff <2x LOR 7440-43-9 E443 0.00010 < 0.00010 0 Diff <2x LOR Cadmium, mSPLP mg/L <0.10 µg/L E443 0.0050 < 0.0050 0 Diff <2x LOR Chromium, mSPLP 7440-47-3 mg/L <5.0 µg/L 7440-48-4 E443 Diff <2x LOR Cobalt, mSPLP 0.0010 mg/L <1.0 µg/L < 0.0010 0 7440-50-8 E443 0.0050 < 0.0050 0 Diff <2x LOR Copper, mSPLP mg/L <5.0 µg/L 7439-92-1 E443 0.0010 < 0.0010 0 Diff <2x LOR Lead, mSPLP mg/L <1.0 µg/L Molybdenum, mSPLP 7439-98-7 E443 0.00050 mg/L 0.56 µg/L 0.00059 0.00003 Diff <2x LOR 7440-02-0 E443 0.0010 < 0.0010 0 Diff <2x LOR Nickel, mSPLP mg/L <1.0 µg/L

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number | Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Limits Result Result Difference ON mSPLP Metal (target pH= 5) (QC Lot: 1370052) - continued WT2405958-004 Anonymous Selenium, mSPLP 7782-49-2 E443 0.0010 < 0.0010 0 Diff <2x LOR mg/L <1.0 µg/L Silver, mSPLP 7440-22-4 E443 0.00025 mg/L <0.25 µg/L < 0.00025 0 Diff <2x LOR Thallium, mSPLP 7440-28-0 E443 0.00050 mg/L <0.50 µg/L < 0.00050 0 Diff <2x LOR 7440-61-1 E443 0.0020 < 0.0020 0 Diff <2x LOR Uranium, mSPLP mg/L <2.0 µg/L \_\_\_\_ Vanadium, mSPLP 7440-62-2 E443 0.00050 mg/L 1.18 µg/L 0.00114 0.00005 Diff <2x LOR Zinc, mSPLP 7440-66-6 E443 0.0050 mg/L <5.0 µg/L < 0.0050 0 Diff <2x LOR ON mSPLP OCP (target pH= 5) (QC Lot: 1370468) WT2405697-002 mSPLP-24-01 60-57-1 E662A 0.0080 <0.0080 <0.0080 Diff <2x LOR Dieldrin, mSPLP μg/L 0 72-20-8 E662A 0.010 μg/L <0.010 < 0.010 0 Diff <2x LOR Endrin, mSPLP \_\_\_\_ Heptachlor epoxide, mSPLP 1024-57-3 E662A 0.0080 μg/L <0.0080 <0.0080 0 Diff <2x LOR Heptachlor, mSPLP 76-44-8 E662A 0.0080 μg/L < 0.0080 <0.0080 0 Diff <2x LOR mSPLP VOCs (QC Lot: 1371649) mSPLP-24-01 WT2405697-002 74-83-9 E619D 0.50 < 0.50 < 0.50 0 Diff <2x LOR Bromomethane, mSPLP μq/L 56-23-5 E619D 0.20 μg/L <0.20 < 0.20 0 Diff <2x LOR Carbon tetrachloride, mSPLP \_\_\_\_ μg/L Chloroform, mSPLP 67-66-3 E619D 1.00 <1.00 <1.00 0 Diff <2x LOR Dibromoethane, 1,2-, mSPLP 106-93-4 E619D 0.20 μg/L < 0.20 < 0.20 0 Diff <2x LOR Dichlorobenzene, 1,2-, mSPLP 95-50-1 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR E619D Dichlorobenzene, 1,4-, mSPLP 106-46-7 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR Dichloroethane, 1,1-, mSPLP 75-34-3 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR 107-06-2 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR Dichloroethane, 1,2-, mSPLP 75-35-4 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR Dichloroethylene, 1,1-, mSPLP Dichloroethylene, cis-1,2-, mSPLP 156-59-2 E619D 0.50 µg/L < 0.50 < 0.50 0 Diff <2x LOR 156-60-5 E619D 0.50 µg/L < 0.50 < 0.50 0 Diff <2x LOR Dichloroethylene, trans-1,2-, mSPLP E619D 0 Diff <2x LOR Dichloropropane, 1,2-, mSPLP 78-87-5 0.50 µg/L < 0.50 < 0.50 10061-01-5 E619D 0.20 µg/L < 0.20 < 0.20 0 Diff <2x LOR Dichloropropylene, cis-1,3-, mSPLP Dichloropropylene, trans-1,3-, 10061-02-6 E619D 0.20 μg/L < 0.20 < 0.20 0 Diff <2x LOR mSPLP Dioxane, 1,4-, mSPLP 123-91-1 E619D 2.0 µg/L <2.0 <2.0 0 Diff <2x LOR E619D 0.50 < 0.50 < 0.50 0 Diff <2x LOR Tetrachloroethane, 1,1,1,2-, mSPLP 630-20-6 µg/L 630-20-6 E619D Diff <2x LOR Tetrachloroethane, 1,1,2,2-, mSPLP 0.50 µg/L < 0.50 < 0.50 0 Tetrachloroethylene, mSPLP 127-18-4 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR 79-00-5 E619D 0.50 < 0.50 < 0.50 Diff <2x LOR Trichloroethane, 1,1,2-, mSPLP µg/L 0 79-01-6 E619D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR Trichloroethylene, mSPLP

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## 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
TCLP Extractables (QCLot: 1370158)					
Nitrate (as N), TCLP	14797-55-8 E240.NO3	5	mg/L	<5.0	
TCLP Extractables (QCLot: 1370159)					
Nitrite (as N), TCLP	14797-65-0 E240.NO2	5	mg/L	<5.0	
TCLP Extractables (QCLot: 1370160)					
Fluoride, TCLP	16984-48-8 E240.F	10	mg/L	<10	
TCLP Extractables (QCLot: 1370375)					
Cyanide, weak acid dissociable, TCLP	E337A	0.1	mg/L	<0.10	
TCLP Extractables (QCLot: 1370416)					
Benzo(a)pyrene, TCLP	50-32-8   E644	0.5	μg/L	<0.50	
TCLP Extractables (QCLot: 1370439)					
Aldrin, TCLP	309-00-2 E661B	0.1	μg/L	<0.10	
Chlordane, cis- (alpha), TCLP	5103-71-9 E661B	0.1	μg/L	<0.10	
Chlordane, trans- (gamma), TCLP	5103-74-2 E661B	0.1	μg/L	<0.10	
DDD, 2,4'-, TCLP	53-19-0 E661B	0.1	μg/L	<0.10	
DDD, 4,4'-, TCLP	72-54-8 E661B	0.1	μg/L	<0.10	
DDE, 2,4'-, TCLP	3424-82-6 E661B	0.1	μg/L	<0.10	
DDE, 4,4'-, TCLP	72-55-9 E661B	0.1	μg/L	<0.10	
DDT, 2,4'-, TCLP	789-02-6 E661B	0.1	μg/L	<0.10	
DDT, 4,4'-, TCLP	50-29-3 E661B	0.1	μg/L	<0.10	
Dieldrin, TCLP	60-57-1 E661B	0.1	μg/L	<0.10	
Endrin, TCLP	72-20-8 E661B	0.1	μg/L	<0.10	
Heptachlor epoxide, TCLP	1024-57-3 E661B	0.1	μg/L	<0.10	
Heptachlor, TCLP	76-44-8 E661B	0.1	μg/L	<0.10	
Hexachlorocyclohexane, gamma-, TCLP	58-89-9 E661B	0.1	μg/L	<0.10	
Methoxychlor, TCLP	72-43-5 E661B	0.1	μg/L	<0.10	
Oxychlordane, TCLP	27304-13-8 E661B	0.1	μg/L	<0.10	
TCLP Extractables (QCLot: 1370440)					
Aroclor 1016, TCLP	12674-11-2 E688A	0.2	μg/L	<0.20	
Aroclor 1221, TCLP	11104-28-2 E688A	0.2	μg/L	<0.20	
Aroclor 1232, TCLP	11141-16-5 E688A	0.2	μg/L	<0.20	
Aroclor 1242, TCLP	53469-21-9 E688A	0.2	μg/L	<0.20	

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Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
CLP Extractables (QCLot: 1370440) - co	ontinued					
Aroclor 1248, TCLP	12672-29-6	E688A	0.2	μg/L	<0.20	
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	μg/L	<0.20	
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	μg/L	<0.20	
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	μg/L	<0.20	
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	μg/L	<0.20	
CLP Metals (QCLot: 1369801)						
Arsenic, TCLP	7440-38-2	E444	1	mg/L	<1.0	
Barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	
Boron, TCLP	7440-42-8	E444	0.5	mg/L	<0.50	
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	<0.050	
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	
Lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	<0.10	
Silver, TCLP	7440-22-4	E444	0.05	mg/L	<0.050	
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	<0.20	
CLP Metals (QCLot: 1369909)						
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	
CLP VOCs (QCLot: 1370207)						
Benzene, TCLP	71-43-2	E615B	5	μg/L	<5.0	
Carbon tetrachloride, TCLP	56-23-5	E615B	25	μg/L	<25	
Chlorobenzene, TCLP	108-90-7	E615B	25	μg/L	<25	
Chloroform, TCLP	67-66-3	E615B	100	μg/L	<100	
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	μg/L	<25	
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	μg/L	<25	
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	μg/L	<25	
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	μg/L	<25	
Dichloromethane, TCLP	75-09-2	E615B	100	μg/L	<100	
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	μg/L	<100	
Tetrachloroethylene, TCLP	127-18-4	E615B	25	μg/L	<25	
Trichloroethylene, TCLP	79-01-6	E615B	25	μg/L	<25	
Vinyl chloride, TCLP	75-01-4	E615B	50	μg/L	<50	
N mSPLP Extractables (target pH= 5)(0	QCLot: 1370540)					
bis(2-Chloro-1-methylethyl) ether mSPLP	108-60-1	E657B	0.4	μg/L	<0.40	
bis(2-Chloroethyl) ether, mSPLP	111-44-4	E657B	0.4	μg/L	<0.40	
Chloroaniline, 4-, mSPLP	106-47-8	E657B	0.4	μg/L	<0.40	

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Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
ON mSPLP Extractables (target pH= 5)	(QCLot: 1370540) - co	ontinued				
Dichlorobenzidine, 3,3'-, mSPLP	91-94-1	E657B	0.4	μg/L	<0.40	
Diethyl phthalate, mSPLP	84-66-2	E657B	0.2	μg/L	<0.20	
Dimethyl phthalate, mSPLP	131-11-3	E657B	0.2	μg/L	<0.20	
Dinitrophenol, 2,4-, mSPLP	51-28-5	E657B	1	μg/L	<1.0	
Dinitrotoluene, 2,4-, mSPLP	121-14-2	E657B	0.4	μg/L	<0.40	
Dinitrotoluene, 2,6-, mSPLP	606-20-2	E657B	0.4	μg/L	<0.40	
Trichlorophenol, 2,4,6-, mSPLP	88-06-2	E657B	0.5	μg/L	<0.50	
ON mSPLP Metal (target pH= 5) (QCLc	ot: 1370052)					
Antimony, mSPLP	7440-36-0	E443	0.0005	mg/L	<0.00050	
Arsenic, mSPLP	7440-38-2	E443	0.001	mg/L	<0.0010	
Barium, mSPLP	7440-39-3	E443	0.002	mg/L	<0.002	
Beryllium, mSPLP	7440-41-7	E443	0.0005	mg/L	<0.00050	
Boron, mSPLP	7440-42-8	E443	0.01	mg/L	<0.010	
Cadmium, mSPLP	7440-43-9	E443	0.0001	mg/L	<0.00010	
Chromium, mSPLP	7440-47-3	E443	0.005	mg/L	<0.0050	
Cobalt, mSPLP	7440-48-4	E443	0.001	mg/L	<0.0010	
Copper, mSPLP	7440-50-8	E443	0.005	mg/L	<0.0050	
Lead, mSPLP	7439-92-1	E443	0.001	mg/L	<0.0010	
Molybdenum, mSPLP	7439-98-7	E443	0.0005	mg/L	<0.00050	
Nickel, mSPLP	7440-02-0	E443	0.001	mg/L	<0.0010	
Selenium, mSPLP	7782-49-2	E443	0.001	mg/L	<0.0010	
Silver, mSPLP	7440-22-4	E443	0.00025	mg/L	<0.00025	
Thallium, mSPLP	7440-28-0	E443	0.0005	mg/L	<0.00050	
Uranium, mSPLP	7440-61-1	E443	0.002	mg/L	<0.0020	
Vanadium, mSPLP	7440-62-2	E443	0.0005	mg/L	<0.00050	
Zinc, mSPLP	7440-66-6	E443	0.005	mg/L	<0.0050	
N mSPLP OCP (target pH= 5) (QCLo	t: 1370468)					
Dieldrin, mSPLP	60-57-1	E662A	0.008	μg/L	<0.0080	
Endrin, mSPLP	72-20-8	E662A	0.01	μg/L	<0.010	
Heptachlor epoxide, mSPLP	1024-57-3	E662A	0.008	μg/L	<0.0080	
Heptachlor, mSPLP	76-44-8	E662A	0.008	μg/L	<0.0080	
SPLP VOCs (QCLot: 1371649)						1
Bromomethane, mSPLP	74-83-9	E619D	0.5	μg/L	<0.50	
Carbon tetrachloride, mSPLP	56-23-5	E619D	0.2	μg/L	<0.20	
Chloroform, mSPLP	67-66-3	E619D	1	μg/L	<1.00	

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Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
mSPLP VOCs (QCLot: 1371649) - contir	nued					
Dibromoethane, 1,2-, mSPLP	106-93-4	E619D	0.2	μg/L	<0.20	
Dichlorobenzene, 1,2-, mSPLP	95-50-1	E619D	0.5	μg/L	<0.50	
Dichlorobenzene, 1,4-, mSPLP	106-46-7	E619D	0.5	μg/L	<0.50	
Dichloroethane, 1,1-, mSPLP	75-34-3	E619D	0.5	μg/L	<0.50	
Dichloroethane, 1,2-, mSPLP	107-06-2	E619D	0.5	μg/L	<0.50	
Dichloroethylene, 1,1-, mSPLP	75-35-4	E619D	0.5	μg/L	<0.50	
Dichloroethylene, cis-1,2-, mSPLP	156-59-2	E619D	0.5	μg/L	<0.50	
Dichloroethylene, trans-1,2-, mSPLP	156-60-5	E619D	0.5	μg/L	<0.50	
Dichloropropane, 1,2-, mSPLP	78-87-5	E619D	0.5	μg/L	<0.50	
Dichloropropylene, cis-1,3-, mSPLP	10061-01-5	E619D	0.2	μg/L	<0.20	
Dichloropropylene, trans-1,3-, mSPLP	10061-02-6	E619D	0.2	μg/L	<0.20	
Dioxane, 1,4-, mSPLP	123-91-1	E619D	2	μg/L	<2.0	
Tetrachloroethane, 1,1,1,2-, mSPLP	630-20-6	E619D	0.5	μg/L	<0.50	
Tetrachloroethane, 1,1,2,2-, mSPLP	630-20-6	E619D	0.5	μg/L	<0.50	
Tetrachloroethylene, mSPLP	127-18-4	E619D	0.5	μg/L	<0.50	
Trichloroethane, 1,1,2-, mSPLP	79-00-5	E619D	0.5	μg/L	<0.50	
Trichloroethylene, mSPLP	79-01-6	E619D	0.5	μg/L	<0.50	

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### 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 Mo	ethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier
TCLP Extractables (QCLot: 1370158)									
Nitrate (as N), TCLP	14797-55-8 E2	240.NO3	5	mg/L	2.5 mg/L	96.8	85.0	115	
TCLP Extractables (QCLot: 1370159)									
Nitrite (as N), TCLP	14797-65-0 E2	240.NO2	5	mg/L	0.5 mg/L	94.3	85.0	115	
TCLP Extractables (QCLot: 1370160)									
Fluoride, TCLP	16984-48-8 E2	240.F	10	mg/L	1 mg/L	83.5	70.0	130	
TCLP Extractables (QCLot: 1370375)									
Cyanide, weak acid dissociable, TCLP	E3	337A	0.1	mg/L	6.25 mg/L	91.6	70.0	130	
TCLP Extractables (QCLot: 1370416)									
Benzo(a)pyrene, TCLP	50-32-8 E6	644	0.5	μg/L	0.5263 μg/L	122	60.0	140	
TCLP Extractables (QCLot: 1370439)									
Aldrin, TCLP	309-00-2 E6	661B	0.1	μg/L	0.2 μg/L	93.6	50.0	150	
Chlordane, cis- (alpha), TCLP	5103-71-9 E6	661B	0.1	μg/L	0.2 μg/L	96.8	50.0	150	
Chlordane, trans- (gamma), TCLP	5103-74-2 E6	661B	0.1	μg/L	0.2 μg/L	97.1	50.0	150	
DDD, 2,4'-, TCLP	53-19-0 E6	661B	0.1	μg/L	0.2 μg/L	134	50.0	150	
DDD, 4,4'-, TCLP	72-54-8 E6	661B	0.1	μg/L	0.2 μg/L	122	50.0	150	
DDE, 2,4'-, TCLP	3424-82-6 E6		0.1	μg/L	0.2 μg/L	92.5	50.0	150	
DDE, 4,4'-, TCLP	72-55-9 E6		0.1	μg/L	0.2 μg/L	90.0	50.0	150	
DDT, 2,4'-, TCLP	789-02-6 E6		0.1	μg/L	0.2 μg/L	59.4	50.0	150	
DDT, 4,4'-, TCLP	50-29-3 E6		0.1	μg/L	0.2 μg/L	# 38.1	50.0	150	LCS-L
Dieldrin, TCLP	60-57-1 E6		0.1	μg/L	0.2 μg/L	134	50.0	150	
Endrin, TCLP	72-20-8 E6		0.1	μg/L	0.2 μg/L	75.5	50.0	150	
Heptachlor epoxide, TCLP	1024-57-3 E6		0.1	μg/L	0.2 μg/L	137	50.0	150	
Heptachlor, TCLP	76-44-8 E6		0.1	μg/L	0.2 μg/L	75.3	50.0	150	
Hexachlorocyclohexane, gamma-, TCLP	58-89-9 E6		0.1	μg/L	0.2 μg/L	82.3	50.0	150	
Methoxychlor, TCLP	72-43-5 E6		0.1	μg/L	0.2 μg/L	55.8	50.0	150	
Oxychlordane, TCLP	27304-13-8 E6	061B	0.1	μg/L	0.2 μg/L	102	50.0	150	
TCLP Extractables (QCLot: 1370440)	40074 ( ) 2 2	2004					05.0	400	1
Aroclor 1016, TCLP	12674-11-2 E6		0.2	μg/L	0.2 μg/L	96.5	65.0	130	
roclor 1221, TCLP 11104-28-2 E688A			0.2	μg/L	0.2 μg/L	96.5	65.0	130	
Aroclor 1232, TCLP 11141-16-5 E688A			0.2	μg/L	0.2 μg/L	96.5	65.0	130	
Aroclor 1242, TCLP	53469-21-9 E6		0.2	μg/L "	0.2 μg/L	96.5	65.0	130	
Aroclor 1248, TCLP	12672-29-6 E6	588A	0.2	μg/L	0.2 μg/L	88.0	65.0	130	

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Sub-Matrix: Soil/Solid	Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
TCLP Extractables (QCLot: 1370440) - co	ntinued								
Aroclor 1254, TCLP	11097-69-1	E688A	0.2	μg/L	0.2 μg/L	74.6	65.0	130	
Aroclor 1260, TCLP	11096-82-5	E688A	0.2	μg/L	0.2 μg/L	89.1	65.0	130	
Aroclor 1262, TCLP	37324-23-5	E688A	0.2	μg/L	0.2 μg/L	89.1	65.0	130	
Aroclor 1268, TCLP	11100-14-4	E688A	0.2	μg/L	0.2 μg/L	89.1	65.0	130	
TCLP Metals (QCLot: 1369801)									
Arsenic, TCLP	7440-38-2	E444	1	mg/L	0.05 mg/L	109	70.0	130	
Barium, TCLP	7440-39-3	E444	2.5	mg/L	0.0125 mg/L	106	70.0	130	
Boron, TCLP	7440-42-8	E444	0.5	mg/L	0.05 mg/L	98.8	70.0	130	
Cadmium, TCLP	7440-43-9	E444	0.05	mg/L	0.005 mg/L	102	70.0	130	
Chromium, TCLP	7440-47-3	E444	0.25	mg/L	0.0125 mg/L	103	70.0	130	
Lead, TCLP	7439-92-1	E444	0.25	mg/L	0.025 mg/L	98.4	70.0	130	
Selenium, TCLP	7782-49-2	E444	0.1	mg/L	0.05 mg/L	102	70.0	130	
Silver, TCLP	7440-22-4	E444	0.05	mg/L	0.005 mg/L	96.8	70.0	130	
Uranium, TCLP	7440-61-1	E444	0.2	mg/L	0.00025 mg/L	94.9	70.0	130	
TCLP Metals (QCLot: 1369909)									
Mercury, TCLP	7439-97-6	E512	0.001	mg/L	0.0001 mg/L	92.7	70.0	130	
TCLP VOCs (QCLot: 1370207)									
Benzene, TCLP	71-43-2	E615B	5	μg/L	250 μg/L	97.9	70.0	130	
Carbon tetrachloride, TCLP	56-23-5	E615B	25	μg/L	250 μg/L	102	60.0	140	
Chlorobenzene, TCLP	108-90-7	E615B	25	μg/L	250 μg/L	95.3	70.0	130	
Chloroform, TCLP	67-66-3	E615B	100	μg/L	250 μg/L	105	70.0	130	
Dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	μg/L	250 μg/L	97.1	70.0	130	
Dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	μg/L	250 μg/L	96.5	70.0	130	
Dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	μg/L	250 μg/L	104	70.0	130	
Dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	μg/L	250 μg/L	99.9	70.0	130	
Dichloromethane, TCLP	75-09-2	E615B	100	μg/L	250 μg/L	110	70.0	130	
Methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	μg/L	250 μg/L	97.3	50.0	150	
Tetrachloroethylene, TCLP	127-18-4	E615B	25	μg/L	250 μg/L	102	70.0	130	
Trichloroethylene, TCLP	79-01-6	E615B	25	μg/L	250 μg/L	103	70.0	130	
Vinyl chloride, TCLP	75-01-4	E615B	50	μg/L	250 μg/L	99.7	60.0	130	
ON mSPLP Extractables (target pH= 5) (Q	CL of: 1370540)								
bis(2-Chloro-1-methylethyl) ether mSPLP	108-60-1	E657B	0.4	μg/L	1.6 μg/L	80.8	50.0	140	
bis(2-Chloroethyl) ether, mSPLP	111-44-4	E667D	0.4	μg/L	1.6 μg/L	84.9	50.0	140	

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Sub-Matrix: Soil/Solid	Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
ON mSPLP Extractables (target pH= 5) (QCI	_ot: 1370540) - con	tinued							
Chloroaniline, 4-, mSPLP	106-47-8	E657B	0.4	μg/L	1.6 μg/L	71.0	50.0	140	
Dichlorobenzidine, 3,3'-, mSPLP	91-94-1	E657B	0.4	μg/L	1.6 µg/L	95.9	50.0	140	
Diethyl phthalate, mSPLP	84-66-2	E657B	0.2	μg/L	6.4 µg/L	90.8	50.0	140	
Dimethyl phthalate, mSPLP	131-11-3	E657B	0.2	μg/L	6.4 µg/L	92.8	50.0	140	
Dinitrophenol, 2,4-, mSPLP	51-28-5	E657B	1	μg/L	4.8 μg/L	71.9	50.0	140	
Dinitrotoluene, 2,4-, mSPLP	121-14-2	E657B	0.4	μg/L	1.6 μg/L	139	50.0	140	
Dinitrotoluene, 2,6-, mSPLP	606-20-2	E657B	0.4	μg/L	1.6 µg/L	131	50.0	140	
Trichlorophenol, 2,4,6-, mSPLP	88-06-2	E657B	0.5	μg/L	4.8 μg/L	99.0	50.0	140	
ON mSPLP Metal (target pH= 5) (QCLot: 137	(0052)								
Antimony, mSPLP	7440-36-0	E443	0.0005	mg/L	0.05 mg/L	104	70.0	130	
Arsenic, mSPLP	7440-38-2	E443	0.001	mg/L	0.05 mg/L	103	70.0	130	
Barium, mSPLP	7440-39-3	E443	0.002	mg/L	0.0125 mg/L	101	70.0	130	
Beryllium, mSPLP	7440-41-7	E443	0.0005	mg/L	0.005 mg/L	90.5	70.0	130	
Boron, mSPLP	7440-42-8	E443	0.01	mg/L	0.05 mg/L	89.7	70.0	130	
Cadmium, mSPLP	7440-43-9	E443	0.0001	mg/L	0.005 mg/L	101	70.0	130	
Chromium, mSPLP	7440-47-3	E443	0.005	mg/L	0.0125 mg/L	97.3	70.0	130	
Cobalt, mSPLP	7440-48-4	E443	0.001	mg/L	0.0125 mg/L	96.4	70.0	130	
Copper, mSPLP	7440-50-8	E443	0.005	mg/L	0.0125 mg/L	95.3	70.0	130	
Lead, mSPLP	7439-92-1	E443	0.001	mg/L	0.025 mg/L	96.1	70.0	130	
Molybdenum, mSPLP	7439-98-7	E443	0.0005	mg/L	0.0125 mg/L	98.8	70.0	130	
Nickel, mSPLP	7440-02-0	E443	0.001	mg/L	0.025 mg/L	94.5	70.0	130	
Selenium, mSPLP	7782-49-2	E443	0.001	mg/L	0.05 mg/L	97.8	70.0	130	
Silver, mSPLP	7440-22-4	E443	0.00025	mg/L	0.005 mg/L	91.8	70.0	130	
Thallium, mSPLP	7440-28-0	E443	0.0005	mg/L	0.05 mg/L	98.8	70.0	130	
Uranium, mSPLP	7440-61-1	E443	0.002	mg/L	0.00025 mg/L	90.0	70.0	130	
Vanadium, mSPLP	7440-62-2	E443	0.0005	mg/L	0.025 mg/L	99.7	70.0	130	
Zinc, mSPLP	7440-66-6	E443	0.005	mg/L	0.025 mg/L	95.5	70.0	130	
ON mSPLP OCP (target pH= 5) (QCLot: 1370									
Dieldrin, mSPLP	60-57-1	E662A	0.008	μg/L	0.2 μg/L	99.0	50.0	150	
Endrin, mSPLP	72-20-8	E662A	0.01	μg/L	0.2 μg/L	# 45.1	50.0	150	LCS-L
Heptachlor epoxide, mSPLP	1024-57-3	E662A	0.008	μg/L	0.2 μg/L	102	50.0	150	
Heptachlor, mSPLP	76-44-8	E662A	0.008	μg/L	0.2 μg/L	55.8	50.0	150	
mSPLP VOCs (QCLot: 1371649)									

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Sub-Matrix: Soil/Solid	Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
mSPLP VOCs (QCLot: 1371649) - contin	ued								
Bromomethane, mSPLP	74-83-9	E619D	0.5	μg/L	100 μg/L	117	70.0	130	
Carbon tetrachloride, mSPLP	56-23-5	E619D	0.2	μg/L	100 μg/L	126	70.0	130	
Chloroform, mSPLP	67-66-3	E619D	1	μg/L	100 μg/L	116	70.0	130	
Dibromoethane, 1,2-, mSPLP	106-93-4	E619D	0.2	μg/L	100 μg/L	101	70.0	130	
Dichlorobenzene, 1,2-, mSPLP	95-50-1	E619D	0.5	μg/L	100 μg/L	106	70.0	130	
Dichlorobenzene, 1,4-, mSPLP	106-46-7	E619D	0.5	μg/L	100 μg/L	107	70.0	130	
Dichloroethane, 1,1-, mSPLP	75-34-3	E619D	0.5	μg/L	100 μg/L	88.9	70.0	130	
Dichloroethane, 1,2-, mSPLP	107-06-2	E619D	0.5	μg/L	100 μg/L	103	70.0	130	
Dichloroethylene, 1,1-, mSPLP	75-35-4	E619D	0.5	μg/L	100 μg/L	108	70.0	130	
Dichloroethylene, cis-1,2-, mSPLP	156-59-2	E619D	0.5	μg/L	100 μg/L	114	70.0	130	
Dichloroethylene, trans-1,2-, mSPLP	156-60-5	E619D	0.5	μg/L	100 μg/L	102	70.0	130	
Dichloropropane, 1,2-, mSPLP	78-87-5	E619D	0.5	μg/L	100 μg/L	98.8	70.0	130	
Dichloropropylene, cis-1,3-, mSPLP	10061-01-5	E619D	0.2	μg/L	100 μg/L	95.4	70.0	130	
Dichloropropylene, trans-1,3-, mSPLP	10061-02-6	E619D	0.2	μg/L	100 μg/L	89.7	70.0	130	
Dioxane, 1,4-, mSPLP	123-91-1	E619D	2	μg/L	100 μg/L	88.8	60.0	140	
Tetrachloroethane, 1,1,1,2-, mSPLP	630-20-6	E619D	0.5	μg/L	100 μg/L	114	70.0	130	
Tetrachloroethane, 1,1,2,2-, mSPLP	630-20-6	E619D	0.5	μg/L	100 μg/L	90.3	70.0	130	
Tetrachloroethylene, mSPLP	127-18-4	E619D	0.5	μg/L	100 μg/L	125	70.0	130	
Trichloroethane, 1,1,2-, mSPLP	79-00-5	E619D	0.5	μg/L	100 μg/L	100	70.0	130	
Trichloroethylene, mSPLP	79-01-6	E619D	0.5	μg/L	100 μg/L	128	70.0	130	

### **Qualifiers**

Qualifier Description

LCS-L

Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

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### 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/Soli	d						Matrix Spike	e (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP Extractable	s (QCLot: 1370158)									
WT2405697-001	TCLP-24-01	Nitrate (as N), TCLP	14797-55-8	E240.NO3	48.3 mg/L	50 mg/L	96.6	50.0	140	
TCLP Extractable	s (QCLot: 1370159)									
WT2405697-001	TCLP-24-01	Nitrite (as N), TCLP	14797-65-0	E240.NO2	9.0 mg/L	10 mg/L	90.4	50.0	140	
TCLP Extractable	s (QCLot: 1370160)									
WT2405697-001	TCLP-24-01	Fluoride, TCLP	16984-48-8	E240.F	16 mg/L	20 mg/L	78.6	50.0	140	
TCLP Extractables	s (QCLot: 1370375)									
WT2405697-001	TCLP-24-01	Cyanide, weak acid dissociable, TCLP	<del></del>	E337A	5.68 mg/L	6.25 mg/L	90.8	50.0	140	
TCLP Extractable	s (QCLot: 1370416)									1
WT2405988-001	Anonymous	Benzo(a)pyrene, TCLP	50-32-8	E644	0.60 µg/L	0.5263 μg/L	115	50.0	140	
TCLP Extractable	s (QCLot: 1370439)					10				
WT2405697-001	TCLP-24-01	Aldrin, TCLP	309-00-2	E661B	0.19 μg/L	0.2 μg/L	94.2	50.0	150	
		Chlordane, cis- (alpha), TCLP	5103-71-9	E661B	0.19 μg/L	0.2 μg/L	94.1	50.0	150	
		Chlordane, trans- (gamma), TCLP	5103-74-2	E661B	0.21 μg/L	0.2 μg/L	107	50.0	150	
		DDD, 2,4'-, TCLP	53-19-0	E661B	0.26 μg/L	0.2 μg/L	132	50.0	150	
		DDD, 4,4'-, TCLP	72-54-8	E661B	0.23 μg/L	0.2 μg/L	116	50.0	150	
		DDE, 2,4'-, TCLP	3424-82-6	E661B	0.19 μg/L	0.2 μg/L	93.3	50.0	150	
		DDE, 4,4'-, TCLP	72-55-9	E661B	0.19 μg/L	0.2 μg/L 0.2 μg/L	96.4	50.0	150	
		DDT, 2,4'-, TCLP	789-02-6	E661B	0.19 μg/L 0.13 μg/L	0.2 μg/L 0.2 μg/L	64.2	50.0	150	
		DDT, 4,4'-, TCLP								
		Dieldrin, TCLP	50-29-3	E661B	0.11 µg/L	0.2 μg/L	54.1	50.0	150	
		Endrin, TCLP	60-57-1	E661B	0.28 µg/L	0.2 μg/L	139	50.0	150	
			72-20-8	E661B	0.19 µg/L	0.2 μg/L	97.2	50.0	150	
		Heptachlor epoxide, TCLP	1024-57-3	E661B	0.26 μg/L	0.2 μg/L	128	50.0	150	
		Heptachlor, TCLP	76-44-8	E661B	0.14 μg/L	0.2 μg/L	68.2	50.0	150	
		Hexachlorocyclohexane, gamma-, TCLP	58-89-9	E661B	0.18 μg/L	0.2 μg/L	88.6	50.0	150	
		Methoxychlor, TCLP	72-43-5	E661B	0.10 μg/L	0.2 μg/L	50.8	50.0	150	
		Oxychlordane, TCLP	27304-13-8	E661B	0.20 μg/L	0.2 μg/L	102	50.0	150	
CLP Extractable	s (QCLot: 1370440)									
WT2405697-001	TCLP-24-01	Aroclor 1016, TCLP	12674-11-2	E688A	0.22 μg/L	0.2 µg/L	110	50.0	150	
		Aroclor 1221, TCLP	11104-28-2	E688A	0.22 μg/L	0.2 μg/L	110	50.0	150	
	ı	Aroclor 1232, TCLP	11141-16-5	E688A	0.22 μg/L	0.2 μg/L	110	50.0	150	

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Matrix Spike (MS) Report Sub-Matrix: Soil/Solid Recovery (%) Recovery Limits (%) Spike Laboratory sample ID | Client sample ID Analyte **CAS Number** Method Concentration Target Low High Qualifier TCLP Extractables (QCLot: 1370440) - continued WT2405697-001 TCLP-24-01 Aroclor 1242, TCLP 53469-21-9 E688A 0.22 µg/L 0.2 µg/L 110 50.0 150 Aroclor 1248, TCLP 12672-29-6 E688A 0.22 µg/L 0.2 µg/L 110 50.0 150 Aroclor 1254, TCLP 11097-69-1 E688A 0.18 µg/L 90.1 150 0.2 µg/L 50.0 Aroclor 1260, TCLP 11096-82-5 E688A 0.24 µg/L 0.2 µg/L 119 50.0 150 Aroclor 1262, TCLP 37324-23-5 E688A 0.24 µg/L 0.2 µg/L 120 50.0 150 Aroclor 1268, TCLP 11100-14-4 E688A 0.24 µg/L 0.2 µg/L 120 50.0 150 TCLP Metals (QCLot: 1369801) WT2405697-001 TCLP-24-01 Arsenic, TCLP 7440-38-2 E444 5.6 mg/L 5 mg/L 113 50.0 140 Barium, TCLP 7440-39-3 E444 140 13.6 mg/L 12.5 mg/L 109 50.0 Boron, TCLP 7440-42-8 E444 10.4 mg/L 10 mg/L 104 50.0 140 Cadmium, TCLP 0.263 mg/L 0.25 mg/L 7440-43-9 E444 105 50.0 140 Chromium, TCLP 7440-47-3 E444 1.35 mg/L 1.25 mg/L 108 50.0 140 Lead, TCLP 7439-92-1 E444 9.86 mg/L 10 mg/L 50.0 140 98.6 Selenium, TCLP 7782-49-2 E444 5.47 mg/L 50.0 5 mg/L 109 140 Silver, TCLP 7440-22-4 E444 0.092 mg/L 0.1 mg/L 91.8 50.0 140 Uranium, TCLP 7440-61-1 97.8 E444 4.89 mg/L 5 mg/L 50.0 140 TCLP Metals (QCLot: 1369909) WT2405697-001 TCLP-24-01 Mercury, TCLP 7439-97-6 E512 0.0030 mg/L 0.003 mg/L 98.5 50.0 140 TCLP VOCs (QCLot: 1370207) WT2405988-001 Anonymous Benzene, TCLP 71-43-2 E615B 200 µg/L 250 µg/L 80.2 50.0 140 Carbon tetrachloride, TCLP 56-23-5 E615B 82.6 50.0 140 206 µg/L 250 µg/L Chlorobenzene, TCLP 108-90-7 E615B 209 µg/L 250 µg/L 83.5 50.0 140 Chloroform, TCLP 67-66-3 E615B 220 µg/L 250 µg/L 87.7 50.0 140 250 µg/L Dichlorobenzene, 1,2-, TCLP 95-50-1 E615B 225 µg/L 90.0 50.0 140 ----Dichlorobenzene, 1,4-, TCLP 106-46-7 E615B 222 µg/L 250 µg/L 88.8 50.0 140 Dichloroethane, 1,2-, TCLP E615B 107-06-2 216 µg/L 250 µg/L 86.5 50.0 140 Dichloroethylene, 1,1-, TCLP 75-35-4 E615B 78.4 50.0 140 196 µg/L 250 µg/L Dichloromethane, TCLP 75-09-2 E615B 220 µg/L 250 µg/L 88.1 50.0 140 Methyl ethyl ketone [MEK], TCLP E615B 210 µg/L 250 µg/L 83.5 78-93-3 50.0 140 Tetrachloroethylene, TCLP 127-18-4 E615B 219 µg/L 87.6 50.0 140 250 µg/L Trichloroethylene, TCLP 79-01-6 E615B 215 µg/L 250 µg/L 86.0 50.0 140 Vinyl chloride, TCLP 75-01-4 E615B 188 µg/L 250 µg/L 75.1 50.0 140 ON mSPLP Extractables (target pH= 5) (QCLot: 1370540) WT2405618-005 Anonymous bis(2-Chloro-1-methylethyl) ether 108-60-1 E657B 1.50 µg/L 1.6 µg/L 84.3 50.0 140 mSPLP

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Matrix Spike (MS) Report Sub-Matrix: Soil/Solid Recovery (%) Recovery Limits (%) Spike Concentration Laboratory sample ID | Client sample ID Analyte **CAS Number** Method Target MS Low High Qualifier ON mSPLP Extractables (target pH= 5) (QCLot: 1370540) - continued WT2405618-005 Anonymous bis(2-Chloroethyl) ether, mSPLP 111-44-4 E657B 1.52 µg/L 1.6 µg/L 85.2 50.0 140 Chloroaniline, 4-, mSPLP 106-47-8 E657B 0.69 µg/L 38.8 50.0 140 **RRQC** 1.6 µg/L Dichlorobenzidine, 3,3'-, mSPLP 91-94-1 E657B 140 1.05 µg/L 1.6 µg/L 58.9 50.0 Diethyl phthalate, mSPLP 84-66-2 E657B 6.77 µg/L 6.4 µg/L 95.2 50.0 140 Dimethyl phthalate, mSPLP 131-11-3 E657B 6.97 µg/L 98.1 140 6.4 µg/L 50.0 Dinitrophenol, 2,4-, mSPLP 51-28-5 E657B 5.1 µg/L 4.8 µg/L 96.4 50.0 140 Dinitrotoluene, 2,4-, mSPLP 121-14-2 E657B 2.59 µg/L 146 50.0 140 RRQC 1.6 µg/L Dinitrotoluene, 2,6-, mSPLP 606-20-2 E657B 2.60 µg/L 1.6 µg/L 146 50.0 140 **RRQC** Trichlorophenol, 2,4,6-, mSPLP 88-06-2 E657B 5.50 µg/L 4.8 µg/L 103 50.0 140 ON mSPLP Metal (target pH= 5) (QCLot: 1370052) WT2405958-004 Antimony, mSPLP Anonymous E443 7440-36-0 5.02 mg/L 5 mg/L 100 50.0 140 Arsenic, mSPLP 7440-38-2 E443 5.26 mg/L 5 mg/L 105 50.0 140 Barium, mSPLP 7440-39-3 E443 106 140 13.2 mg/L 12.5 mg/L 50.0 Beryllium, mSPLP 7440-41-7 E443 0.236 mg/L 0.25 mg/L 94.5 50.0 140 Boron, mSPLP 7440-42-8 E443 9.58 mg/L 10 mg/L 95.8 50.0 140 Cadmium, mSPLP 7440-43-9 E443 0.261 mg/L 0.25 mg/L 104 50.0 140 Chromium, mSPLP 7440-47-3 E443 1.24 mg/L 1.25 mg/L 99.4 50.0 140 Cobalt, mSPLP 7440-48-4 E443 0.244 mg/L 0.25 mg/L 97.7 50.0 140 Copper, mSPLP 7440-50-8 E443 2.41 mg/L 2.5 mg/L 96.4 50.0 140 Lead, mSPLP 7439-92-1 E443 9.56 mg/L 10 mg/L 95.6 50.0 140 Molybdenum, mSPLP 1.25 mg/L 7439-98-7 E443 1.23 mg/L 98.4 50.0 140 Nickel, mSPLP 7440-02-0 E443 2.41 mg/L 50.0 2.5 mg/L 96.3 140 Selenium, mSPLP 7782-49-2 E443 5.15 mg/L 103 50.0 140 5 mg/L Silver, mSPLP 7440-22-4 E443 0.0866 mg/L 0.1 mg/L 86.6 50.0 140 Thallium, mSPLP 7440-28-0 E443 4.83 mg/L 5 mg/L 96.7 50.0 140 Uranium, mSPLP 7440-61-1 E443 4.60 mg/L 5 mg/L 92.1 70.0 130 Vanadium, mSPLP 7440-62-2 E443 0.759 mg/L 101 50.0 140 0.75 mg/L Zinc, mSPLP 7440-66-6 E443 9.87 mg/L 10 mg/L 98.7 50.0 140 ON mSPLP OCP (target pH= 5) (QCLot: 1370468) mSPLP-24-01 WT2405697-002 Dieldrin, mSPLP 60-57-1 E662A 0.209 µg/L 104 50.0 150 0.2 µg/L Endrin, mSPLP 72-20-8 E662A 150 0.161 µg/L  $0.2 \mu g/L$ 80.4 50.0 ----Heptachlor epoxide, mSPLP 1024-57-3 E662A 0.232 µg/L 0.2 µg/L 116 50.0 150 Heptachlor, mSPLP 76-44-8 E662A 0.116 µg/L 0.2 µg/L 58.1 50.0 150 mSPLP VOCs (QCLot: 1371649) mSPLP-24-01 WT2405697-002 Bromomethane, mSPLP 74-83-9 140 E619D 105 µg/L 100 µg/L 105 50.0

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Sub-Matrix. Soli/Solid			manx opine (mo) report								
				Spi	ike	Recovery (%)	Recovery Limits (%)				
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
mSPLP VOCs (QC	Lot: 1371649) - co	ntinued									
WT2405697-002 r	mSPLP-24-01	Carbon tetrachloride, mSPLP	56-23-5	E619D	112 µg/L	100 μg/L	112	50.0	140		
		Chloroform, mSPLP	67-66-3	E619D	107 μg/L	100 μg/L	107	50.0	140		
		Dibromoethane, 1,2-, mSPLP	106-93-4	E619D	96.8 μg/L	100 μg/L	96.8	50.0	140		
		Dichlorobenzene, 1,2-, mSPLP	95-50-1	E619D	98.6 μg/L	100 μg/L	98.6	50.0	140		
		Dichlorobenzene, 1,4-, mSPLP	106-46-7	E619D	98.8 μg/L	100 μg/L	98.8	50.0	140		
		Dichloroethane, 1,1-, mSPLP	75-34-3	E619D	98.3 μg/L	100 μg/L	98.3	50.0	140		
		Dichloroethane, 1,2-, mSPLP	107-06-2	E619D	98.1 μg/L	100 μg/L	98.1	50.0	140		
		Dichloroethylene, 1,1-, mSPLP	75-35-4	E619D	97.1 μg/L	100 μg/L	97.1	50.0	140		
		Dichloroethylene, cis-1,2-, mSPLP	156-59-2	E619D	107 μg/L	100 μg/L	107	50.0	140		
		Dichloroethylene, trans-1,2-, mSPLP	156-60-5	E619D	92.7 μg/L	100 μg/L	92.7	50.0	140		
		Dichloropropane, 1,2-, mSPLP	78-87-5	E619D	92.1 μg/L	100 μg/L	92.1	50.0	140		
		Dichloropropylene, cis-1,3-, mSPLP	10061-01-5	E619D	86.2 µg/L	100 μg/L	86.2	50.0	140		
		Dichloropropylene, trans-1,3-, mSPLP	10061-02-6	E619D	83.1 µg/L	100 μg/L	83.1	50.0	140		
		Dioxane, 1,4-, mSPLP	123-91-1	E619D	92.6 µg/L	100 μg/L	92.6	50.0	140		
		Tetrachloroethane, 1,1,1,2-, mSPLP	630-20-6	E619D	106 μg/L	100 μg/L	106	50.0	140		
		Tetrachloroethane, 1,1,2,2-, mSPLP	630-20-6	E619D	88.4 µg/L	100 μg/L	88.4	50.0	140		
		Tetrachloroethylene, mSPLP	127-18-4	E619D	112 μg/L	100 μg/L	112	50.0	140		
		Trichloroethane, 1,1,2-, mSPLP	79-00-5	E619D	96.1 µg/L	100 μg/L	96.1	50.0	140		
		Trichloroethylene, mSPLP	79-01-6	E619D	115 µg/L	100 μg/L	115	50.0	140		

### **Qualifiers**

Qualifier Description

RRQC Refer to report comments for information regarding this QC result.

# Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

www.alsglobal.com

Street:

City/Province:

Ottawa, ON 30 Lansfield Way

K2G 3V8

Invoice To Postal Code:

Same as Report To

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8

Email 3

Invoice Recipients

Email 2

Email 1 or Fax Luke@Lopers.ca

Select Distribution:

- EMAIL

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3 day [P3] if received by 3pm M-F - 25% rush surcharge minir
2 day [P2] if received by 3pm M-F - 50% rush surcharge minir
1 day [E] if received by 3pm M-F - 100% rush surcharge minir
Same day [E2] if received by 10am M-S - 200% rush surcharge

X Routine [R] If received by 3pm M-F - no surcharges apply

1 day [P4] if received by 3pm M-F - 20% rush surcharge in 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim

Turnaround Time (TAT) Requested

Merge QC/QCI Reports with COA \_\_ YES \_\_\_\_ NO

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Compare Results to Criteria on Report - provide details below if box checked

Select Report Format:

Reports / Recipients

Z PDF 🛽 EXCEL 🗌 EDD (DIGITAL)

Phone:

613-327-9073

Luke Lopers

Company address below will appear on the final report

Contact:

Company:

LOPERS & ASSOCIATES - LOPE100

Contact and company name below will appear on the final report

Report To

Canada Toll Free: 1 800 668 9878

Page ٥,

Environmental Division

Work Order Reference WT2405697

Telephone: +1 519 886 6910

Date and Time Required for all E&P TATs;

For all tests with rush TATs requested, please co.

Additional fees may apply to rush requests on weeken

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SHIPMENT RELEASE (client use)		√use?		DW System?	iles (client use)	las <sup>1</sup> (aliant usa)											-24-01	24-01	Sample Identification (This description will	ALS Lab Work Order# (ALS use only):				LOPE100/WT2023LOPE1000002	Project Information			th Report 🔢 YES 📃
e) .	U. Kay Tuem	C 0 186/8 ( 1890)	C. 28. 7	( 4774) the 20 0		Notes / Speci													Sample Identification and/or Coordinates (This description will appear on the report)					3LOPE1000002	THE PROPERTY OF THE PROPERTY O			l No
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13,2024

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Received by:

Date:

03/13/24

Time:

Received by:

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### **ALS Canada Ltd.**



### **CERTIFICATE OF ANALYSIS**

**Work Order** : **WT2405173** Page : 1 of 17

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo ON Canada N2V 2B8

 Telephone
 : 613 327 9073
 Telephone
 : 613 225 8279

 Project
 : LOP23-029B
 Date Samples Received
 : 07-Mar-2024 14:00

PO : --- Date Analysis Commenced : 08-Mar-2024

C-O-C number : --- Issue Date : 14-Mar-2024 10:22

Site ·

Quote number : SOA 2024

No. of samples received : 17
No. of samples analysed : 17

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:

: Client

General Comments

Analytical Results

Surrogate Control Limits

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**

Sampler

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
Kelly Fischer	Technical Specialist	Inorganics, Waterloo, Ontario
Kelly Fischer	Technical Specialist	Metals, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

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Client : Lopers & Associates

Project : LOP23-029B



### **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.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

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

<sup>&</sup>lt;: less than.

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

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

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

### **Sample Comments**

Sample	Client Id	Comment
WT2405173-006	BH12-24-GW1	sample was lab-filtered for Dissolved Cr6.

### **Qualifiers**

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical
	Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
OWP	Organic water sample contained visible sediment (must be included as part of
	analysis). Measured concentrations of organic substances in water can be biased
	high due to presence of sediment.
PEHT	Parameter exceeded recommended holding time prior to analysis.
RRR	Refer to report comments for issues regarding this analysis.

<sup>&</sup>gt;: greater than.

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SP Sample was preserved at the laboratory.

SRU Sample Received Unpreserved. Results may be biased low for indicated

parameter(s).



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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Water			CI	ient sample ID	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH4-24-GW1	BH5-24-GW1
(Matrix: Water)									
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-001	WT2405173-002	WT2405173-003	WT2405173-004	WT2405173-005
					Result	Result	Result	Result	Result
Physical Tests									
Conductivity		E100/WT	0.0010	mS/cm		8.52			7.26
рН		E108/WT	0.10	pH units		8.22			8.17
Anions and Nutrients									
Chloride	16887-00-6	E235.CI/WT	0.50	mg/L		2500 DLDS			2060 DLDS
Cyanides									
Cyanide, weak acid dissociable		E336/WT	2.0	μg/L		<2.0			<2.0
Dissolved Metals									
Antimony, dissolved	7440-36-0		0.10	μg/L		<1.00 DLHC			<1.00 DLHC
Arsenic, dissolved	7440-38-2		0.10	μg/L		<1.00 DLHC			<1.00 DLHC
Barium, dissolved	7440-39-3		0.10	μg/L		459 DLHC			471 DLHC
Beryllium, dissolved	7440-41-7		0.020	μg/L		<0.200 DLHC			<0.200 DLHC
Boron, dissolved	7440-42-8	E421/WT	10	μg/L		<100 DLHC			<100 DLHC
Cadmium, dissolved	7440-43-9	E421/WT	0.0050	μg/L		0.106 DLHC			0.0826 DLHC
Chromium, dissolved	7440-47-3	E421/WT	0.50	μg/L		<5.00 DLHC			<5.00 DLHC
Cobalt, dissolved	7440-48-4	E421/WT	0.10	μg/L		<1.00 DLHC			<1.00 DLHC
Copper, dissolved	7440-50-8	E421/WT	0.20	μg/L		<2.00 DLHC			<2.00 DLHC
Lead, dissolved	7439-92-1	E421/WT	0.050	μg/L		<0.500 DLHC			<0.500 DLHC
Mercury, dissolved	7439-97-6	E509/WT	0.0050	μg/L		<0.0050			<0.0050
Molybdenum, dissolved	7439-98-7	E421/WT	0.050	μg/L		1.85 DLHC			0.604 DLHC
Nickel, dissolved	7440-02-0	E421/WT	0.50	μg/L		<5.00 DLHC			<5.00 DLHC
Selenium, dissolved	7782-49-2	E421/WT	0.050	μg/L		<0.500 DLHC			<0.500 DLHC
Silver, dissolved	7440-22-4	E421/WT	0.010	μg/L		0.216 DLHC			<0.100 DLHC
Sodium, dissolved	7440-23-5	E421/WT	50	μg/L		1140000 DLHC			1010000 DLHC
Thallium, dissolved	7440-28-0	E421/WT	0.010	μg/L		<0.100 DLHC			<0.100 DLHC
Uranium, dissolved	7440-61-1	E421/WT	0.010	μg/L		6.07 DLHC			3.93 DLHC
Vanadium, dissolved	7440-62-2	E421/WT	0.50	μg/L		<5.00 DLHC			<5.00 DLHC
Zinc, dissolved	7440-66-6		1.0	μg/L		<10.0 DLHC			<10.0 DLHC
Dissolved mercury filtration location		EP509/WT	-	_		Field			Field
Dissolved metals filtration location		EP421/WT	-	-		Field			Field
·		•	•			•	•		

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Sub-Matrix: Water		C	lient sample ID	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH4-24-GW1	BH5-24-GW1
(Matrix: Water)								
		Client samp	oling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-001	WT2405173-002	WT2405173-003	WT2405173-004	WT2405173-005
				Result	Result	Result	Result	Result
Speciated Metals								DEUT
Chromium, hexavalent [Cr VI], dissolved	18540-29-9 E532A/WT	0.50	μg/L		3.38			2.56 PEHT,
Volatile Organic Compounds								
Acetone	67-64-1 E611D/WT	20	μg/L	<20	<20	<20	<20	<20
Benzene	71-43-2 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	75-27-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	75-25-2 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	74-83-9 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	56-23-5 E611D/WT	0.20	μg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	108-90-7 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform	67-66-3 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	124-48-1 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.20	μg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	75-71-8 E611D/WT	0.50	μg/L	5.01 OWP	4.40	2.06	0.57 <sup>OWP</sup>	<0.50
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	75-35-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane	75-09-2 E611D/WT	1.0	μg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.30	μg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.30	μg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	100-41-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Hexane, n-	110-54-3 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT	20	μg/L	<20	<20	<20	<20	<20
Methyl isobutyl ketone [MIBK]	108-10-1 E611D/WT	20	μg/L	<20	<20	<20	<20	<20
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Sub-Matrix: Water		С	lient sample ID	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH4-24-GW1	BH5-24-GW1
(Matrix: Water)								
		Client samp	oling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-001	WT2405173-002	WT2405173-003	WT2405173-004	WT2405173-005
				Result	Result	Result	Result	Result
Volatile Organic Compounds								
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	100-42-5 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	127-18-4 E611D/WT	0.50	μg/L	1.77 OWP	<0.50	<0.50	<0.50	<0.50
Toluene	108-88-3 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	79-01-6 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane	75-69-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	75-01-4 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Xylene, m+p-	179601-23-1 E611D/WT	0.40	μg/L	<0.40	<0.40	<0.40	0.97 <sup>owp</sup>	<0.40
Xylene, o-	95-47-6 E611D/WT	0.30	μg/L	< 0.30	<0.30	<0.30	0.63 <sup>owp</sup>	<0.30
Xylenes, total	1330-20-7 E611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	1.60	<0.50
BTEX, total	E611D/WT	1.0	μg/L	<1.0	<1.0	<1.0	1.6	<1.0
Hydrocarbons								
F1 (C6-C10)	E581.F1-L/WT	25	μg/L		<25	<25		<25
F2 (C10-C16)	E601.SG/WT	100	μg/L		<100	<100		<100
F3 (C16-C34)	E601.SG/WT	250	μg/L		<250	<250		<250
F4 (C34-C50)	E601.SG/WT	250	μg/L		<250	<250		<250
F1-BTEX	EC580/WT	25	μg/L		<25	<25		<25
Hydrocarbons, total (C6-C50)	<sub>n/a</sub> EC581SG/WT	240	μg/L		<370	<370		<370
Chromatogram to baseline at nC50	n/a E601.SG/WT	-	-		YES	YES		YES
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E601.SG/WT	1.0	%		91.0	88.4		86.8
Dichlorotoluene, 3,4-	95-75-0 E581.F1-L/WT	1.0	%		88.2	95.4		71.8
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4 E611D/WT	1.0	%	93.8	96.4	96.7	92.6	95.3
Difluorobenzene, 1,4-	540-36-3 E611D/WT	1.0	%	98.6	98.4	97.7	99.3	98.0
Polycyclic Aromatic Hydrocarbons								

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Sub-Matrix: Water		CI	ient sample ID	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH4-24-GW1	BH5-24-GW1
(Matrix: Water)								
			ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-001	WT2405173-002	WT2405173-003	WT2405173-004	WT2405173-005
				Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A/WT	0.010	μg/L		<0.010			<0.010
Acenaphthylene	208-96-8 E641A/WT	0.010	μg/L		<0.010			<0.010
Anthracene	120-12-7 E641A/WT	0.010	μg/L		<0.010			<0.010
Benz(a)anthracene	56-55-3 E641A/WT	0.010	μg/L		<0.010			<0.010
Benzo(a)pyrene	50-32-8 E641A/WT	0.0050	μg/L		<0.0050			<0.0050
Benzo(b+j)fluoranthene	n/a E641A/WT	0.010	μg/L		<0.010			<0.010
Benzo(g,h,i)perylene	191-24-2 E641A/WT	0.010	μg/L		<0.010			<0.010
Benzo(k)fluoranthene	207-08-9 E641A/WT	0.010	μg/L		<0.010			<0.010
Chrysene	218-01-9 E641A/WT	0.010	μg/L		<0.010			<0.010
Dibenz(a,h)anthracene	53-70-3 E641A/WT	0.0050	μg/L		<0.0050			<0.0050
Fluoranthene	206-44-0 E641A/WT	0.010	μg/L		<0.010			0.012
Fluorene	86-73-7 E641A/WT	0.010	μg/L		<0.010			<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A/WT	0.010	μg/L		<0.010			<0.010
Methylnaphthalene, 1-	90-12-0 E641A/WT	0.010	μg/L		0.019			<0.010
Methylnaphthalene, 1+2-	E641A/WT	0.015	μg/L		0.050			<0.015
Methylnaphthalene, 2-	91-57-6 E641A/WT	0.010	μg/L		0.031			<0.010
Naphthalene	91-20-3 E641A/WT	0.050	μg/L		0.050			<0.050
Phenanthrene	85-01-8 E641A/WT	0.020	μg/L		<0.020			<0.020
Pyrene	129-00-0 E641A/WT	0.010	μg/L		<0.010			0.039
Polycyclic Aromatic Hydrocarbons Surrogates								
Chrysene-d12	1719-03-5 E641A/WT	0.1	%		115			115
Naphthalene-d8	1146-65-2 E641A/WT	0.1	%		98.2			97.1
Phenanthrene-d10	1517-22-2 E641A/WT	0.1	%		108			106
Polychlorinated Biphenyls								
Aroclor 1016	12674-11-2 E687/WT	0.020	μg/L					<0.020
Aroclor 1221	11104-28-2 E687/WT	0.020	μg/L					<0.020
Aroclor 1232	11141-16-5 E687/WT	0.020	μg/L					<0.020
Aroclor 1242	53469-21-9 E687/WT	0.020	μg/L					<0.020
Aroclor 1248	12672-29-6 E687/WT	0.020	μg/L					<0.020
Aroclor 1254	11097-69-1 E687/WT	0.020	μg/L					<0.020
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### Analytical Results

Sub-Matrix: Water			CI	ient sample ID	BH1-24-GW1	BH2-24-GW1	BH3-24-GW1	BH4-24-GW1	BH5-24-GW1
(Matrix: Water)									
			Client sampling date / time		06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-001	WT2405173-002	WT2405173-003	WT2405173-004	WT2405173-005
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1260	11096-82-5	E687/WT	0.020	μg/L					<0.020
Aroclor 1262	37324-23-5 l	E687/WT	0.020	μg/L					<0.020
Aroclor 1268	11100-14-4	E687/WT	0.020	μg/L					<0.020
Polychlorinated biphenyls [PCBs], total	[	E687/WT	0.060	μg/L					<0.060
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3 l	E687/WT	0.1	%					116
Tetrachloro-m-xylene	877-09-8 <b>l</b>	E687/WT	0.1	%					106

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.

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Sub-Matrix: Water			CI	ient sample ID	BH12-24-GW1	BH13-24-GW1	BH15-24-GW1	MW-2-GW1	MW-3-GW1
(Matrix: Water)									
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-006	WT2405173-007	WT2405173-008	WT2405173-009	WT2405173-010
					Result	Result	Result	Result	Result
Physical Tests Conductivity		E100/WT	0.0010	mS/cm	8.71				6.09
pH		E108/WT	0.10	pH units	8.22				7.63
		L 100/VV 1	0.10	pri units	0.22				7.03
Anions and Nutrients Chloride	16887-00-6	E235 CI/MT	0.50	mg/L	2550 DLDS				1800 DLDS
	10007-00-0	2200.01/111	0.00	mg/L	2000				1000
Cyanides Cyanide, weak acid dissociable		E336/WT	2.0	μg/L	<2.0 <sup>sp</sup>				<2.0
			2.0	µg/⊏	2.0				2.0
Dissolved Metals Antimony, dissolved	7440-36-0	E421/WT	0.10	μg/L	<1.00 DLHC				<1.00 DLHC
Arsenic, dissolved	7440-38-2		0.10	μg/L	<1.00 DLHC				<1.00 DLHC
Barium, dissolved	7440-39-3		0.10	μg/L	482 DLHC				405 DLHC
Beryllium, dissolved	7440-41-7		0.020	μg/L	<0.200 DLHC				<0.200 DLHC
Boron, dissolved	7440-42-8		10	μg/L	<100 DLHC				<100 DLHC
Cadmium, dissolved	7440-43-9		0.0050	μg/L	0.113 DLHC				<0.0500 DLHC
Chromium, dissolved	7440-47-3		0.50	μg/L	<5.00 DLHC				<5.00 DLHC
Cobalt, dissolved	7440-48-4		0.10	μg/L	<1.00 DLHC				<1.00 DLHC
Copper, dissolved	7440-50-8		0.20	μg/L	<2.00 DLHC				<2.00 DLHC
Lead, dissolved	7439-92-1		0.050	μg/L	<0.500 DLHC				<0.500 DLHC
Mercury, dissolved	7439-97-6	E509/WT	0.0050	μg/L	<0.0050				<0.0050
Molybdenum, dissolved	7439-98-7	E421/WT	0.050	μg/L	1.60 DLHC				1.22 DLHC
Nickel, dissolved	7440-02-0	E421/WT	0.50	μg/L	<5.00 DLHC				<5.00 DLHC
Selenium, dissolved	7782-49-2	E421/WT	0.050	μg/L	<0.500 DLHC				<0.500 DLHC
Silver, dissolved	7440-22-4	E421/WT	0.010	μg/L	0.578 DLHC				<0.100 DLHC
Sodium, dissolved	7440-23-5	E421/WT	50	μg/L	1210000 DLHC				571000 DLHC
Thallium, dissolved	7440-28-0	E421/WT	0.010	μg/L	<0.100 DLHC				<0.100 DLHC
Uranium, dissolved	7440-61-1	E421/WT	0.010	μg/L	6.20 DLHC				11.8 DLHC
Vanadium, dissolved	7440-62-2	E421/WT	0.50	μg/L	5.12 DLHC				<5.00 DLHC
Zinc, dissolved	7440-66-6	E421/WT	1.0	μg/L	<10.0 DLHC				<10.0 DLHC
Dissolved mercury filtration location		EP509/WT	-	-	Field				Field
Dissolved metals filtration location		EP421/WT	-	-	Field				Field
Speciated Metals									

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Water		CI	lient sample ID	BH12-24-GW1	BH13-24-GW1	BH15-24-GW1	MW-2-GW1	MW-3-GW1
(Matrix: Water)								
			oling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-006	WT2405173-007	WT2405173-008	WT2405173-009	WT2405173-010
				Result	Result	Result	Result	Result
Speciated Metals Chromium, hexavalent [Cr VI], dissolved	18540-29-9 E532A/WT	0.50	a/l	3.98 PEHT, RRR, SRU				<0.50 PEHT, SRU
	18540-29-9 E532A/W1	0.50	μg/L	3.90 RRR, SRU				<0.50 <sub>SRU</sub>
Volatile Organic Compounds	67-64-1 E611D/WT	20	//	<20	<20		<20	<20
Acetone		0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Benzene	71-43-2 E611D/WT	0.50	μg/L		<0.50		<0.50	<0.50
Bromodichloromethane	75-27-4 E611D/WT		μg/L	<0.50				
Bromoform	75-25-2 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Bromomethane	74-83-9 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50 <0.20	<0.50
Carbon tetrachloride	56-23-5 E611D/WT	0.20	μg/L	<0.20	<0.20			<0.20 <0.50
Chlorobenzene	108-90-7 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Chloroform	67-66-3 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	
Dibromochloromethane	124-48-1 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.20	μg/L	<0.20	<0.20		<0.20	<0.20
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.50	μg/L "	<0.50	<0.50		<0.50	<0.50
Dichlorodifluoromethane	75-71-8 E611D/WT	0.50	μg/L 	4.07	2.76 OWP		6.86	15.8 <sup>owp</sup>
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.50	μg/L 	<0.50	<0.50		<0.50	<0.50
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.50	μg/L 	<0.50	<0.50		<0.50	<0.50
Dichloroethylene, 1,1-	75-35-4 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichloromethane	75-09-2 E611D/WT	1.0	μg/L	<1.0	<1.0		<1.0	<1.0
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.30	μg/L	<0.30	<0.30		<0.30	<0.30
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.30	μg/L	<0.30	<0.30		<0.30	<0.30
Ethylbenzene	100-41-4 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Hexane, n-	110-54-3 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT	20	μg/L	<20	<20		<20	<20
Methyl isobutyl ketone [MIBK]	108-10-1 E611D/WT	20	μg/L	<20	<20		<20	<20

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Water		C	ient sample ID	BH12-24-GW1	BH13-24-GW1	BH15-24-GW1	MW-2-GW1	MW-3-GW1
(Matrix: Water)								
		Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-006	WT2405173-007	WT2405173-008	WT2405173-009	WT2405173-010
				Result	Result	Result	Result	Result
Volatile Organic Compounds								
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Styrene	100-42-5 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Tetrachloroethylene	127-18-4 E611D/WT	0.50	μg/L	<0.50	0.61 OWP		<0.50	<0.50
Toluene	108-88-3 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Trichloroethylene	79-01-6 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Trichlorofluoromethane	75-69-4 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Vinyl chloride	75-01-4 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
Xylene, m+p-	179601-23-1 E611D/WT	0.40	μg/L	<0.40	<0.40		<0.40	<0.40
Xylene, o-	95-47-6 E611D/WT	0.30	μg/L	< 0.30	<0.30		<0.30	< 0.30
Xylenes, total	1330-20-7 E611D/WT	0.50	μg/L	<0.50	<0.50		<0.50	<0.50
BTEX, total	E611D/WT	1.0	μg/L	<1.0	<1.0		<1.0	<1.0
Hydrocarbons								
F1 (C6-C10)	E581.F1-L/WT	25	μg/L	<25				
F2 (C10-C16)	E601.SG/WT	100	μg/L	<100				
F3 (C16-C34)	E601.SG/WT	250	μg/L	<250				
F4 (C34-C50)	E601.SG/WT	250	μg/L	<250				
F1-BTEX	EC580/WT	25	μg/L	<25				
Hydrocarbons, total (C6-C50)	n/a EC581SG/WT	240	μg/L	<370				
Chromatogram to baseline at nC50	<sub>n/a</sub> E601.SG/WT	-	-	YES				
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E601.SG/WT	1.0	%	85.2				
Dichlorotoluene, 3,4-	95-75-0 E581.F1-L/WT	1.0	%	92.9				
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4 E611D/WT	1.0	%	96.9	92.0		93.2	93.5
Difluorobenzene, 1,4-	540-36-3 E611D/WT	1.0	%	97.8	99.0		99.0	99.6
Polycyclic Aromatic Hydrocarbons								

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Lopers & Associates LOP23-029B Client

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Sub-Matrix: Water		CI	ient sample ID	BH12-24-GW1	BH13-24-GW1	BH15-24-GW1	MW-2-GW1	MW-3-GW1
(Matrix: Water)								
		Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2405173-006	WT2405173-007	WT2405173-008	WT2405173-009	WT2405173-010
				Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A/WT	0.010	μg/L	<0.010				<0.010
Acenaphthylene	208-96-8 E641A/WT	0.010	μg/L	<0.010				<0.010
Anthracene	120-12-7 E641A/WT	0.010	μg/L	<0.010				<0.010
Benz(a)anthracene	56-55-3 E641A/WT	0.010	μg/L	<0.010				<0.010
Benzo(a)pyrene	50-32-8 E641A/WT	0.0050	μg/L	<0.0050				0.0070
Benzo(b+j)fluoranthene	n/a E641A/WT	0.010	μg/L	<0.010				0.013
Benzo(g,h,i)perylene	191-24-2 E641A/WT	0.010	μg/L	<0.010				0.014
Benzo(k)fluoranthene	207-08-9 E641A/WT	0.010	μg/L	<0.010				<0.010
Chrysene	218-01-9 E641A/WT	0.010	μg/L	<0.010				<0.010
Dibenz(a,h)anthracene	53-70-3 E641A/WT	0.0050	μg/L	<0.0050				<0.0050
Fluoranthene	206-44-0 E641A/WT	0.010	μg/L	<0.010				0.014
Fluorene	86-73-7 E641A/WT	0.010	μg/L	<0.010				<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A/WT	0.010	μg/L	<0.010				<0.010
Methylnaphthalene, 1-	90-12-0 E641A/WT	0.010	μg/L	0.020				<0.010
Methylnaphthalene, 1+2-	E641A/WT	0.015	μg/L	0.060				<0.015
Methylnaphthalene, 2-	91-57-6 E641A/WT	0.010	μg/L	0.040				<0.010
Naphthalene	91-20-3 E641A/WT	0.050	μg/L	0.068				<0.050
Phenanthrene	85-01-8 E641A/WT	0.020	μg/L	<0.020				<0.020
Pyrene	129-00-0 E641A/WT	0.010	μg/L	<0.010				0.018
Polycyclic Aromatic Hydrocarbons Surrogates								
Chrysene-d12	1719-03-5 E641A/WT	0.1	%	113				122
Naphthalene-d8	1146-65-2 E641A/WT	0.1	%	112				116
Phenanthrene-d10	1517-22-2 E641A/WT	0.1	%	112				114
Polychlorinated Biphenyls								
Aroclor 1016	12674-11-2 E687/WT	0.020	μg/L			<0.020		
Aroclor 1221	11104-28-2 E687/WT	0.020	μg/L			<0.020		
Aroclor 1232	11141-16-5 E687/WT	0.020	μg/L			<0.020		
Aroclor 1242	53469-21-9 E687/WT	0.020	μg/L			<0.020		
Aroclor 1248	12672-29-6 E687/WT	0.020	μg/L			<0.020		
Aroclor 1254	11097-69-1 E687/WT	0.020	μg/L			<0.020		
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Client : Lopers & Associates

Project : LOP23-029B



### Analytical Results

Sub-Matrix: Water			CI	ient sample ID	BH12-24-GW1	BH13-24-GW1	BH15-24-GW1	MW-2-GW1	MW-3-GW1
(Matrix: Water)									
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-006	WT2405173-007	WT2405173-008	WT2405173-009	WT2405173-010
					Result	Result	Result	Result	Result
Polychlorinated Biphenyls									
Aroclor 1260	11096-82-5	E687/WT	0.020	μg/L			<0.020		
Aroclor 1262	37324-23-5	E687/WT	0.020	μg/L			<0.020		
Aroclor 1268	11100-14-4	E687/WT	0.020	μg/L			<0.020		
Polychlorinated biphenyls [PCBs], total		E687/WT	0.060	μg/L			<0.060		
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%			117		
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%			105		

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.

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Water			CI	ient sample ID	MW-12-GW1	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1
(Matrix: Water)									
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-011	WT2405173-012	WT2405173-013	WT2405173-014	WT2405173-015
					Result	Result	Result	Result	Result
Volatile Organic Compounds									
Acetone	67-64-1 E6		20	μg/L	<20	<20	<20	<20	<20
Benzene	71-43-2 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	75-27-4 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	75-25-2 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	74-83-9 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	56-23-5 E6		0.20	μg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	108-90-7 E6	311D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform	67-66-3 E6		0.50	μg/L	<0.50	<0.50	<0.50	1.70	<0.50
Dibromochloromethane	124-48-1 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromoethane, 1,2-	106-93-4 E6		0.20	μg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorobenzene, 1,2-	95-50-1 E6	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,3-	541-73-1 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorobenzene, 1,4-	106-46-7 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	75-71-8 E6	S11D/WT	0.50	μg/L	6.95	<0.50	<0.50	<0.50	<0.50
Dichloroethane, 1,1-	75-34-3 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethane, 1,2-	107-06-2 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, 1,1-	75-35-4 E6	311D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, cis-1,2-	156-59-2 E6	311D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloroethylene, trans-1,2-	156-60-5 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane	75-09-2 E6	S11D/WT	1.0	μg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloropropane, 1,2-	78-87-5 E6	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloropropylene, cis+trans-1,3-	542-75-6 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloropropylene, cis-1,3-	10061-01-5 E6	S11D/WT	0.30	μg/L	< 0.30	<0.30	< 0.30	<0.30	<0.30
Dichloropropylene, trans-1,3-	10061-02-6 E6	S11D/WT	0.30	μg/L	< 0.30	<0.30	< 0.30	<0.30	<0.30
Ethylbenzene	100-41-4 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Hexane, n-	110-54-3 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl ethyl ketone [MEK]	78-93-3 E6		20	μg/L	<20	<20	<20	<20	<20
Methyl isobutyl ketone [MIBK]	108-10-1 E6		20	μg/L	<20	<20	<20	<20	<20
Methyl-tert-butyl ether [MTBE]	1634-04-4 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	100-42-5 E6		0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
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Project : LOP23-029B



### Analytical Results

Sub-Matrix: Water			CI	ient sample ID	MW-12-GW1	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1
(Matrix: Water)									
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00	06-Mar-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-011	WT2405173-012	WT2405173-013	WT2405173-014	WT2405173-015
					Result	Result	Result	Result	Result
Volatile Organic Compounds									
Tetrachloroethane, 1,1,1,2-	630-20-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethane, 1,1,2,2-	79-34-5 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	127-18-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	108-88-3 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,1-	71-55-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethane, 1,1,2-	79-00-5 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	79-01-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane	75-69-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	75-01-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Xylene, m+p-	179601-23-1 E	611D/WT	0.40	μg/L	<0.40	<0.40	<0.40	<0.40	<0.40
Xylene, o-	95-47-6 E	611D/WT	0.30	μg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Xylenes, total	1330-20-7 E	611D/WT	0.50	μg/L	<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	E	611D/WT	1.0	μg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4 E	611D/WT	1.0	%	93.0	90.9	93.1	92.2	93.2
Difluorobenzene, 1,4-	540-36-3 E	611D/WT	1.0	%	99.0	98.3	98.8	98.5	99.0

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.

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Water			CI	ient sample ID	BH5-23-GW1	TRIP BLANK	 	
(Matrix: Water)								
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	 	
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-016	WT2405173-017	 	
					Result	Result	 	
Volatile Organic Compounds								
Acetone	67-64-1 E6	S11D/WT	20	μg/L	<20	<20	 	
Benzene	71-43-2 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Bromodichloromethane	75-27-4 E6		0.50	μg/L	<0.50	<0.50	 	
Bromoform	75-25-2 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Bromomethane	74-83-9 E6		0.50	μg/L	<0.50	<0.50	 	
Carbon tetrachloride	56-23-5 E6	S11D/WT	0.20	μg/L	<0.20	<0.20	 	
Chlorobenzene	108-90-7 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Chloroform	67-66-3 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dibromochloromethane	124-48-1 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dibromoethane, 1,2-	106-93-4 E6	S11D/WT	0.20	μg/L	<0.20	<0.20	 	
Dichlorobenzene, 1,2-	95-50-1 E6	311D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichlorobenzene, 1,3-	541-73-1 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichlorobenzene, 1,4-	106-46-7 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichlorodifluoromethane	75-71-8 <b>E</b> 6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloroethane, 1,1-	75-34-3 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloroethane, 1,2-	107-06-2 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloroethylene, 1,1-	75-35-4 E6	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloroethylene, cis-1,2-	156-59-2 E6	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloroethylene, trans-1,2-	156-60-5 E6	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloromethane	75-09-2 E6	611D/WT	1.0	μg/L	<1.0	<1.0	 	
Dichloropropane, 1,2-	78-87-5 E6	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloropropylene, cis+trans-1,3-	542-75-6 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Dichloropropylene, cis-1,3-	10061-01-5 E6	S11D/WT	0.30	μg/L	< 0.30	<0.30	 	
Dichloropropylene, trans-1,3-	10061-02-6 E6		0.30	μg/L	<0.30	<0.30	 	
Ethylbenzene	100-41-4 E6		0.50	μg/L	<0.50	<0.50	 	
Hexane, n-	110-54-3 E6	S11D/WT	0.50	μg/L	<0.50	<0.50	 	
Methyl ethyl ketone [MEK]	78-93-3 E6		20	μg/L	<20	<20	 	
Methyl isobutyl ketone [MIBK]	108-10-1 E6		20	μg/L	<20	<20	 	
Methyl-tert-butyl ether [MTBE]	1634-04-4 E6		0.50	μg/L	<0.50	<0.50	 	
Styrene	100-42-5 E6		0.50	μg/L	<0.50	<0.50	 	
1 -			1			l		

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Client : Lopers & Associates

Project : LOP23-029B



### Analytical Results

Sub-Matrix: Water			CI	ient sample ID	BH5-23-GW1	TRIP BLANK	 	
(Matrix: Water)								
			Client samp	ling date / time	06-Mar-2024 00:00	06-Mar-2024 00:00	 	
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2405173-016	WT2405173-017	 	
					Result	Result	 	
Volatile Organic Compounds								
Tetrachloroethane, 1,1,1,2-	630-20-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Tetrachloroethane, 1,1,2,2-	79-34-5 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Tetrachloroethylene	127-18-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Toluene	108-88-3 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Trichloroethane, 1,1,1-	71-55-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Trichloroethane, 1,1,2-	79-00-5 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Trichloroethylene	79-01-6 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Trichlorofluoromethane	75-69-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Vinyl chloride	75-01-4 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
Xylene, m+p-	179601-23-1 E	611D/WT	0.40	μg/L	<0.40	<0.40	 	
Xylene, o-	95-47-6 E	611D/WT	0.30	μg/L	<0.30	<0.30	 	
Xylenes, total	1330-20-7 E	611D/WT	0.50	μg/L	<0.50	<0.50	 	
BTEX, total	E	611D/WT	1.0	μg/L	<1.0	<1.0	 	
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4 E	611D/WT	1.0	%	93.4	92.8	 	
Difluorobenzene, 1,4-	540-36-3 E	611D/WT	1.0	%	98.7	98.9	 	

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

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



### **QUALITY CONTROL INTERPRETIVE REPORT**

**Work Order** : **WT2405173** Page : 1 of 15

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road L

30 Lansfield Way Address 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo, Ontario Canada N2V 2B8 :613 327 9073 Telephone :613 225 8279

 Telephone
 : 613 327 9073
 Telephone
 : 613 225 8279

 Project
 : LOP23-029B
 Date Samples Received
 : 07-Mar-2024 14:00

PO : ---- Issue Date : 14-Mar-2024 10:22 C-O-C number : ----

Site .

Quote number : SOA 2024

: Client

No. of samples received :17
No. of samples analysed :17

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

Sampler

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 Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur please see following pages for full details.
- 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) ● Analysis Holding Time Outliers exist - please see following pages for full details.

### **Outliers : Frequency of Quality Control Samples**

• No Quality Control Sample Frequency Outliers occur.

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Client Lopers & Associates LOP23-029B **Project** 



Outliers: Quality Control Samples
Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

### Matrix: Water

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recover	ries							
Volatile Organic Compounds	QC-1361150-002		Methyl ethyl ketone [MEK]	78-93-3	E611D	69.4 % MES	70.0-130%	Recovery less than lower
								control limit

### **Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

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Client : Lopers & Associates
Project : LOP23-029B



# **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.

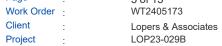
Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

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: x = Holding time exceedance; √ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pi	eparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Chloride in Water by IC											
HDPE [ON MECP] BH12-24-GW1	E235.CI	06-Mar-2024	11-Mar-2024	28 days	5 days	✓	11-Mar-2024	28 days	6 days	✓	
Anions and Nutrients : Chloride in Water by IC											
HDPE [ON MECP] BH2-24-GW1	E235.Cl	06-Mar-2024	11-Mar-2024	28 days	5 days	✓	11-Mar-2024	28 days	6 days	✓	
Anions and Nutrients : Chloride in Water by IC											
HDPE [ON MECP] BH5-24-GW1	E235.Cl	06-Mar-2024	11-Mar-2024	28 days	5 days	✓	11-Mar-2024	28 days	6 days	✓	
Anions and Nutrients : Chloride in Water by IC											
HDPE [ON MECP] MW-3-GW1	E235.CI	06-Mar-2024	11-Mar-2024	28 days	5 days	✓	11-Mar-2024	28 days	6 days	✓	
Cyanides : WAD Cyanide											
UV-inhibited HDPE - total (sodium hydroxide) BH2-24-GW1	E336	06-Mar-2024	11-Mar-2024	14 days	5 days	4	11-Mar-2024	14 days	5 days	✓	
Cyanides : WAD Cyanide											
UV-inhibited HDPE - total (sodium hydroxide) BH5-24-GW1	E336	06-Mar-2024	11-Mar-2024	14 days	5 days	✓	11-Mar-2024	14 days	5 days	✓	
Cyanides : WAD Cyanide											
UV-inhibited HDPE - total (sodium hydroxide) MW-3-GW1	E336	06-Mar-2024	11-Mar-2024	14 days	5 days	✓	11-Mar-2024	14 days	5 days	✓	

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

Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pr	reparation		,	Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Cyanides : WAD Cyanide										
HDPE [ON MECP] BH12-24-GW1	E336	06-Mar-2024	11-Mar-2024	42 hrs	127 hrs	<b>*</b> EHTL	11-Mar-2024	42 hrs	128 hrs	# EHTL
Pical Class Company of the Company o						LIIIL				LIIIL
Dissolved Metals : Dissolved Mercury in Water by CVAAS  Glass vial dissolved (hydrochloric acid)							<u> </u>			
BH12-24-GW1	E509	06-Mar-2024	09-Mar-2024	28 days	3 days	✓	11-Mar-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH2-24-GW1	E509	06-Mar-2024	09-Mar-2024	28 days	3 days	✓	11-Mar-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) BH5-24-GW1	E509	06-Mar-2024	09-Mar-2024	28 days	3 days	✓	11-Mar-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW-3-GW1	E509	06-Mar-2024	09-Mar-2024	28 days	3 days	<b>√</b>	11-Mar-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH12-24-GW1	E421	06-Mar-2024	08-Mar-2024	180 days	3 days	✓	08-Mar-2024	180 days	3 days	<b>4</b>
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH2-24-GW1	E421	06-Mar-2024	08-Mar-2024	180 days	3 days	1	08-Mar-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) BH5-24-GW1	E421	06-Mar-2024	08-Mar-2024	180 days	3 days	4	08-Mar-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-3-GW1	E421	06-Mar-2024	08-Mar-2024	180 days	3 days	✓	08-Mar-2024	180 days	3 days	✓

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Client : Lopers & Associates
Project : LOP23-029B



Matrix: Water

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

Matrix: Water					Ev	/aluation: 🗴 =	Holding time excee	edance ; 🛚	= Within	Holding Time
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate)										
BH12-24-GW1	E581.F1-L	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)									,	
Glass vial (sodium bisulfate)										
BH2-24-GW1	E581.F1-L	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate)										
BH3-24-GW1	E581.F1-L	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate)										
BH5-24-GW1	E581.F1-L	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)						,				,
BH12-24-GW1	E601.SG	06-Mar-2024	12-Mar-2024	14	6 days	✓	12-Mar-2024	40 days	1 days	✓
				days						
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)	E004.00	00.140004	40.14 0004			<b>√</b>	40.14 0004	40.1	.	
BH2-24-GW1	E601.SG	06-Mar-2024	12-Mar-2024	14	6 days	<b>*</b>	12-Mar-2024	40 days	1 days	✓
				days						
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) BH5-24-GW1	E601.SG	06-Mar-2024	12-Mar-2024		6 days	✓	12-Mar-2024	40 days	1 days	✓
BH3-24-GW I	E001.5G	00-Mar-2024	12-10101-2024	14	o days	•	12-Mai-2024	40 days	Tuays	•
				days						
Hydrocarbons: Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID				I						
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] BH3-24-GW1	E601.SG	06-Mar-2024	12-Mar-2024	40	6 days	<b>√</b>	12-Mar-2024	40 days	1 days	1
BN3-24-GW1	E001.3G	00-Wai-2024	12-Mai-2024		0 uays	•	12-IVId1-2024	40 days	1 uays	•
				days						
Physical Tests : Conductivity in Water										
HDPE [ON MECP] BH12-24-GW1	E100	06-Mar-2024	11-Mar-2024	20	5 days	<b>√</b>	13-Mar-2024	28 days	7 days	<b>√</b>
DI112-24-GVV1		00-ividi=2024	1 1-1VIAI-2U24	28	Juays	,	13-IVIAI-2024	20 days	i uays	*
				days						

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Client : Lopers & Associates
Project : LOP23-029B



Matrix: Water

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Matrix: Water					ΕV	/aluation. * -	Holding time excee	edance, v	– vvitriiri	Holding Time
Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pr	reparation		Analysis			
Container / Client Sample ID(s)			Preparation Holding Times		Eval	Analysis Date	Holding Times		Eval	
			Date	Rec	Actual	•		Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH2-24-GW1	E100	06-Mar-2024	11-Mar-2024	28	5 days	✓	13-Mar-2024	28 days	7 days	✓
				days						
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
BH5-24-GW1	E100	06-Mar-2024	11-Mar-2024	28	5 days	✓	13-Mar-2024	28 days	7 days	✓
				days	-				-	
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
MW-3-GW1	E100	06-Mar-2024	11-Mar-2024	28	5 days	✓	13-Mar-2024	28 days	7 days	✓
				days					1	
Physical Tests : pH by Meter				,						
HDPE [ON MECP]							<u> </u>			
BH12-24-GW1	E108	06-Mar-2024	11-Mar-2024	14	5 days	✓	13-Mar-2024	14 days	7 days	✓
BITTE 24-OWI		00 Mai 2021	1 1-Wal-2024	days	o days	,	10-Wai-2024	14 days	r days	
				uays						
Physical Tests: pH by Meter										
HDPE [ON MECP] BH2-24-GW1	E108	06-Mar-2024	11-Mar-2024	4.4	5 days	<b>√</b>	13-Mar-2024	14 days	7 days	✓
DHZ-24-GW I	E100	00-iviai-2024	1 1-1VIA1-2024	14	5 uays	•	13-Wai-2024	14 uays	1 uays	•
				days						
Physical Tests : pH by Meter										
HDPE [ON MECP]	F400	00.140004	44.84 0004			<b>√</b>	40.14 0004			✓
BH5-24-GW1	E108	06-Mar-2024	11-Mar-2024	14	5 days	<b>*</b>	13-Mar-2024	14 days	7 days	<b>✓</b>
				days						
Physical Tests : pH by Meter									, ,	
HDPE [ON MECP]										
MW-3-GW1	E108	06-Mar-2024	11-Mar-2024	14	5 days	✓	13-Mar-2024	14 days	7 days	✓
				days						
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
BH15-24-GW1	E687	06-Mar-2024	12-Mar-2024	14	7 days	✓	12-Mar-2024	40 days	0 days	✓
				days						
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
BH5-24-GW1	E687	06-Mar-2024	12-Mar-2024	14	7 days	✓	12-Mar-2024	40 days	0 days	✓
DI 10-24-0W1	1				_					

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Client Lopers & Associates LOP23-029B Project



Matrix: Water					E	valuation: ≭ =	Holding time exce	edance ; 🗸	′ = Within	Holding Tir
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
BH12-24-GW1	E641A	06-Mar-2024	12-Mar-2024	14	6 days	✓	12-Mar-2024	40 days	1 days	✓
				days					·	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
BH2-24-GW1	E641A	06-Mar-2024	12-Mar-2024	14	6 days	✓	12-Mar-2024	40 days	1 days	1
5.12 2 . 5.1.1				days	,-			,-	, -	
D. Landin Annual College Company (1997)				dayo						
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS  Amber glass/Teflon lined cap (sodium bisulfate)				l l	<u> </u>	<u> </u>	I			
BH5-24-GW1	E641A	06-Mar-2024	12-Mar-2024	14	6 days	<b>√</b>	12-Mar-2024	40 days	1 days	✓
BH3-24-GVV1	L041A	00-Wai-2024	12-IVIA1-2024		0 days	•	12-IVIAI-2024	40 days	i uays	•
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP]										
MW-3-GW1	E641A	06-Mar-2024	12-Mar-2024	14	6 days	✓	12-Mar-2024	40 days	1 days	✓
				days						
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
BH12-24-GW1	E532A	06-Mar-2024					08-Mar-2024	28 days	3 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
BH2-24-GW1	E532A	06-Mar-2024					08-Mar-2024	28 days	3 days	✓
								,	,	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]							I			
BH5-24-GW1	E532A	06-Mar-2024					08-Mar-2024	28 days	3 days	1
DI 10-24-0W I	2002/1	00-14141-2024					00-Wai-2024	20 days	o days	•
							<u> </u>			
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC							I			
HDPE - dissolved (NaOH+Buf) [ON MECP]	E530A	06 Mar 2024					00 Mar 2024	00 day:-	2 days	1
MW-3-GW1	E532A	06-Mar-2024					08-Mar-2024	28 days	3 days	•
				<u> </u>						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH1-23-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓

days

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Client : Lopers & Associates
Project : LOP23-029B



Matrix: Water

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Matrix: Water					L1	aluation. • –	Holding time excee	suarioe,	- vviti iii i	Holding Tim
Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH1-24-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH13-24-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH2-23-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH3-23-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH4-23-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH4-24-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH5-23-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW-12-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW-2-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						

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Lopers & Associates





Matrix: Water

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

viaura. vvater					L\	aluation. • –	Holding time excel	cuarioc , .	- vviti iii i	Holding III
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW-3-GW1	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
TRIP BLANK	E611D	06-Mar-2024	08-Mar-2024	14	3 days	✓	08-Mar-2024	14 days	3 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH12-24-GW1	E611D	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH2-24-GW1	E611D	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH3-24-GW1	E611D	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BH5-24-GW1	E611D	06-Mar-2024	11-Mar-2024	14	5 days	✓	11-Mar-2024	14 days	5 days	✓
				days						

### **Legend & Qualifier Definitions**

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

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

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Client : Lopers & Associates
Project : LOP23-029B



# **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		Evaluati	ion: × = QC freque		ecification; ✓ =		<u> </u>
Quality Control Sample Type				ount		6)	
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	1361151	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.CI	1361202	1	17	5.8	5.0	✓
Conductivity in Water	E100	1361205	1	13	7.6	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1359359	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1360215	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1359938	1	19	5.2	5.0	✓
pH by Meter	E108	1361204	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1359399	2	40	5.0	5.0	✓
WAD Cyanide	E336	1359206	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1361151	1	5	20.0	5.0	1
Chloride in Water by IC	E235.CI	1361202	1	17	5.8	5.0	<b>√</b>
Conductivity in Water	E100	1361205	1	13	7.6	5.0	<b>√</b>
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1359359	1	20	5.0	5.0	<b>√</b>
Dissolved Mercury in Water by CVAAS	E509	1360215	2	40	5.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	1359938	1	19	5.2	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1362415	2	18	11.1	5.0	<b>√</b>
PCB Aroclors by GC-MS	E687	1363144	1	15	6.6	4.7	✓
pH by Meter	E108	1361204	1	20	5.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1362416	2	17	11.7	5.0	1
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1359399	2	40	5.0	5.0	✓
WAD Cyanide	E336	1359206	1	10	10.0	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1361151	1	5	20.0	5.0	1
Chloride in Water by IC	E235.CI	1361202	1	17	5.8	5.0	1
Conductivity in Water	E100	1361205	1	13	7.6	5.0	<u>√</u>
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1359359	1	20	5.0	5.0	<b>√</b>
Dissolved Mercury in Water by CVAAS	E509	1360215	2	40	5.0	5.0	<b>√</b>
Dissolved Metals in Water by CRC ICPMS	E421	1359938	1	19	5.2	5.0	<b>√</b>
PAHs by Hexane LVI GC-MS	E641A	1362415	2	18	11.1	5.0	1
PCB Aroclors by GC-MS	E687	1363144	1	15	6.6	4.7	1
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1362416	2	17	11.7	5.0	1
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1359399	2	40	5.0	5.0	<b>√</b>
WAD Cyanide	E336	1359206	1	10	10.0	5.0	1
Matrix Spikes (MS)							•

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Client : Lopers & Associates
Project : LOP23-029B



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

						,		
Quality Control Sample Type			Co	ount	Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued								
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1361151	1	5	20.0	5.0	✓	
Chloride in Water by IC	E235.Cl	1361202	1	17	5.8	5.0	✓	
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1359359	1	20	5.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	1360215	2	40	5.0	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	1359938	1	19	5.2	5.0	✓	
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1359399	2	40	5.0	5.0	✓	
WAD Cyanide	E336	1359206	1	10	10.0	5.0	✓	

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Client : Lopers & Associates
Project : LOP23-029B



# **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	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
	ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Waterloo			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 $\pm$ 5°C). For high accuracy test results,
	ALS Environmental -			pH should be measured in the field within the recommended 15 minute hold time.
	Waterloo			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			
	Waterloo			
WAD Cyanide	E336	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.
	ALS Environmental -			
	Waterloo			
Dissolved Metals in Water by CRC ICPMS	E421	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental -		` '	
	Waterloo			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered
				by this method.
Dissolved Mercury in Water by CVAAS	E509	Water	APHA 3030B/EPA	Water samples are filtered (0.45 um), preserved with HCI, then undergo a cold-oxidation
			1631E (mod)	using bromine monochloride prior to reduction with stannous chloride, and analyzed by
	ALS Environmental -			CVAAS.
	Waterloo			
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.
	ALS Environmental -			
	Waterloo			sample pretreatment involved field or lab filtration following by sample preservation.
CCME PHC - F1 by Headspace GC-FID (Low	E581.F1-L	Water	CCME PHC in Soil - Tier	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in
Level)			1 (mod)	headspace vials and are heated and agitated on the headspace autosampler, causing
	ALS Environmental -			VOCs to partition between the aqueous phase and the headspace in accordance with
	Waterloo			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.

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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	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
	ALS Environmental - Waterloo			headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
	ALS Environmental - Waterloo			
PCB Aroclors by GC-MS	E687	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
	ALS Environmental - Waterloo			
F1-BTEX	EC580	Water	CCME PHC in Soil - Tier	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
	ALS Environmental - Waterloo			
SUM F1 to F4 where F2-F4 is SG treated	EC581SG	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
	ALS Environmental - Waterloo			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	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental - Waterloo			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	ALS Environmental - Waterloo			
VOCs Preparation for Headspace Analysis	EP581	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
	ALS Environmental - Waterloo			GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
	ALS Environmental - Waterloo			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Pesticides, PCB, and Neutral Extractable	EP660	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid
Chlorinated Hydrocarbons Extraction				extraction.
	ALS Environmental -			
	Waterloo			

# **ALS Canada Ltd.**



# **QUALITY CONTROL REPORT**

Work Order : WT2405173

Client : Lopers & Associates

Address : 30 Lansfield Way

Ottawa ON Canada K2G 3V8

: Luke Lopers

Telephone

Contact

Project : LOP23-029B

PO :----C-O-C number :----

Sampler : Client 613 327 9073

Site

Quote number : SOA 2024

No. of samples received : 17

No. of samples analysed : 17

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Laboratory ; ALS Environmental - Waterloo

Account Manager : Costas Farassoglou

Address : 60 Northland Road, Unit 1

Waterloo, Ontario Canada N2V 2B8

Telephone : 613 225 8279

Date Samples Received : 07-Mar-2024 14:00

Date Analysis Commenced : 08-Mar-2024

Issue Date : 14-Mar-2024 10:22

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

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

Signatories	Position	Laboratory Department
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Kelly Fischer	Technical Specialist	Waterloo Inorganics, Waterloo, Ontario
Kelly Fischer	Technical Specialist	Waterloo Metals, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

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Project : LOP23-029B



### **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.

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### 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).

ub-Matrix: Water							Labora	tory Duplicate (D	иР) кероп		
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
hysical Tests (QC	<u> </u>										
VT2405161-006	Anonymous	pH		E108	0.10	pH units	8.16	8.07	1.11%	4%	
hysical Tests (QC	Lot: 1361205)										
VT2405161-006	Anonymous	Conductivity		E100	2.0	μS/cm	2550	2540	0.393%	10%	
nions and Nutrien	ts (QC Lot: 1361202)										
VT2405138-001	Anonymous	Chloride	16887-00-6	E235.CI	0.50	mg/L	17.3	17.2	0.488%	20%	
yanides (QC Lot:	1359206)										
O2401635-001	Anonymous	Cyanide, weak acid dissociable		E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
issolved Metals (C	QC Lot: 1359938)										
A2400468-001	Anonymous	Antimony, dissolved	7440-36-0	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	
		Arsenic, dissolved	7440-38-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	
		Barium, dissolved	7440-39-3	E421	0.00100	mg/L	0.104	0.105	0.578%	20%	
		Beryllium, dissolved	7440-41-7	E421	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	
		Boron, dissolved	7440-42-8	E421	0.100	mg/L	0.105	0.100	0.005	Diff <2x LOR	
		Cadmium, dissolved	7440-43-9	E421	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	
		Chromium, dissolved	7440-47-3	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	
		Cobalt, dissolved	7440-48-4	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	
		Copper, dissolved	7440-50-8	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	
		Lead, dissolved	7439-92-1	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	
		Molybdenum, dissolved	7439-98-7	E421	0.000500	mg/L	0.00101	0.000991	0.000017	Diff <2x LOR	
		Nickel, dissolved	7440-02-0	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	
		Selenium, dissolved	7782-49-2	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	
		Silver, dissolved	7440-22-4	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Sodium, dissolved	7440-23-5	E421	0.500	mg/L	279	277	0.923%	20%	
		Thallium, dissolved	7440-28-0	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Uranium, dissolved	7440-61-1	E421	0.000100	mg/L	0.000145	0.000150	0.000004	Diff <2x LOR	
		Vanadium, dissolved	7440-62-2	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	
		Zinc, dissolved	7440-66-6	E421	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	
issolved Metals (C	OC Lot: 1360215)										
VT2404948-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	

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Laboratory Duplicate (DUP) Report Sub-Matrix: Water Laboratory sample ID Client sample ID Analyte CAS Number | Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Difference Limits Result Result Dissolved Metals (QC Lot: 1360216) - continued HA2400468-001 Anonymous 7439-97-6 E509 0.0000050 < 0.0000050 < 0.0000050 0 Diff <2x LOR Mercury, dissolved mg/L ----Speciated Metals (QC Lot: 1359359) VA24A4710-001 Anonymous Chromium, hexavalent [Cr VI], 18540-29-9 E532A 0.00050 mg/L <0.00050 <0.00050 Diff <2x LOR 0 dissolved Volatile Organic Compounds (QC Lot: 1359399) WT2405161-001 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 ----75-27-4 E611D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR Bromodichloromethane Bromoform 75-25-2 E611D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR 74-83-9 E611D 0.50 < 0.50 < 0.50 0 Diff <2x LOR Bromomethane μg/L ----E611D Carbon tetrachloride 56-23-5 0.20 μg/L < 0.20 < 0.20 0 Diff <2x LOR Diff <2x LOR Chlorobenzene 108-90-7 E611D 0.50 µg/L < 0.50 < 0.50 0 E611D Diff <2x LOR Chloroform 67-66-3 0.50 μg/L < 0.50 < 0.50 0 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 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 μq/L < 0.50 < 0.50 0 Dichlorodifluoromethane 75-71-8 E611D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR \_\_\_\_ E611D 0.50 0.69 0.67 0.02 Diff <2x LOR Dichloroethane, 1,1-75-34-3 µg/L Dichloroethane, 1,2-107-06-2 E611D 0.50 μq/L < 0.50 < 0.50 0 Diff <2x LOR Diff <2x LOR Dichloroethylene, 1,1-75-35-4 E611D 0.50 μg/L < 0.50 < 0.50 0 156-59-2 E611D 0.50 <0.50 < 0.50 0 Diff <2x LOR Dichloroethylene, cis-1,2μg/L 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 < 0.50 Dichloropropane, 1,2-78-87-5 E611D 0.50 µg/L < 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 10061-02-6 E611D 0.30 μq/L < 0.30 < 0.30 0 Diff <2x LOR Dichloropropylene, trans-1,3-100-41-4 E611D 0.50 < 0.50 < 0.50 0 Diff <2x LOR Ethylbenzene µg/L 110-54-3 E611D 0.50 0 Diff <2x LOR Hexane, nµg/L < 0.50 < 0.50 78-93-3 E611D Diff <2x LOR Methyl ethyl ketone [MEK] 20 μg/L <20 <20 0 108-10-1 E611D 20 <20 <20 0 Diff <2x LOR Methyl isobutyl ketone [MIBK] µg/L 1634-04-4 E611D 0.50 < 0.50 0 Diff <2x LOR Methyl-tert-butyl ether [MTBE] μg/L < 0.50 Styrene 100-42-5 E611D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR 630-20-6 E611D 0.50 < 0.50 < 0.50 0 Diff <2x LOR Tetrachloroethane, 1,1,1,2μg/L

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ub-Matrix: Water							Labora	ntory Duplicate (D	OUP) Report		
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
/olatile Organic Co	mpounds (QC Lot: 1	359399) - continued									
VT2405161-001	Anonymous	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	<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	
olatile Organic Co	mpounds (QC Lot: 1	361150)									
VT2405173-002	BH2-24-GW1	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	4.40	4.51	2.47%	30%	
		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-	10061-01-0	E611D	0.30	r3/-	<0.30	<0.30	0		

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Laboratory Duplicate (DUP) Report Sub-Matrix: Water Client sample ID CAS Number | Method Laboratory sample ID Analyte LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Result Result Difference Limits Volatile Organic Compounds (QC Lot: 1361150) - continued WT2405173-002 BH2-24-GW1 100-41-4 E611D 0.50 μg/L <0.50 <0.50 0 Diff <2x LOR Ethylbenzene Diff <2x LOR Hexane, n-110-54-3 E611D 0.50 <0.50 < 0.50 0 μg/L μg/L Methyl ethyl ketone [MEK] 78-93-3 E611D 20 <20 <20 0 Diff <2x LOR E611D Diff <2x LOR 108-10-1 20 μg/L <20 <20 0 Methyl isobutyl ketone [MIBK] \_\_\_\_ Methyl-tert-butyl ether [MTBE] 1634-04-4 E611D 0.50 μg/L <0.50 <0.50 0 Diff <2x LOR Diff <2x LOR Styrene 100-42-5 E611D 0.50 μg/L < 0.50 < 0.50 0 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 < 0.50 <0.50 0 Diff <2x LOR 71-55-6 E611D 0.50 <0.50 0 Diff <2x LOR μg/L < 0.50 Trichloroethane, 1,1,1-Trichloroethane, 1,1,2-79-00-5 E611D 0.50 μg/L < 0.50 < 0.50 0 Diff <2x LOR 79-01-6 E611D Diff <2x LOR Trichloroethylene 0.50 μg/L <0.50 < 0.50 0 E611D Diff <2x LOR 75-69-4 0.50 < 0.50 0 Trichlorofluoromethane μg/L <0.50 Diff <2x LOR Vinyl chloride 75-01-4 E611D 0.50 μg/L < 0.50 < 0.50 0 179601-23-1 E611D < 0.40 Diff <2x LOR Xylene, m+p-0.40 μg/L < 0.40 0 Xylene, o-95-47-6 E611D 0.30 μg/L <0.30 < 0.30 0 Diff <2x LOR Hydrocarbons (QC Lot: 1361151) WT2405173-002 BH2-24-GW1 F1 (C6-C10) E581.F1-L 25 <25 <25 0 Diff <2x LOR μg/L

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## 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.

nalyte	CAS Number	Method	LOR	Unit	Result	Qualifier
hysical Tests (QCLot: 1361205)						
Conductivity		E100	1	μS/cm	<1.0	
nions and Nutrients (QCLot: 1361202)						
Chloride	16887-00-6	E235.CI	0.5	mg/L	<0.50	
yanides (QCLot: 1359206)						
Cyanide, weak acid dissociable		E336	0.002	mg/L	<0.0020	
issolved Metals (QCLot: 1359938)						
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	
issolved Metals (QCLot: 1360215)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	
issolved Metals (QCLot: 1360216)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.000050	
peciated Metals (QCLot: 1359359)						
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	

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Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
/olatile Organic Compounds (QCLot	: 1359399) - continued				
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	
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLc	ot: 1359399) - continued					
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	
/olatile Organic Compounds (QCLc	ot: 1361150)					
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLo	t: 1361150) - continued					
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	
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: 1361151)						
F1 (C6-C10)		E581.F1-L	25	μg/L	<25	
lydrocarbons (QCLot: 1362416)						
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: 1362419)						
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	
olycyclic Aromatic Hydrocarbons	(QCLot: 1362415)					
Acenaphthene	83-32-9	E641A	0.01	μg/L	<0.010	
Acenaphthylene	208-96-8	E641A	0.01	μg/L	<0.010	
Anthracene	120-12-7	E641A	0.01	μg/L	<0.010	
Benz(a)anthracene	56-55-3	E641A	0.01	μg/L	<0.010	
Benzo(a)pyrene	50-32-8	E641A	0.005	μg/L	<0.0050	
Benzo(b+j)fluoranthene	n/a	E641A	0.01	μg/L	<0.010	
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	μg/L	<0.010	
Benzo(k)fluoranthene	207-08-9	E641A	0.01	μg/L	<0.010	
Chrysene	218-01-9	E641A	0.01	μg/L	<0.010	
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	μg/L	<0.0050	
Fluoranthene	206-44-0	E641A	0.01	μg/L	<0.010	
Fluorene	86-73-7	E641A	0.01	μg/L	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	μg/L	<0.010	

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Analyte	CAS Number	Method		LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbon	s (QCLot: 1362415) - conti	nued					
Methylnaphthalene, 1-	90-12-0	E641A		0.01	μg/L	<0.010	
Methylnaphthalene, 2-	91-57-6	E641A	(	0.01	μg/L	<0.010	
Naphthalene	91-20-3	E641A	(	0.05	μg/L	<0.050	
Phenanthrene	85-01-8	E641A	(	0.02	μg/L	<0.020	
Pyrene	129-00-0	E641A	(	0.01	μg/L	<0.010	
Polycyclic Aromatic Hydrocarbon	s (QCLot: 1362418)						
Acenaphthene	83-32-9	E641A	(	0.01	μg/L	<0.010	
Acenaphthylene	208-96-8	E641A	(	0.01	μg/L	<0.010	
Anthracene	120-12-7	E641A		0.01	μg/L	<0.010	
Benz(a)anthracene	56-55-3	E641A		0.01	μg/L	<0.010	
Benzo(a)pyrene	50-32-8	E641A	C	0.005	μg/L	<0.0050	
Benzo(b+j)fluoranthene	n/a	E641A		0.01	μg/L	<0.010	
Benzo(g,h,i)perylene	191-24-2	E641A		0.01	μg/L	<0.010	
Benzo(k)fluoranthene	207-08-9	E641A		0.01	μg/L	<0.010	
Chrysene	218-01-9	E641A		0.01	μg/L	<0.010	
Dibenz(a,h)anthracene	53-70-3	E641A	C	0.005	μg/L	<0.0050	
Fluoranthene	206-44-0	E641A		0.01	μg/L	<0.010	
Fluorene	86-73-7	E641A		0.01	μg/L	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A		0.01	μg/L	<0.010	
Methylnaphthalene, 1-	90-12-0	E641A		0.01	μg/L	<0.010	
Methylnaphthalene, 2-	91-57-6	E641A	(	0.01	μg/L	<0.010	
Naphthalene	91-20-3	E641A	(	0.05	μg/L	<0.050	
Phenanthrene	85-01-8	E641A	(	0.02	μg/L	<0.020	
Pyrene	129-00-0	E641A		0.01	μg/L	<0.010	
Polychlorinated Biphenyls (QCLo	ot: 1363144)						
Aroclor 1016	12674-11-2	E687		0.02	μg/L	<0.020	
Aroclor 1221	11104-28-2	E687		0.02	μg/L	<0.020	
Aroclor 1232	11141-16-5	E687		0.02	μg/L	<0.020	
Aroclor 1242	53469-21-9	E687		0.02	μg/L	<0.020	
Aroclor 1248	12672-29-6	E687		0.02	μg/L	<0.020	
Aroclor 1254	11097-69-1	E687		0.02	μg/L	<0.020	
Aroclor 1260	11096-82-5	E687		0.02	μg/L	<0.020	
Aroclor 1262	37324-23-5	E687		0.02	μg/L	<0.020	
Aroclor 1268	11100-14-4	E687		0.02	μg/L	<0.020	

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# 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 Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1361204)									
pH		E108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 1361205)									
Conductivity		E100	1	μS/cm	1409 μS/cm	102	90.0	110	
Anions and Nutrients (QCLot: 1361202)									
Chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	100	90.0	110	
Cyanides (QCLot: 1359206)									
Cyanide, weak acid dissociable		E336	0.002	mg/L	0.125 mg/L	95.2	80.0	120	
Dissolved Metals (QCLot: 1359938)									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	96.0	80.0	120	
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	97.4	80.0	120	
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	98.0	80.0	120	
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	97.2	80.0	120	
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	95.9	80.0	120	
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	92.8	80.0	120	
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	93.3	80.0	120	
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.0125 mg/L	91.7	80.0	120	
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	92.0	80.0	120	
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	96.0	80.0	120	
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.0125 mg/L	94.5	80.0	120	
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	90.7	80.0	120	
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	92.6	80.0	120	
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	91.2	80.0	120	
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	99.7	80.0	120	
Γhallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	94.4	80.0	120	
Jranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.00025 mg/L	99.6	80.0	120	
/anadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	94.3	80.0	120	
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	92.7	80.0	120	
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.2	80.0	120	
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	

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Laboratory Control Sample (LCS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Speciated Metals (QCLot: 1359359) 18540-29-9 E532A 0.0005 80.0 120 Chromium, hexavalent [Cr VI], dissolved mg/L 0.025 mg/L 95.6 Volatile Organic Compounds (QCLot: 1359399) Acetone 67-64-1 E611D 20 μg/L 100 µg/L 98.8 70.0 130 71-43-2 E611D 0.5 70.0 130 Benzene μg/L 100 µg/L 95.6 0.5 130 75-27-4 E611D 70.0 Bromodichloromethane μg/L 100 µg/L 93.3 75-25-2 E611D 0.5 70.0 130 Bromoform μg/L 100 µg/L 91.2 74-83-9 E611D 140 Bromomethane 0.5 μg/L 100 µg/L 103 60.0 56-23-5 E611D 0.2 μg/L 70.0 130 Carbon tetrachloride 100 µg/L 99.2 Chlorobenzene 108-90-7 E611D 130 0.5 μg/L 100 μg/L 95.0 70.0 67-66-3 E611D 0.5 100 μg/L 70.0 130 Chloroform μg/L 94.9 Dibromochloromethane 124-48-1 E611D 0.5 µg/L 100 μg/L 86.8 70.0 130 Dibromoethane, 1,2-106-93-4 E611D 0.2 μg/L 85.5 70.0 130 100 µg/L Dichlorobenzene, 1,2-95-50-1 E611D 0.5 µg/L 100 µg/L 96.3 70.0 130 541-73-1 E611D 0.5 70.0 130 Dichlorobenzene, 1,3μg/L 100 µg/L 97.6 106-46-7 E611D 0.5 µg/L 70.0 130 Dichlorobenzene, 1,4-100 µg/L 98.6 Dichlorodifluoromethane 75-71-8 E611D 0.5 μg/L 100 µg/L 99.2 60.0 140 75-34-3 E611D 0.5 70.0 130 Dichloroethane, 1,1μg/L 104 100 µg/L 107-06-2 E611D 0.5 70.0 130 Dichloroethane, 1,2μg/L 100 µg/L 93.6 75-35-4 E611D 0.5 Dichloroethylene, 1,1μg/L 70.0 130 100 µg/L 100 Dichloroethylene, cis-1,2-156-59-2 E611D 0.5 μg/L 93.3 70.0 130 100 µg/L 156-60-5 E611D Dichloroethylene, trans-1,2-0.5 μg/L 100 µg/L 98.4 70.0 130 75-09-2 E611D μg/L 97.4 70.0 130 Dichloromethane 100 µg/L 78-87-5 E611D 0.5 70.0 Dichloropropane, 1,2μg/L 100 µg/L 91.6 130 10061-01-5 E611D 0.3 Dichloropropylene, cis-1,3µg/L 100 µg/L 92.0 70.0 130 10061-02-6 E611D Dichloropropylene, trans-1,3-0.3 μg/L 100 µg/L 92.7 70.0 130 100-41-4 E611D 0.5 70.0 130 Ethylbenzene μg/L 100 µg/L 87.7 110-54-3 E611D 0.5 μg/L 100 µg/L 106 70.0 130 Hexane, n-78-93-3 E611D 20 70.0 130 Methyl ethyl ketone [MEK] μg/L 100 µg/L 90.5 108-10-1 E611D Methyl isobutyl ketone [MIBK] 20 μg/L 100 μg/L 76.2 70.0 130 1634-04-4 E611D 0.5 70.0 130 Methyl-tert-butyl ether [MTBE] μg/L 100 µg/L 95.3 100-42-5 E611D 0.5 μg/L 100 μg/L 95.2 70.0 130 Styrene Tetrachloroethane, 1,1,1,2-630-20-6 E611D 0.5 70.0 130 μg/L 100 µg/L 92.2 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 0.5 μg/L 97.8 70.0 130 100 µg/L 127-18-4 E611D Tetrachloroethylene 0.5 μg/L 100 µg/L 102 70.0 130 Toluene 108-88-3 E611D 0.5 μg/L 100 µg/L 92.6 70.0 130

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Laboratory Control Sample (LCS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Volatile Organic Compounds (QCLot: 1359399) - continued 71-55-6 E611D 0.5 70.0 130 Trichloroethane, 1,1,1μg/L 100 µg/L 97.7 79-00-5 E611D 0.5 μq/L 70.0 130 Trichloroethane, 1,1,2-100 µg/L 88.6 Trichloroethylene 79-01-6 E611D 0.5 μg/L 100 μg/L 96.8 70.0 130 Trichlorofluoromethane 75-69-4 E611D 0.5 µg/L 100 µg/L 101 60.0 140 75-01-4 E611D Vinyl chloride 0.5 µg/L 100 µg/L 105 60.0 140 Xylene, m+p-179601-23-1 E611D 0.4 μg/L 200 µg/L 98.0 70.0 130 95-47-6 E611D 0.3 Xylene, oμg/L 100 µg/L 88.6 70.0 130 Volatile Organic Compounds (QCLot: 1361150) 67-64-1 E611D Acetone 20 μg/L 100 µg/L 80.9 70.0 130 71-43-2 E611D 0.5 70.0 130 μg/L Benzene 100 µg/L 92.1 Bromodichloromethane 75-27-4 E611D 0.5 μg/L 100 µg/L 92.5 70.0 130 75-25-2 E611D 0.5 70.0 130 Bromoform μg/L 100 µg/L 84.7 74-83-9 E611D 0.5 60.0 140 Bromomethane μg/L 100 µg/L 89.8 56-23-5 E611D 0.2 70.0 130 Carbon tetrachloride μg/L 100 µg/L 103 Chlorobenzene 108-90-7 E611D 0.5 μg/L 93.3 70.0 130 100 µg/L Chloroform 67-66-3 E611D 0.5 μg/L 100 µg/L 94.1 70.0 130 124-48-1 E611D 0.5 70.0 130 Dibromochloromethane μg/L 100 µg/L 87.0 106-93-4 E611D Dibromoethane, 1,2-0.2 μg/L 100 μg/L 81.5 70.0 130 Dichlorobenzene, 1,2-95-50-1 E611D 0.5 μg/L 93.6 70.0 130 100 µg/L Dichlorobenzene, 1,3-541-73-1 E611D 0.5 µg/L 100 µg/L 96.2 70.0 130 106-46-7 E611D 0.5 70.0 Dichlorobenzene, 1,4μg/L 100 µg/L 94.2 130 75-71-8 E611D 0.5 60.0 140 μg/L Dichlorodifluoromethane 100 µg/L 101 75-34-3 E611D 0.5 70.0 Dichloroethane, 1,1μg/L 130 100 µg/L 94.4 107-06-2 E611D 0.5 70.0 130 μg/L Dichloroethane, 1,2-100 µg/L 83.9 μg/L 75-35-4 E611D Dichloroethylene, 1,1-0.5 100 µg/L 100 70.0 130 156-59-2 E611D 0.5 70.0 130 Dichloroethylene, cis-1,2μg/L 100 µg/L 92.1 Dichloroethylene, trans-1,2-156-60-5 E611D 0.5 μg/L 99.2 70.0 130 100 µg/L 75-09-2 E611D 70.0 130 Dichloromethane μg/L 100 µg/L 90.4 Dichloropropane, 1,2-78-87-5 E611D 0.5 μg/L 70.0 130 100 µg/L 88.9 Dichloropropylene, cis-1,3-10061-01-5 E611D 0.3 μg/L 100 µg/L 79.1 70.0 130 10061-02-6 E611D 0.3 70.0 130 Dichloropropylene, trans-1,3μg/L 100 µg/L 76.6 100-41-4 E611D 0.5 70.0 130 Ethylbenzene μg/L 100 µg/L 97.8 110-54-3 E611D 0.5 70.0 130 μg/L Hexane, n-100 µg/L 94.4 78-93-3 E611D Methyl ethyl ketone [MEK] 20 μg/L 100 µg/L # 69.4 70.0 130 MES 108-10-1 E611D 20 70.0 130 Methyl isobutyl ketone [MIBK] μg/L 100 µg/L 71.7 1634-04-4 E611D Methyl-tert-butyl ether [MTBE] 0.5 μg/L 97.5 70.0 130 100 µg/L

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Laboratory Control Sample (LCS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Volatile Organic Compounds (QCLot: 1361150) - continued 100-42-5 E611D 0.5 70.0 130 μg/L 100 µg/L 90.8 0.5 630-20-6 E611D μg/L 70.0 130 Tetrachloroethane, 1,1,1,2-100 µg/L 93.7 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 0.5 μg/L 100 μg/L 85.3 70.0 130 Tetrachloroethylene 127-18-4 E611D 0.5 µg/L 100 µg/L 103 70.0 130 108-88-3 E611D 0.5 Toluene μg/L 100 µg/L 96.0 70.0 130 71-55-6 E611D Trichloroethane, 1,1,1-0.5 μg/L 100 µg/L 101 70.0 130 79-00-5 E611D 0.5 Trichloroethane, 1,1,2μg/L 100 µg/L 84.7 70.0 130 79-01-6 E611D 0.5 μg/L 100 µg/L 97.1 70.0 130 Trichloroethylene 75-69-4 E611D 0.5 60.0 140 μg/L Trichlorofluoromethane 100 µg/L 98.8 Vinyl chloride 75-01-4 E611D 0.5 60.0 140 μg/L 100 µg/L 99.7 179601-23-1 E611D 0.4 70.0 130 Xylene, m+pμg/L 200 µg/L 97.6 Xylene, o-95-47-6 E611D 0.3 μg/L 100 µg/L 94.8 70.0 130 Hydrocarbons (QCLot: 1361151) ---- E581.F1-L 25 80.0 120 F1 (C6-C10) μg/L 2000 µg/L 91.9 Hydrocarbons (QCLot: 1362416) F2 (C10-C16) ---- E601.SG 100 μg/L 70.0 130 3768 µg/L 103 ---- E601.SG 250 7770.15 µg/L F3 (C16-C34) μg/L 110 70.0 130 F4 (C34-C50) E601.SG 250 μg/L 70.0 130 4145.96 µg/L 113 Hydrocarbons (QCLot: 1362419) ---- E601.SG F2 (C10-C16) 100 μg/L 3768 µg/L 107 70.0 130 F3 (C16-C34) ---- E601.SG 250 70.0 130 μg/L 7770.15 µg/L 107 F4 (C34-C50) ---- E601.SG 250 μg/L 70.0 130 4145.96 µg/L 107 Polycyclic Aromatic Hydrocarbons (QCLot: 1362415) Acenaphthene 83-32-9 E641A 0.01 50.0 140 μg/L 0.5263 µg/L 113 Acenaphthylene 208-96-8 E641A 0.01 μg/L 116 50.0 140 0.5263 µg/L 120-12-7 E641A 0.01 50.0 140 Anthracene μg/L 0.5263 µg/L 112 Benz(a)anthracene 56-55-3 E641A 0.01 μg/L 50.0 140 0.5263 µg/L 125 50-32-8 E641A Benzo(a)pyrene 0.005 μg/L 0.5263 µg/L 114 50.0 140 n/a E641A 0.01 50.0 140 Benzo(b+j)fluoranthene μg/L 0.5263 µg/L 115 191-24-2 E641A 0.01 50.0 140 Benzo(g,h,i)perylene μg/L 0.5263 µg/L 122 207-08-9 E641A 0.01 50.0 140 μg/L Benzo(k)fluoranthene 0.5263 µg/L 105 218-01-9 E641A Chrysene 0.01 μg/L 0.5263 µg/L 124 50.0 140 Dibenz(a,h)anthracene 53-70-3 E641A 0.005 50.0 140 μg/L 0.5263 µg/L 112 Fluoranthene 206-44-0 E641A 0.01 μg/L 0.5263 µg/L 129 50.0 140

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Laboratory Control Sample (LCS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Polycyclic Aromatic Hydrocarbons (QCLot: 1362415) - continued 86-73-7 E641A 0.01 50.0 140 Fluorene μg/L 0.5263 µg/L 125 193-39-5 E641A 0.01 μg/L 50.0 140 Indeno(1,2,3-c,d)pyrene 0.5263 µg/L 134 Methylnaphthalene, 1-90-12-0 E641A 0.01 μg/L 0.5263 µg/L 110 50.0 140 Methylnaphthalene, 2-91-57-6 E641A 0.01 µg/L 0.5263 µg/L 112 50.0 140 91-20-3 E641A Naphthalene 0.05 µg/L 0.5263 µg/L 103 50.0 140 Phenanthrene 85-01-8 E641A 0.02 μg/L 0.5263 µg/L 126 50.0 140 129-00-0 E641A 0.01 140 Pyrene μg/L 0.5263 µg/L 122 50.0 Polycyclic Aromatic Hydrocarbons (QCLot: 1362418) 83-32-9 E641A Acenaphthene 0.01 μg/L 0.5263 µg/L 105 50.0 140 208-96-8 E641A 0.01 140 μg/L 50.0 Acenaphthylene 0.5263 µg/L 104 Anthracene 120-12-7 E641A 0.01 μg/L 0.5263 µg/L 109 50.0 140 Benz(a)anthracene 56-55-3 E641A 0.01 50.0 140 μg/L 0.5263 µg/L 120 50-32-8 E641A 0.005 50.0 140 Benzo(a)pyrene μg/L 0.5263 µg/L 111 140 n/a E641A 0.01 50.0 Benzo(b+j)fluoranthene μg/L 0.5263 µg/L 108 191-24-2 E641A 0.01 μg/L 125 50.0 140 Benzo(g,h,i)perylene 0.5263 µg/L Benzo(k)fluoranthene 207-08-9 E641A 0.01 μg/L 0.5263 µg/L 101 50.0 140 218-01-9 E641A 0.01 μg/L 113 50.0 140 Chrysene 0.5263 µg/L 53-70-3 E641A Dibenz(a,h)anthracene 0.005 μg/L 0.5263 µg/L 120 50.0 140 Fluoranthene 206-44-0 E641A 0.01 μg/L 0.5263 µg/L 123 50.0 140 Fluorene 86-73-7 E641A 0.01 µg/L 0.5263 µg/L 117 50.0 140 193-39-5 E641A 0.01 50.0 140 Indeno(1,2,3-c,d)pyrene μg/L 0.5263 µg/L 128 90-12-0 E641A 0.01 50.0 140 Methylnaphthalene, 1µg/L 0.5263 µg/L 97.7 91-57-6 E641A 0.01 50.0 140 Methylnaphthalene, 2μg/L 0.5263 µg/L 99.5 μg/L Naphthalene 91-20-3 E641A 0.05 50.0 140 0.5263 µg/L 98.2 85-01-8 E641A 0.02 50.0 140 Phenanthrene μg/L 0.5263 µg/L 121 129-00-0 E641A 0.01 μg/L 50.0 140 Pyrene 0.5263 µg/L 113 Polychlorinated Biphenyls (QCLot: 1363144) 12674-11-2 E687 Aroclor 1016 0.02 μg/L 0.2 µg/L 119 60.0 140 11104-28-2 E687 0.02 60.0 140 Aroclor 1221 μg/L 0.2 µg/L 119 11141-16-5 E687 Aroclor 1232 0.02 µg/L 119 60.0 140 0.2 µg/L 53469-21-9 E687 0.02 60.0 140 μg/L Aroclor 1242 0.2 µg/L 119 Aroclor 1248 12672-29-6 E687 0.02 60.0 140 μg/L 0.2 µg/L 112 11097-69-1 E687 0.02 60.0 140 Aroclor 1254 μg/L 0.2 µg/L 102 Aroclor 1260 11096-82-5 E687 0.02 μg/L 125 60.0 140 0.2 µg/L 37324-23-5 E687 0.02 60.0 140 Aroclor 1262 μg/L 0.2 µg/L 125

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Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polychlorinated Biphenyls (QCLot: 136314	4) - continued								
Aroclor 1268	11100-14-4 E	E687	0.02	μg/L	0.2 μg/L	125	60.0	140	

# Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

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## 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 Spik	e (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ents (QCLot: 136120	)2)								
WT2405138-001	Anonymous	Chloride	16887-00-6	E235.CI	99.3 mg/L	100 mg/L	99.3	75.0	125	
Cyanides (QCLo	t: 1359206)									
EO2401635-001	Anonymous	Cyanide, weak acid dissociable		E336	0.116 mg/L	0.125 mg/L	93.0	75.0	125	
Dissolved Metals	(QCLot: 1359938)									
HA2400468-002	Anonymous	Antimony, dissolved	7440-36-0	E421	0.0534 mg/L	0.05 mg/L	107	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0578 mg/L	0.05 mg/L	116	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	0.00539 mg/L	0.005 mg/L	108	70.0	130	
		Boron, dissolved	7440-42-8	E421	0.051 mg/L	0.05 mg/L	102	70.0	130	
		Cadmium, dissolved	7440-43-9	E421	0.00512 mg/L	0.005 mg/L	102	70.0	130	
		Chromium, dissolved	7440-47-3	E421	0.0122 mg/L	0.0125 mg/L	97.9	70.0	130	
		Cobalt, dissolved	7440-48-4	E421	0.0119 mg/L	0.0125 mg/L	95.3	70.0	130	
		Copper, dissolved	7440-50-8	E421	0.0118 mg/L	0.0125 mg/L	94.1	70.0	130	
		Lead, dissolved	7439-92-1	E421	0.0251 mg/L	0.025 mg/L	100	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	0.0233 mg/L	0.025 mg/L	93.3	70.0	130	
		Selenium, dissolved	7782-49-2	E421	0.0606 mg/L	0.05 mg/L	121	70.0	130	
		Silver, dissolved	7440-22-4	E421	0.00484 mg/L	0.005 mg/L	96.9	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	0.0493 mg/L	0.05 mg/L	98.6	70.0	130	
		Uranium, dissolved	7440-61-1	E421	0.000260 mg/L	0.00025 mg/L	104	70.0	130	
		Vanadium, dissolved	7440-62-2	E421	0.0252 mg/L	0.025 mg/L	101	70.0	130	
		Zinc, dissolved	7440-66-6	E421	0.0259 mg/L	0.025 mg/L	104	70.0	130	
Dissolved Metals	(QCLot: 1360215)									
WT2404948-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000921 mg/L	0.0001 mg/L	92.1	70.0	130	
Dissolved Metals	(QCLot: 1360216)									
HA2400468-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000816 mg/L	0.0001 mg/L	81.6	70.0	130	
Speciated Metals	(QCLot: 1359359)									
VA24A4710-001	Anonymous	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0410 mg/L	0.04 mg/L	102	70.0	130	

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Matrix Spike (MS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) Laboratory sample ID | Client sample ID Analyte **CAS Number** Method Concentration Target Low High Qualifier Volatile Organic Compounds (QCLot: 1359399) WT2405161-001 Anonymous Acetone 67-64-1 E611D 95 µg/L 100 µg/L 95.3 60.0 140 Benzene 71-43-2 E611D 93.3 µg/L 100 µg/L 93.3 60.0 140 Bromodichloromethane 75-27-4 E611D 91.9 µg/L 100 µg/L 91.9 60.0 140 Bromoform 75-25-2 E611D 88.1 µg/L 100 µg/L 88.1 60.0 140 Bromomethane 74-83-9 E611D 97.0 µg/L 100 µg/L 97.0 60.0 140 Carbon tetrachloride E611D 56-23-5 96.2 µg/L 100 µg/L 96.2 60.0 140 Chlorobenzene 108-90-7 E611D 92.5 µg/L 100 µg/L 92.5 60.0 140 Chloroform 67-66-3 E611D 93.2 µg/L 100 µg/L 93.2 60.0 140 Dibromochloromethane 124-48-1 E611D 87.4 µg/L 100 µg/L 87.4 60.0 140 Dibromoethane, 1,2-106-93-4 E611D 85.7 µg/L 100 µg/L 85.7 60.0 140 Dichlorobenzene, 1,2-95-50-1 E611D 92.7 µg/L 100 µg/L 92.7 60.0 140 Dichlorobenzene, 1.3-541-73-1 E611D 95.0 µg/L 100 µg/L 95.0 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 87.6 µg/L 100 µg/L 87.6 60.0 140 Dichloroethane, 1.1-75-34-3 E611D 94.1 µg/L 60.0 100 µg/L 94.1 140 Dichloroethane, 1,2-107-06-2 E611D 92.0 µg/L 100 µg/L 92.0 60.0 140 Dichloroethylene, 1,1-75-35-4 E611D 96.4 µg/L 100 µg/L 96.4 60.0 140 Dichloroethylene, cis-1,2-156-59-2 E611D 91.1 µg/L 100 µg/L 91.1 60.0 140 Dichloroethylene, trans-1,2-E611D 156-60-5 94.6 µg/L 100 µg/L 94.6 60.0 140 Dichloromethane 75-09-2 E611D 95.5 µg/L 100 µg/L 95.5 60.0 140 Dichloropropane, 1,2-78-87-5 E611D 89.5 µg/L 100 µg/L 89.5 60.0 140 Dichloropropylene, cis-1,3-E611D 10061-01-5 90.4 µg/L 100 µg/L 90.4 60.0 140 Dichloropropylene, trans-1,3-10061-02-6 E611D 85.8 µg/L 100 μg/L 60.0 85.8 140 Ethylbenzene 100-41-4 E611D 86.0 µg/L 100 µg/L 86.0 60.0 140 Hexane, n-110-54-3 E611D 96.0 µg/L 100 μg/L 96.0 60.0 140 Methyl ethyl ketone [MEK] 78-93-3 E611D 60.0 88 µg/L 100 µg/L 87.9 140 Methyl isobutyl ketone [MIBK] 108-10-1 E611D 74 µg/L 100 µg/L 74.4 60.0 140 Methyl-tert-butyl ether [MTBE] E611D 1634-04-4 94.4 µg/L 100 µg/L 94.4 60.0 140 Styrene 100-42-5 E611D 92.5 µg/L 100 µg/L 92.5 60.0 140 Tetrachloroethane, 1,1,1,2-630-20-6 E611D 92.2 µg/L 100 µg/L 92.2 60.0 140 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 100 μg/L 92.6 µg/L 92.6 60.0 140 Tetrachloroethylene 127-18-4 E611D 97.7 97.7 µg/L 100 µg/L 60.0 140 Toluene 108-88-3 E611D 90.7 µg/L 100 µg/L 90.7 60.0 140 Trichloroethane, 1,1,1-71-55-6 E611D 95.3 60.0 140 95.3 µg/L 100 µg/L Trichloroethane, 1,1,2-79-00-5 E611D 89.6 µg/L 100 µg/L 89.6 60.0 140 Trichloroethylene 79-01-6 94.0 µg/L E611D 100 µg/L 94.0 60.0 140

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Matrix Spike (MS) Report Sub-Matrix: Water Spike Recovery (%) Recovery Limits (%) Laboratory sample ID | Client sample ID Analyte **CAS Number** Method Concentration Target Low High Qualifier Volatile Organic Compounds (QCLot: 1359399) - continued WT2405161-001 Anonymous Trichlorofluoromethane 75-69-4 E611D 95.8 µg/L 100 µg/L 95.8 60.0 140 Vinyl chloride 75-01-4 E611D 96.7 µg/L 100 µg/L 96.7 60.0 140 Xylene, m+p-179601-23-1 E611D 192 µg/L 200 µg/L 95.8 60.0 140 Xylene, o-95-47-6 E611D 89.0 µg/L 100 µg/L 89.0 60.0 140 Volatile Organic Compounds (QCLot: 1361150) WT2405173-002 BH2-24-GW1 Acetone E611D 67-64-1 102 µg/L 100 µg/L 102 60.0 140 Benzene 71-43-2 E611D 140 90.3 µg/L 100 µg/L 90.3 60.0 Bromodichloromethane 75-27-4 E611D 96.0 µg/L 100 µg/L 96.0 60.0 140 Bromoform 75-25-2 E611D 87.9 µg/L 100 µg/L 87.9 60.0 140 Bromomethane 74-83-9 E611D 81.2 µg/L 100 µg/L 81.2 60.0 140 Carbon tetrachloride E611D 56-23-5 92.1 µg/L 100 µg/L 92.1 60.0 140 Chlorobenzene 108-90-7 E611D 89.8 µg/L 100 µg/L 89.8 60.0 140 Chloroform 67-66-3 E611D 93.8 µg/L 100 µg/L 93.8 60.0 140 Dibromochloromethane 124-48-1 E611D 90.4 µg/L 100 µg/L 90.4 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 90.6 µg/L 100 µg/L 90.6 60.0 140 Dichlorobenzene, 1,3-541-73-1 E611D 90.4 µg/L 100 µg/L 90.4 60.0 140 Dichlorobenzene, 1,4-89.9 µg/L 106-46-7 E611D 60.0 100 µg/L 89.9 140 Dichlorodifluoromethane 75-71-8 E611D 72.9 µg/L 100 µg/L 72.9 60.0 140 Dichloroethane, 1,1-E611D 75-34-3 92.3 µg/L 100 µg/L 92.3 60.0 140 Dichloroethane, 1,2-E611D 107-06-2 93.5 µg/L 100 µg/L 93.5 60.0 140 Dichloroethylene, 1,1-75-35-4 E611D 88.4 µg/L 100 µg/L 88.4 60.0 140 Dichloroethylene, cis-1,2-156-59-2 E611D 92.7 µg/L 100 µg/L 92.7 60.0 140 Dichloroethylene, trans-1,2-156-60-5 E611D 96.2 µg/L 100 µg/L 96.2 60.0 140 Dichloromethane 75-09-2 E611D 92.8 µg/L 92.8 60.0 140 100 µg/L Dichloropropane, 1,2-78-87-5 E611D 92.9 µg/L 60.0 140 100 µg/L 92.9 Dichloropropylene, cis-1,3-10061-01-5 E611D 86.3 µg/L 100 µg/L 86.3 60.0 140 Dichloropropylene, trans-1,3-E611D 82.8 µg/L 10061-02-6 100 µg/L 82.8 60.0 140 Ethylbenzene 100-41-4 E611D 88.6 88.6 µg/L 100 µg/L 60.0 140 Hexane, n-110-54-3 E611D 79.3 79.3 µg/L 100 µg/L 60.0 140 Methyl ethyl ketone [MEK] 78-93-3 E611D 88 µg/L 100 µg/L 87.6 60.0 140 Methyl isobutyl ketone [MIBK] 108-10-1 E611D 90 µg/L 100 µg/L 90.1 60.0 140 Methyl-tert-butyl ether [MTBE] 1634-04-4 E611D 95.7 µg/L 100 μg/L 95.7 60.0 140 88.1 µg/L 100-42-5 E611D 100 µg/L 88.1 60.0 140 Tetrachloroethane, 1,1,1,2-91.3 µg/L 630-20-6 E611D 100 µg/L 91.3 60.0 140

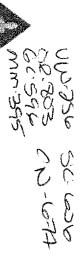
Page 22 of 22 WT2405173 Work Order: Client

Lopers & Associates

LOP23-029B Project



Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic	Compounds (QCLot: 13	61150) - continued								
WT2405173-002	BH2-24-GW1	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	92.3 μg/L	100 μg/L	92.3	60.0	140	
		Tetrachloroethylene	127-18-4	E611D	91.3 μg/L	100 μg/L	91.3	60.0	140	
		Toluene	108-88-3	E611D	88.5 µg/L	100 μg/L	88.5	60.0	140	
		Trichloroethane, 1,1,1-	71-55-6	E611D	92.2 μg/L	100 μg/L	92.2	60.0	140	
		Trichloroethane, 1,1,2-	79-00-5	E611D	90.7 μg/L	100 μg/L	90.7	60.0	140	
		Trichloroethylene	79-01-6	E611D	92.3 μg/L	100 μg/L	92.3	60.0	140	
		Trichlorofluoromethane	75-69-4	E611D	83.3 µg/L	100 μg/L	83.3	60.0	140	
		Vinyl chloride	75-01-4	E611D	83.2 µg/L	100 μg/L	83.2	60.0	140	
		Xylene, m+p-	179601-23-1	E611D	179 μg/L	200 μg/L	89.3	60.0	140	
		Xylene, o-	95-47-6	E611D	88.3 µg/L	100 μg/L	88.3	60.0	140	
Hydrocarbons (C	QCLot: 1361151)									
WT2405173-002	BH2-24-GW1	F1 (C6-C10)		E581.F1-L	1440 μg/L	2000 μg/L	72.0	60.0	140	



Street

City/Province:

Ottawa, ON 30 Lansfield Way

stal Code:

K2G 3V8

Email 3 Email 2 Phone: Contact:

613-327-9073

Luke Lopers

Company address below will appear on the final report

Select Distribution: 🔁 EMAIL

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A Select Report Format: Z PDF 🖸 EXCEL 🗍 EDD (DIGITAL)

Reports / Recipients

Compare Results to Criteria on Report - provide details below if box checked

MAIL

I I

] 1 day [E] If received by 3pm M-F - 100% rush surcharg. Same day [E2] If received by 10am M-S - 200% rush su

Date and Time Required for all E&P TATs:

Additional fees may apply to rush requests on we

Email 1 or Fax Luke@Lopers.ca

Report To

www.atsglobal.com

Company:

LOPERS & ASSOCIATES - LOPE 100

Contact and company name below will appear on the final report

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

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Waterloo
Work Order Reference
WT2405173 **Environmental Division** 

3 day [P3] if received by 3pm M-F - 25% rush surcharg Routine {R] if received by 3pm M-F - no surcharges appl
 1 4 day [P4] if received by 3pm M-F - 20% rush surcharge Turnaround Time (TAT) Requested

felephone: +1 519 886 6910

		,			COPY	YELLOW - CLIENT COPY	FLOM -	١	WHITE - LABORATORY COPY	HW		NG INFORMATION	REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	R TO BACK PAGE F
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閉	FINAL COOLER TEMPERATURES °C	FINAL	INITIAL COOLER TEMPERATURES °C	RTEMPER	IAL COOLER	INIT	П					1	insumption/ use?	Are samples for human consumption/ use?
1	y Seals Intact	N/A Sample Custody Seals Intact:	YES N	intact:	Cooler Custody Seals Intact:	er Custo	Cool			5	CIRCO RUPAL LARGE V	ロスペイス	0	YES 🔀 NO
l	YES	Submission Comments identified on Sample Receipt Notification:	ed on Sample	s identific	Comments	nission (	Subr			1	1		Are samples taken from a Regulated DW System?	amples taken from a
IE	COOLING INITIATED	☐ ICE PACKS ☐ FROZEN	√ ICE ∐IC	NONE		Cooling Method:	Cool			Excel COC only)	(E)		Difficulty water (DW) Samples (Client use)	Partie Part Communication
í	e only)	SAMPLE RECEIPT DETAILS (ALS use only)	MPLE RECEIP	SAN			П	vn below	ıg from drop-dov	valuation by selecti	Notes I Specify Limits for result evaluation by selecting from drop-down below	Notes / Sp	WN Samples (client use)	Drinking Water (
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i				PAH PCB	AOC			Sample Type	(hh:mm)	(dd-mmm-yy)	<b>.</b>	appear on the repo	(This description will appear on the report)	(ALS use only)
					VF1-F4	ls & Inorg	MBER		Sampler:	Costas Farassogiou	ALS Contact:	and/or Coordinate	(ALS use only):  Samula Identification and/or Coordinates	ALS Lab Work Order# (ALS use only):
						anics	l OI				Location:			
				<u>-</u>			- C				Requisitioner:			PO / AFE:
							01		Rauting Code:		Major/Minor Code:		)298	Job #: LOP23-029B
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							AIN	use)	≸Fields (client	Oil and Gas Required Fields (client use)	lio		Project Information	
1							EF				Email 2			Contact:
	P) below	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	), Preserved (P) or	Filtered (F)	Indicate I		₹Ѕ			Email 1 or Fax Luke@Lopers.ca	Email 1 or Fax			Company:
1		Analysis Request	Ana					∃ FAX	AIL MAIL (	istribution: 🗾 EMAIL	Select Invoice Distribution:	I I	Copy of Invoice with Report Z YES	Copy of
Į	o confirm availabil	For all tests with rush TATs requested, please contact your AM to confirm availability.	rush TATs requeste	II tests with	For a				cipients	Invoice Recipients		I I	Same as Report To	Invoice To Same a

Faiture to Amplete 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. . If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form YELLOW - CLIENT COPY

# Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

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New aisglobal.com

Canada Toll Free: 1 800 668 9878

Company: Contact: Street: Job # Phone: Are samples for human consumption/ use? Are samples taken from a Regulated DW System? PO / AFE: ALS Account # / Quote #: City/Province: SD nvoice To Postal Code: Contact: Company: Report To (ALS use only) ALS Sample # ALS Lab Work Order # (ALS use only): Drinking Water (DW) Samples (client use) ř N Ottawa, ON 613-327-9073 LOP23-029B 30 Lansfield Way LOPERS & ASSOCIATES - LOPE100 Copy of Invoice with Report Same as Report To K2G 3V8 Luke Lopers Company address below will appear on the final report 8 8 SHIPMENT RELEASE (client use) Contact and company name below will appear on the final report E 2-25-63 Project Information W Sample Identification and/or Coordinates (This description will appear on the report) LOPE100/WT2023LOPE1000002 5-5 E MIN 12001 Ě Ϋ́ΕS È 1 0, REG 155/04 TABLE 3 8 Š Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only) Email 3 Received by: ALS Contact: Requisitioner: AFE/Cost Center: Email 2 Email 1 or Fax Luke@Lopers.ca Select Invoice Distribution: 🗵 EMAIL Email 2 Email 1 or Fax Luke@Lopers.ca Select Distribution: Merge QC/QCI Reports with COA \_\_ YES Select Report Format: Z PDF [2] EXCEL Major/Minor Code: \_ocation: Compare Results to Criteria on Report - provide details below if box checked Oil and Gas Required Fields (client use) INITIAL SHIPMENT RECEPTION (ALS use only) Cr. M.R. 23 万 Farassoglou (dd-mmm-yy) EMAIL Costas Date Reports / Recipients Invoice Recipients Date: Routing Code: PQ# Sampler: (hh:mm) MAIL Time 8 MAIL U 8 EDD (DIGITAL) 707 FAX TO SOF Sample Type F.A. ∐ ∖ } STATES 之 SQL **36** 义 SOIL SOL SOL SOIL SOIL Time: Submission Comments identified on Sample Receipt Notification: 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. 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum Routine [R] If received by 3pm M-F - no surcharges apply
 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum Cooling Method: **NUMBER OF CONTAINERS** Cooler Custody Seals Intact: Date and Time Required for all E&P TATs: Metals & Inorganics INITIAL COOLER TEMPERATURES °C Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests. Received by: BTEX/F1-F4 Turnaround Time (TAT) Requested Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below voc NONE For all tests with rush TATs requested, please contact your AM to confirm availability. PAH SAMPLE RECEIPT DETAILS (ALS use only) PCB Ä Ř ICE PACKS Analysis Request N/A Sample Custody Seals Intact: FROZEN FINAL COOLER TEMPERATURES °C AFFIX ALS BARCODE LABEL HERE しん Ě (ALS use only) COOLING INITIATED 8 ), (Sell) SAMPLES ON HOLD ĕ EXTENDED STORAGE REQUIRED l N/A SUSPECTED HAZARD (see notes

<sup>1.</sup> If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form Failure to complete all portions of this form may delay analysts. 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. REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

# **ALS Canada Ltd.**



# **CERTIFICATE OF ANALYSIS**

**Work Order** : **WT2403940** Page : 1 of 12

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo ON Canada N2V 2B8

 Telephone
 : 613 327 9073
 Telephone
 : 613 225 8279

 Project
 : LOP23-029B
 Date Samples Received
 : 22-Feb-2024 12:30

PO : --- Date Analysis Commenced : 25-Feb-2024

C-O-C number : ---- Issue Date : 29-Feb-2024 19:46

Sampler : CLIENT

Site :

No. of samples analysed : 10

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:

: SOA 2024

: 10

General Comments

- Analytical Results
- Surrogate Control Limits

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**

Quote number

No. of samples received

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
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Metals, Waterloo, Ontario
Niki Goebel	Inorganics Analyst	Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario

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Client : Lopers & Associates

Project : LOP23-029B



### **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.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances 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

<: less than.

>: greater than.

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

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

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

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# Analytical Results

Sub-Matrix: Soil/Solid		Ci	ient sample ID	BH3-24-SS1	BH3-24-SS6	BH4-24-SS2	BH4-24-SS8	BH5-24-SS1
(Matrix: Soil/Solid)								
		Client sampling date / time		21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00
Analyte CAS Nun	ber Method/Lab	LOR	Unit	WT2403940-001	WT2403940-002	WT2403940-003	WT2403940-004	WT2403940-005
				Result	Result	Result	Result	Result
Physical Tests								
Conductivity (1:2 leachate)	E100-L/WT	0.00500	mS/cm	0.575	0.969			0.332
Moisture	E144/WT	0.25	%	21.8	26.0	19.5	32.4	10.7
pH (1:2 soil:CaCl2-aq)	E108A/WT	0.10	pH units	7.83	7.33			7.43
Cyanides								
Cyanide, weak acid dissociable	E336A/WT	0.050	mg/kg	<0.050	<0.050			<0.050
Fixed-Ratio Extractables								
	)-2 E484/WT	0.50	mg/L	21.5	3.51			4.16
	5-4 E484/WT	0.50	mg/L	38.6	0.96			5.18
Sodium, soluble ion content 17341-2	5-2 E484/WT	0.50	mg/L	124	175			59.0
Sodium adsorption ratio [SAR]	E484/WT	0.10	-	3.70	21.4			4.56
Metals								
Antimony 7440-3	6-0 E440C/WT	0.10	mg/kg	<0.10	<0.10			<0.10
Arsenic 7440-3	3-2 E440C/WT	0.10	mg/kg	3.94	1.64			3.48
<b>Barium</b> 7440-3	9-3 E440C/WT	0.50	mg/kg	172	262			119
Beryllium 7440-4	1-7 E440C/WT	0.10	mg/kg	0.78	0.64			0.52
Boron 7440-4	2-8 E440C/WT	5.0	mg/kg	12.1	<5.0			12.2
Boron, hot water soluble 7440-4	2-8 E487/WT	0.10	mg/kg	0.19	<0.10			0.19
Cadmium 7440-4	3-9 E440C/WT	0.020	mg/kg	0.168	0.096			0.124
Chromium 7440-4	7-3 E440C/WT	0.50	mg/kg	46.8	48.0			25.7
Cobalt 7440-4	3-4 E440C/WT	0.10	mg/kg	12.2	13.9			8.94
<b>Copper</b> 7440-5	)-8 E440C/WT	0.50	mg/kg	24.1	26.7			15.5
Lead 7439-9	2-1 E440C/WT	0.50	mg/kg	12.6	5.12			9.03
<b>Mercury</b> 7439-9	7-6 E510C/WT	0.0050	mg/kg	0.0471	<0.0050			0.0407
Molybdenum 7439-9	3-7 E440C/WT	0.10	mg/kg	0.71	0.29			0.72
Nickel 7440-0	2-0 E440C/WT	0.50	mg/kg	29.2	28.3			21.3
	9-2 E440C/WT	0.20	mg/kg	<0.20	<0.20			<0.20
	2-4 E440C/WT	0.10	mg/kg	0.16	<0.10			0.14
	3-0 E440C/WT	0.050	mg/kg	0.246	0.253			0.215
	1-1 E440C/WT	0.050	mg/kg	0.730	0.630			0.614

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# Analytical Results

Sub-Matrix: Soil/Solid		Client sample ID		BH3-24-SS1	BH3-24-SS6	BH4-24-SS2	BH4-24-SS8	BH5-24-SS1
(Matrix: Soil/Solid)								
		Client sampling date / time		21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2403940-001	WT2403940-002	WT2403940-003	WT2403940-004	WT2403940-005
				Result	Result	Result	Result	Result
Metals								
Vanadium	7440-62-2 E440C/WT	0.20	mg/kg	68.6	72.6			48.0
Zinc	7440-66-6 E440C/WT	2.0	mg/kg	67.2	78.1			37.2
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9 E532/WT	0.10	mg/kg	0.28	0.18			0.30
Volatile Organic Compounds								
Acetone	67-64-1 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Benzene	71-43-2 E611A/WT	0.0050	mg/kg					<0.0050
Benzene	71-43-2 E611D/WT	0.0050	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	
Bromodichloromethane	75-27-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Bromoform	75-25-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Bromomethane	74-83-9 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Carbon tetrachloride	56-23-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Chlorobenzene	108-90-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Chloroform	67-66-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dibromochloromethane	124-48-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichlorodifluoromethane	75-71-8 <mark>E611D/WT</mark>	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, 1,1-	75-35-4 <mark>E611D/WT</mark>	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloromethane	75-09-2 E611D/WT	0.045	mg/kg	<0.045	<0.045	<0.045	<0.045	
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	

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Sub-Matrix: Soil/Solid		C	lient sample ID	BH3-24-SS1	BH3-24-SS6	BH4-24-SS2	BH4-24-SS8	BH5-24-SS1
(Matrix: Soil/Solid)								
		Client samp	oling date / time	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2403940-001	WT2403940-002	WT2403940-003	WT2403940-004	WT2403940-005
Volatile Organic Compounds				Result	Result	Result	Result	Result
Ethylbenzene	100-41-4 E611A/WT	0.015	mg/kg					<0.015
Ethylbenzene	100-41-4 E611D/WT	0.015	mg/kg	<0.015	<0.015	<0.015	<0.015	
Hexane, n-	110-54-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Methyl isobutyl ketone [MIBK]	108-10-1 E611D/WT	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.040	mg/kg	<0.040	<0.040	<0.040	<0.040	
Styrene	100-42-5 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Tetrachloroethylene	127-18-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Toluene	108-88-3 E611A/WT	0.050	mg/kg					<0.050
Toluene	108-88-3 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.050	mg/kg	< 0.050	<0.050	<0.050	<0.050	
Trichloroethylene	79-01-6 E611D/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	
Trichlorofluoromethane	75-69-4 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Vinyl chloride	75-01-4 E611D/WT	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	
Xylene, m+p-	179601-23-1 E611A/WT	0.030	mg/kg					< 0.030
Xylene, m+p-	179601-23-1 E611D/WT	0.030	mg/kg	< 0.030	<0.030	<0.030	<0.030	
Xylene, o-	95-47-6 E611A/WT	0.030	mg/kg					<0.030
Xylene, o-	95-47-6 E611D/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	
Xylenes, total	1330-20-7 E611A/WT	0.050	mg/kg					<0.050
Xylenes, total	1330-20-7 E611D/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
BTEX, total	E611A/WT	0.10	mg/kg					<0.10
BTEX, total	E611D/WT	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	
Hydrocarbons	5504 54047	5.0						.50
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg					<5.0
F2 (C10-C16)	E601.SG-L/W	10	mg/kg					<10
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Sub-Matrix: Soil/Solid		C	lient sample ID	BH3-24-SS1	BH3-24-SS6	BH4-24-SS2	BH4-24-SS8	BH5-24-SS1
(Matrix: Soil/Solid)								
		Client samp	oling date / time	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00
Analyte	CAS Number Method/Lai	b LOR	Unit	WT2403940-001	WT2403940-002	WT2403940-003	WT2403940-004	WT2403940-005
				Result	Result	Result	Result	Result
Hydrocarbons								
F3 (C16-C34)	E601.SG-L/W	50	mg/kg					<50
F4 (C34-C50)	E601.SG-L/W	50	mg/kg					<50
F1-BTEX	EC580/WT	5.0	mg/kg					<5.0
Hydrocarbons, total (C6-C50)	n/a EC581/WT	80	mg/kg					<80
Chromatogram to baseline at nC50	n/a E601.SG-L/W	-	-					YES
	Т							
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E601.SG-L/W	1.0	%					111
Dichlorotoluene, 3,4-	95-75-0 E581.F1/WT	1.0	%					116
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4 E611A/WT	0.10	%					102
Bromofluorobenzene, 4-	460-00-4 E611D/WT	0.10	%	108	89.2	89.7	92.1	
Difluorobenzene, 1,4-	540-36-3 E611A/WT	0.10	%					105
Difluorobenzene, 1,4-	540-36-3 E611D/WT	0.10	%	114	96.5	96.0	97.8	
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A/WT	0.050	mg/kg					<0.050
Acenaphthylene	208-96-8 E641A/WT	0.050	mg/kg					<0.050
Anthracene	120-12-7 E641A/WT	0.050	mg/kg					<0.050
Benz(a)anthracene	56-55-3 E641A/WT	0.050	mg/kg					<0.050
Benzo(a)pyrene	50-32-8 E641A/WT	0.050	mg/kg					<0.050
Benzo(b+j)fluoranthene	n/a E641A/WT	0.050	mg/kg					<0.050
Benzo(g,h,i)perylene	191-24-2 E641A/WT	0.050	mg/kg					<0.050
Benzo(k)fluoranthene	207-08-9 E641A/WT	0.050	mg/kg					<0.050
Chrysene	218-01-9 E641A/WT	0.050	mg/kg					<0.050
Dibenz(a,h)anthracene	53-70-3 E641A/WT	0.050	mg/kg					<0.050
Fluoranthene	206-44-0 E641A/WT	0.050	mg/kg					<0.050
Fluorene	86-73-7 E641A/WT	0.050	mg/kg					<0.050
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A/WT	0.050	mg/kg					<0.050

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# Analytical Results

Sub-Matrix: Soil/Solid			CI	ient sample ID	BH3-24-SS1	BH3-24-SS6	BH4-24-SS2	BH4-24-SS8	BH5-24-SS1
(Matrix: Soil/Solid)									
				ling date / time	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00	21-Feb-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2403940-001	WT2403940-002	WT2403940-003	WT2403940-004	WT2403940-005
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Methylnaphthalene, 1-		E641A/WT	0.030	mg/kg					<0.030
Methylnaphthalene, 1+2-		E641A/WT	0.050	mg/kg					<0.050
Methylnaphthalene, 2-		E641A/WT	0.030	mg/kg					<0.030
Naphthalene	91-20-3	E641A/WT	0.010	mg/kg					<0.010
Phenanthrene		E641A/WT	0.050	mg/kg					<0.050
Pyrene	129-00-0	E641A/WT	0.050	mg/kg					<0.050
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A/WT	0.1	%					86.7
Chrysene-d12	1719-03-5	E641A/WT	0.1	%					105
Naphthalene-d8	1146-65-2	E641A/WT	0.1	%					91.3
Phenanthrene-d10	1517-22-2	E641A/WT	0.1	%					94.9
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.010	mg/kg					<0.010
Aroclor 1221	11104-28-2	E687/WT	0.010	mg/kg					<0.010
Aroclor 1232	11141-16-5	E687/WT	0.010	mg/kg					<0.010
Aroclor 1242	53469-21-9	E687/WT	0.010	mg/kg					<0.010
Aroclor 1248	12672-29-6	E687/WT	0.010	mg/kg					<0.010
Aroclor 1254	11097-69-1	E687/WT	0.010	mg/kg					<0.010
Aroclor 1260	11096-82-5	E687/WT	0.010	mg/kg					<0.010
Aroclor 1262	37324-23-5	E687/WT	0.010	mg/kg					<0.010
Aroclor 1268	11100-14-4		0.010	mg/kg					<0.010
Polychlorinated biphenyls [PCBs], total		E687/WT	0.030	mg/kg					<0.030
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%					133
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%					92.9

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.

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Client : Lopers & Associates

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Sub-Matrix: Soil/Solid			C	lient sample ID	BH5-24-SS7	BH6-24-SS1	BH6-24-SS4	BH7-24-SS1	BH7-24-SS5
(Matrix: Soil/Solid)									
			Client samp	oling date / time	21-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2403940-006	WT2403940-007	WT2403940-008	WT2403940-009	WT2403940-010
					Result	Result	Result	Result	Result
Physical Tests Conductivity (1:2 leachate)		E100-L/WT	0.00500	mS/cm	1.39	1.29	1.43	3.37	1.82
Moisture		E144/WT	0.25	%	20.1	21.0	26.8	20.2	27.0
pH (1:2 soil:CaCl2-aq)		E108A/WT	0.10	pH units	7.45	7.72	7.15	7.41	7.39
		210074741	0.10	pridints	7.10	7.72	7.10	7.11	7.00
Cyanides Cyanide, weak acid dissociable		E336A/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Fixed-Ratio Extractables				פיייפייי					
Calcium, soluble ion content	7440-70-2	E484/WT	0.50	mg/L	13.1	3.20	4.25	77.5	22.2
Magnesium, soluble ion content	7439-95-4		0.50	mg/L	3.44	0.71	0.74	19.2	5.95
Sodium, soluble ion content	17341-25-2		0.50	mg/L	244	246	270	596	316
Sodium adsorption ratio [SAR]		E484/WT	0.10	-	15.5	32.4	31.8	15.7	15.4
Metals									
Antimony	7440-36-0	E440C/WT	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	7440-38-2	E440C/WT	0.10	mg/kg	1.36	1.82	1.64	1.91	1.72
Barium	7440-39-3	E440C/WT	0.50	mg/kg	188	280	235	301	302
Beryllium	7440-41-7	E440C/WT	0.10	mg/kg	0.46	0.66	0.59	0.82	0.72
Boron	7440-42-8	E440C/WT	5.0	mg/kg	<5.0	5.4	<5.0	6.1	<5.0
Boron, hot water soluble	7440-42-8	E487/WT	0.10	mg/kg	<0.10	0.16	0.12	0.27	<0.10
Cadmium	7440-43-9	E440C/WT	0.020	mg/kg	0.067	0.091	0.075	0.127	0.092
Chromium	7440-47-3	E440C/WT	0.50	mg/kg	39.9	51.1	49.4	62.1	58.8
Cobalt	7440-48-4	E440C/WT	0.10	mg/kg	10.8	14.8	13.9	16.2	16.2
Copper	7440-50-8	E440C/WT	0.50	mg/kg	21.3	29.1	27.5	24.4	31.8
Lead	7439-92-1	E440C/WT	0.50	mg/kg	3.98	6.28	4.93	7.50	5.73
Mercury	7439-97-6	E510C/WT	0.0050	mg/kg	<0.0050	<0.0050	<0.0050	0.0163	0.0052
Molybdenum	7439-98-7	E440C/WT	0.10	mg/kg	0.27	0.35	0.28	0.27	0.30
Nickel	7440-02-0	E440C/WT	0.50	mg/kg	22.9	29.8	28.1	33.4	33.8
Selenium	7782-49-2	E440C/WT	0.20	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	7440-22-4	E440C/WT	0.10	mg/kg	0.14	<0.10	<0.10	<0.10	<0.10
Thallium	7440-28-0	E440C/WT	0.050	mg/kg	0.213	0.287	0.256	0.312	0.302
Uranium	7440-61-1	E440C/WT	0.050	mg/kg	0.558	0.655	0.658	0.579	0.637
Vanadium	7440-62-2	E440C/WT	0.20	mg/kg	58.0	72.4	66.3	77.2	78.4

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Soil/Solid		C	lient sample ID	BH5-24-SS7	BH6-24-SS1	BH6-24-SS4	BH7-24-SS1	BH7-24-SS5
(Matrix: Soil/Solid)								
			lling date / time	21-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2403940-006 Result	WT2403940-007 Result	WT2403940-008 Result	WT2403940-009 Result	WT2403940-010 Result
Metals				Result	Result	Result	Result	Result
Zinc	7440-66-6 E440C/WT	2.0	mg/kg	58.2	78.5	70.6	85.4	86.7
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9 E532/WT	0.10	mg/kg	<0.10	0.13	0.25	0.50	0.33
Volatile Organic Compounds								
Acetone	67-64-1 E611D/WT	0.50	mg/kg	<0.50				
Benzene	71-43-2 E611A/WT	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050
Benzene	71-43-2 E611D/WT	0.0050	mg/kg	<0.0050				
Bromodichloromethane	75-27-4 E611D/WT	0.050	mg/kg	<0.050				
Bromoform	75-25-2 E611D/WT	0.050	mg/kg	<0.050				
Bromomethane	74-83-9 E611D/WT	0.050	mg/kg	<0.050				
Carbon tetrachloride	56-23-5 E611D/WT	0.050	mg/kg	<0.050				
Chlorobenzene	108-90-7 E611D/WT	0.050	mg/kg	<0.050				
Chloroform	67-66-3 E611D/WT	0.050	mg/kg	<0.050				
Dibromochloromethane	124-48-1 <mark>E611D/WT</mark>	0.050	mg/kg	<0.050				
Dibromoethane, 1,2-	106-93-4 E611D/WT	0.050	mg/kg	<0.050				
Dichlorobenzene, 1,2-	95-50-1 E611D/WT	0.050	mg/kg	<0.050				
Dichlorobenzene, 1,3-	541-73-1 E611D/WT	0.050	mg/kg	<0.050				
Dichlorobenzene, 1,4-	106-46-7 E611D/WT	0.050	mg/kg	<0.050				
Dichlorodifluoromethane	75-71-8 <mark>E611D/WT</mark>	0.050	mg/kg	<0.050				
Dichloroethane, 1,1-	75-34-3 E611D/WT	0.050	mg/kg	<0.050				
Dichloroethane, 1,2-	107-06-2 E611D/WT	0.050	mg/kg	<0.050				
Dichloroethylene, 1,1-	75-35-4 E611D/WT	0.050	mg/kg	<0.050				
Dichloroethylene, cis-1,2-	156-59-2 E611D/WT	0.050	mg/kg	<0.050				
Dichloroethylene, trans-1,2-	156-60-5 E611D/WT	0.050	mg/kg	<0.050				
Dichloromethane	75-09-2 E611D/WT	0.045	mg/kg	<0.045				
Dichloropropane, 1,2-	78-87-5 E611D/WT	0.050	mg/kg	<0.050				
Dichloropropylene, cis+trans-1,3-	542-75-6 E611D/WT	0.050	mg/kg	<0.050				
Dichloropropylene, cis-1,3-	10061-01-5 E611D/WT	0.030	mg/kg	<0.030				
Dichloropropylene, trans-1,3-	10061-02-6 E611D/WT	0.030	mg/kg	<0.030				
Ethylbenzene	100-41-4 E611A/WT	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015

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Lopers & Associates LOP23-029B Client

Project



Sub-Matrix: Soil/Solid		C	lient sample ID	BH5-24-SS7	BH6-24-SS1	BH6-24-SS4	BH7-24-SS1	BH7-24-SS5
(Matrix: Soil/Solid)								
		Client samp	lling date / time	21-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2403940-006	WT2403940-007	WT2403940-008	WT2403940-009	WT2403940-010
				Result	Result	Result	Result	Result
Volatile Organic Compounds Ethylbenzene	100-41-4 E611D/WT	0.015	ma/ka	<0.015				
Hexane, n-		0.013	mg/kg	<0.050				
·	110-54-3 E611D/WT	0.030	mg/kg	<0.50				
Methyl ethyl ketone [MEK]	78-93-3 E611D/WT 108-10-1 E611D/WT	0.50	mg/kg	<0.50				
Methyl isobutyl ketone [MIBK]		0.040	mg/kg	<0.040				
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611D/WT	0.040	mg/kg	<0.040				
Styrene	100-42-5 E611D/WT		mg/kg					
Tetrachloroethane, 1,1,1,2-	630-20-6 E611D/WT	0.050	mg/kg	<0.050				
Tetrachloroethane, 1,1,2,2-	79-34-5 E611D/WT	0.050	mg/kg	<0.050				
Tetrachloroethylene	127-18-4 E611D/WT	0.050	mg/kg	<0.050				
Toluene	108-88-3 E611A/WT	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050
Toluene	108-88-3 E611D/WT	0.050	mg/kg	<0.050				
Trichloroethane, 1,1,1-	71-55-6 E611D/WT	0.050	mg/kg	<0.050				
Trichloroethane, 1,1,2-	79-00-5 E611D/WT	0.050	mg/kg	<0.050				
Trichloroethylene	79-01-6 E611D/WT	0.010	mg/kg	<0.010				
Trichlorofluoromethane	75-69-4 E611D/WT	0.050	mg/kg	<0.050				
Vinyl chloride	75-01-4 E611D/WT	0.020	mg/kg	<0.020				
Xylene, m+p-	179601-23-1 E611A/WT	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030
Xylene, m+p-	179601-23-1 E611D/WT	0.030	mg/kg	<0.030				
Xylene, o-	95-47-6 E611A/WT	0.030	mg/kg		<0.030	<0.030	<0.030	<0.030
Xylene, o-	95-47-6 E611D/WT	0.030	mg/kg	<0.030				
Xylenes, total	1330-20-7 E611A/WT	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050
Xylenes, total	1330-20-7 E611D/WT	0.050	mg/kg	<0.050				
BTEX, total	E611A/WT	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10
BTEX, total	E611D/WT	0.10	mg/kg	<0.10				
Hydrocarbons								
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	E601.SG-L/W	10	mg/kg	<10	<10	<10	<10	<10
F3 (C16-C34)	 E601.SG-L/W T	50	mg/kg	<50	<50	<50	<50	<50

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Client : Lopers & Associates

Project : LOP23-029B



Sub-Matrix: Soil/Solid		C	ient sample ID	BH5-24-SS7	BH6-24-SS1	BH6-24-SS4	BH7-24-SS1	BH7-24-SS5
(Matrix: Soil/Solid)								
		Client samp	ling date / time	21-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00
Analyte	CAS Number Method/Lab	LOR	Unit	WT2403940-006	WT2403940-007	WT2403940-008	WT2403940-009	WT2403940-010
				Result	Result	Result	Result	Result
Hydrocarbons								
F4 (C34-C50)	E601.SG-L/W T	50	mg/kg	<50	72	<50	<50	<50
F1-BTEX	EC580/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Hydrocarbons, total (C6-C50)	n/a EC581/WT	80	mg/kg	<80	<80	<80	<80	<80
Chromatogram to baseline at nC50	n/a E601.SG-L/W T	-	-	YES	YES	YES	YES	YES
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6 E601.SG-L/W T	1.0	%	111	110	115	111	111
Dichlorotoluene, 3,4-	95-75-0 E581.F1/WT	1.0	%	92.8	89.6	94.6	98.8	81.7
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4 E611A/WT	0.10	%		92.5	86.5	93.2	85.1
Bromofluorobenzene, 4-	460-00-4 E611D/WT	0.10	%	86.8				
Difluorobenzene, 1,4-	540-36-3 E611A/WT	0.10	%		96.8	90.9	97.5	90.0
Difluorobenzene, 1,4-	540-36-3 E611D/WT	0.10	%	91.5				
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Acenaphthylene	208-96-8 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Anthracene	120-12-7 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Benz(a)anthracene	56-55-3 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Benzo(a)pyrene	50-32-8 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Benzo(b+j)fluoranthene	n/a <mark>E641A/WT</mark>	0.050	mg/kg		<0.050		<0.050	
Benzo(g,h,i)perylene	191-24-2 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Benzo(k)fluoranthene	207-08-9 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Chrysene	218-01-9 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Dibenz(a,h)anthracene	53-70-3 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Fluoranthene	206-44-0 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Fluorene	86-73-7 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A/WT	0.050	mg/kg		<0.050		<0.050	
Methylnaphthalene, 1-	90-12-0 E641A/WT	0.030	mg/kg		<0.030		<0.030	
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg		<0.050		<0.050	

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Client : Lopers & Associates

Project : LOP23-029B

# ALS

# Analytical Results

Sub-Matrix: Soil/Solid			CI	ient sample ID	BH5-24-SS7	BH6-24-SS1	BH6-24-SS4	BH7-24-SS1	BH7-24-SS5
(Matrix: Soil/Solid)									
			Client samp	ling date / time	21-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00	22-Feb-2024 00:00
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2403940-006	WT2403940-007	WT2403940-008	WT2403940-009	WT2403940-010
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Methylnaphthalene, 2-	91-57-6	E641A/WT	0.030	mg/kg		<0.030		<0.030	
Naphthalene	91-20-3	E641A/WT	0.010	mg/kg		<0.010		<0.010	
Phenanthrene		E641A/WT	0.050	mg/kg		<0.050		<0.050	
Pyrene	129-00-0	E641A/WT	0.050	mg/kg		<0.050		<0.050	
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A/WT	0.1	%		82.6		88.7	
Chrysene-d12	1719-03-5	E641A/WT	0.1	%		93.4		105	
Naphthalene-d8	1146-65-2	E641A/WT	0.1	%		91.7		92.0	
Phenanthrene-d10	1517-22-2	E641A/WT	0.1	%		94.2		96.6	
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1221	11104-28-2	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1232	11141-16-5	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1242	53469-21-9	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1248	12672-29-6	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1254	11097-69-1	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1260	11096-82-5	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1262	37324-23-5	E687/WT	0.010	mg/kg	<0.010				
Aroclor 1268	11100-14-4	E687/WT	0.010	mg/kg	<0.010				
Polychlorinated biphenyls [PCBs], total		E687/WT	0.030	mg/kg	<0.030				
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	107				
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	90.0				

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.



### **QUALITY CONTROL INTERPRETIVE REPORT**

Work Order : WT2403940 Page : 1 of 21

Client : Lopers & Associates Laboratory : ALS Environmental - Waterloo

Contact : Luke Lopers Account Manager : Costas Farassoglou
Address : 30 Lansfield Way Address : 60 Northland Road L

:30 Lansfield Way Address :60 Northland Road, Unit 1
Ottawa ON Canada K2G 3V8 Waterloo, Ontario Canada N2V 2B8

Telephone : 613 327 9073 Telephone : 613 225 8279

 Project
 : LOP23-029B
 Date Samples Received
 : 22-Feb-2024 12:30

 PO
 : --- Issue Date
 : 29-Feb-2024 19:46

C-O-C number : 25-1 eb-2024 19.4

Site .

No. of samples received :10

No. of samples analysed :10

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other

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

Sampler

Quote number

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

: CLIENT

:SOA 2024

- Matrix Spike outliers occur please see following pages for full details.
- 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.

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Lopers & Associates LOP23-029B Client Project



Outliers: Quality Control Samples
Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

### Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Polychlorinated Biphenyls	Anonymous	Anonymous	Aroclor 1254	11097-69-1	E687	165 % <sup>E</sup>	50.0-150%	Recovery greater than
								upper data quality
								objective
Polychlorinated Biphenyls	Anonymous	Anonymous	Aroclor 1260	11096-82-5	E687	179 % <sup>E</sup>	50.0-150%	Recovery greater than
								upper data quality
								objective

### **Result Qualifiers**

Qualifier	Description
E	Matrix Spike recovery outside ALS DQO due to heterogeneous analyte background in sample.

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Matrix: Soil/Solid

BH3-24-SS6

BH5-24-SS1

Cyanides: WAD Cyanide (0.01M NaOH Extraction)
Glass soil jar/Teflon lined cap [ON MECP]

Analyte Group: Analytical Method

Container / Client Sample ID(s)

Client : Lopers & Associates
Project : LOP23-029B



Eval

Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Analysis Date

28-Feb-2024

28-Feb-2024

Analysis

**Holding Times** 

### **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.

Sampling Date

Method

E336A

E336A

Extraction / Preparation

Preparation

27-Feb-2024

27-Feb-2024

**Holding Times** 

7 days

7 days

14 days

14 days Eval

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.

			Date	Rec	Actual			Rec	Actual	
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH6-24-SS1	E336A	22-Feb-2024	27-Feb-2024	14 days	6 days	✓	28-Feb-2024	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH6-24-SS4	E336A	22-Feb-2024	27-Feb-2024	14 days	6 days	✓	28-Feb-2024	14 days	1 days	4
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS1	E336A	22-Feb-2024	27-Feb-2024	14 days	6 days	✓	28-Feb-2024	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS5	E336A	22-Feb-2024	27-Feb-2024	14 days	6 days	✓	28-Feb-2024	14 days	1 days	4
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH3-24-SS1	E336A	21-Feb-2024	27-Feb-2024	14 days	7 days	✓	28-Feb-2024	14 days	1 days	4
Cyanides : WAD Cyanide (0.01M NaOH Extraction)							•			
Glass soil jar/Teflon lined cap [ON MECP]										

21-Feb-2024

21-Feb-2024

14 days 1 days

14 days 1 days

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Client Lopers & Associates LOP23-029B **Project** 



fatrix: Soil/Solid					Ev	aluation: × =	Holding time excee	edance ; 🗸	= Withir	Holding Ti
Analyte Group : Analytical Method	Method	Sampling Date	Ext	traction / Pi	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rec	Actual	
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS7	E336A	21-Feb-2024	27-Feb-2024	14	7 days	✓	28-Feb-2024	14 days	1 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH5-24-SS7	E581.F1	21-Feb-2024	25-Feb-2024	14	5 days	✓	25-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										_
BH6-24-SS1	E581.F1	22-Feb-2024	26-Feb-2024	14	5 days	✓	26-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH6-24-SS4	E581.F1	22-Feb-2024	26-Feb-2024	14	5 days	✓	26-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH7-24-SS1	E581.F1	22-Feb-2024	26-Feb-2024	14	5 days	✓	26-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH7-24-SS5	E581.F1	22-Feb-2024	26-Feb-2024	14	5 days	✓	26-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										_
BH5-24-SS1	E581.F1	21-Feb-2024	26-Feb-2024	14	6 days	✓	26-Feb-2024	40 days	0 days	✓
				days						
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS1	E601.SG-L	22-Feb-2024	27-Feb-2024	14	6 days	✓	28-Feb-2024	40 days	1 days	✓
				days						
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS4	E601.SG-L	22-Feb-2024	27-Feb-2024	14	6 days	✓	28-Feb-2024	40 days	1 days	✓
				days						

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Client : Lopers & Associates
Project : LOP23-029B



Matrix: Soil/Solid

Evaluation: × = Holding	ı time exceedance ; ✓	= Within Holding Time
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Matrix: Soil/Solid			_			/aiuation. × –	= Holding time exceedance ; ✓ = Within Holding Til				
Analyte Group : Analytical Method	Method	Sampling Date		traction / Pi	•			Analys			
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date	Holding		Eval	
			Date	Rec	Actual			Rec	Actual		
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)											
Glass soil jar/Teflon lined cap [ON MECP]	E601.SG-L	22-Feb-2024	07 5 1 0004		0.1	<b>√</b>	00 5 1 0004	40 1	4 1	<b>√</b>	
BH7-24-SS1	E001.5G-L	22-Feb-2024	27-Feb-2024	14	6 days	•	28-Feb-2024	40 days	1 days	▼	
				days							
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)					<u> </u>						
Glass soil jar/Teflon lined cap [ON MECP]	E604 SC I	22-Feb-2024	27-Feb-2024		6 days	<b>√</b>	20 Fab 2024	10 days	1 days	✓	
BH7-24-SS5	E601.SG-L	22-Feb-2024	21-reb-2024	14	6 days	•	28-Feb-2024	40 days	i uays	<b>▼</b>	
				days							
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)					I						
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS1	E601.SG-L	21-Feb-2024	27-Feb-2024	14	7 days	<b>√</b>	28-Feb-2024	40 days	1 days	✓	
DN0-24-00 I	L001.3G-L	21-1 60-2024	27-1 60-2024		7 days	•	20-1 60-2024	40 days	i uays	•	
				days							
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)							I				
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS7	E601.SG-L	21-Feb-2024	27-Feb-2024	14	7 days	<b>√</b>	28-Feb-2024	40 days	1 days	✓	
DN:-24-331	L001.3G-L	21-1 GD-2024	21-F6D-2024	14 days	r uays	•	20-F60-2024	40 days	i uays	•	
				uays							
Metals : Boron-Hot Water Extractable by ICPOES					I		I				
Glass soil jar/Teflon lined cap [ON MECP] BH6-24-SS1	E487	22-Feb-2024	29-Feb-2024	180	7 days	<b>√</b>	29-Feb-2024	180	0 days	✓	
DI 10-24-00 I	L-101	22-1 65-2024	20-1 60-2024	days	, days	,	20-1 60-2024	days	o days	•	
With the Property of the Control of				uays				uays			
Metals : Boron-Hot Water Extractable by ICPOES Glass soil jar/Teflon lined cap [ON MECP]							I				
BH6-24-SS4	E487	22-Feb-2024	29-Feb-2024	180	7 days	<b>√</b>	29-Feb-2024	180	0 days	✓	
D110 24 004		22 1 35 2024	20-1 00-2024	days	, days		20-1 00-2024	days	Judys	•	
Matella di Bassa di Hati Water Entre stabila ha JOROFO				days				days			
Metals : Boron-Hot Water Extractable by ICPOES		1									
Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS1	E487	22-Feb-2024	29-Feb-2024	180	7 days	<b>√</b>	29-Feb-2024	180	0 days	✓	
D111-24-001	L-101	221 05 2024	20-1 05-2024	days	, days	,	20-1 00-2024	days	Judys	•	
Market Program Had Water Entranchable In 1990 Fo				days				aays			
Metals : Boron-Hot Water Extractable by ICPOES		I	l				I				
Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS5	E487	22-Feb-2024	29-Feb-2024	180	7 days	<b>√</b>	29-Feb-2024	180	0 days	✓	
Di 11-24-000	L-101	221 05 2024	20-1 05-2024	days	, days	,	20-1 00-2024	days	Judys	•	
With the property of the state				days			<u> </u>	aays			
Metals : Boron-Hot Water Extractable by ICPOES											
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS1	E487	21-Feb-2024	29-Feb-2024	180	8 days	<b>√</b>	29-Feb-2024	180	0 days	✓	
D110-24-001	L-101	21-1 05-2024	20-1 60-2024	days	Juays	•	20-1 60-2024	days	o days	•	
				uays				uays			

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### Matrix: Soil/Solid

Evaluation: × =	Holding time exceedance ; ✓	= Within Holding Tin	ne

Watti. John John			Evaluation: W =				Tronding time onto	riolanig riii		
Analyte Group : Analytical Method	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	ng Times Eval		Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS7	E487	21-Feb-2024	29-Feb-2024	180	8 days	✓	29-Feb-2024	180	0 days	✓
				days				days		
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS1	E487	21-Feb-2024	29-Feb-2024	180	8 days	✓	29-Feb-2024	180	1 days	✓
				days				days		
Metals : Boron-Hot Water Extractable by ICPOES								,		
Glass soil jar/Teflon lined cap [ON MECP]							<u> </u>			
BH3-24-SS6	E487	21-Feb-2024	29-Feb-2024	180	8 days	✓	29-Feb-2024	180	1 days	✓
50 2.1 000				days	, -			davs	, -	
Marie Marie 1: 0. 1/0. I'll - OVA AO (1005)				dayo				dayo		
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)  Glass soil jar/Teflon lined cap [ON MECP]							I			
BH6-24-SS1	E510C	22-Feb-2024	29-Feb-2024	00	7 days	✓	29-Feb-2024	28 days	7 daya	✓
БП0-24-551	L310C	22-1 65-2024	29-F60-2024	28	7 uays	*	29-Feb-2024	20 uays	1 uays	•
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)					<u> </u>					
Glass soil jar/Teflon lined cap [ON MECP]	E5400	00 5 1 0004	00 = 1 0004			,	00 5 1 0004	00.1	<b>-</b> .	,
BH6-24-SS4	E510C	22-Feb-2024	29-Feb-2024	28	7 days	✓	29-Feb-2024	28 days	7 days	✓
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS1	E510C	22-Feb-2024	29-Feb-2024	28	7 days	✓	29-Feb-2024	28 days	7 days	✓
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS5	E510C	22-Feb-2024	29-Feb-2024	28	7 days	✓	29-Feb-2024	28 days	7 days	✓
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS1	E510C	21-Feb-2024	28-Feb-2024	28	8 days	✓	29-Feb-2024	28 days	8 days	✓
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS6	E510C	21-Feb-2024	28-Feb-2024	28	8 days	✓	29-Feb-2024	28 days	8 davs	✓
				days	,-				,-	
				uays						

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Matrix: Soil/Solid

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method  Container / Client Sample ID(s)	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	via.	
Container / Client Sample ID(s)										
I I			Preparation	Holding	g Times	Eval	Analysis Date	nalysis Date Holding Tim		
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS1	E510C	21-Feb-2024	29-Feb-2024	28	8 days	✓	29-Feb-2024	28 days	8 days	✓
				days						
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS7	E510C	21-Feb-2024	29-Feb-2024	28	8 days	✓	29-Feb-2024	28 days	8 days	✓
				days						
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS1	E440C	22-Feb-2024	29-Feb-2024	180	7 days	✓	29-Feb-2024	180	8 days	✓
				days	1			days	,	
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]							<u> </u>			
BH6-24-SS4	E440C	22-Feb-2024	29-Feb-2024	180	7 days	1	29-Feb-2024	180	8 days	✓
DI 10-24-334	L++00	22-1 05-202-	29-1 CD-2024	days	7 days	·	23-1 65-2024	days	0 days	•
				uays				uays		
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)				I	1					
Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS1	E440C	22-Feb-2024	29-Feb-2024	400	7 days	✓	29-Feb-2024	400	8 days	✓
BH1-24-551	E440C	22-Feb-2024	29-Feb-2024	180	7 days	•	29-Feb-2024	180	o days	•
				days				days		
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS5	E440C	22-Feb-2024	29-Feb-2024	180	7 days	✓	29-Feb-2024	180	8 days	✓
				days				days		
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS1	E440C	21-Feb-2024	28-Feb-2024	180	8 days	✓	29-Feb-2024	180	9 days	✓
				days				days		
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS6	E440C	21-Feb-2024	28-Feb-2024	180	8 days	✓	29-Feb-2024	180	9 days	✓
				days				days		
Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS1	E440C	21-Feb-2024	29-Feb-2024	180	8 days	✓	29-Feb-2024	180	9 days	✓
1				days	'			days		

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BH3-24-SS6





Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group : Analytical Method Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation Holding Times Eval Analysis Date Eval Rec Actual Rec Actual Date Metals : Metals in Soil/Solid by CRC ICPMS (<355 μm) Glass soil jar/Teflon lined cap [ON MECP] E440C 21-Feb-2024 29-Feb-2024 29-Feb-2024 ✓ BH5-24-SS7 8 days 9 days 180 180 days days Metals: Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] BH6-24-SS1 E484 22-Feb-2024 29-Feb-2024 180 7 days 1 29-Feb-2024 180 0 days ✓ days days Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] BH6-24-SS4 E484 22-Feb-2024 29-Feb-2024 7 days 1 29-Feb-2024 1 0 days 180 180 davs davs Metals: Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] E484 1 BH7-24-SS1 22-Feb-2024 29-Feb-2024 180 7 days 29-Feb-2024 180 0 days 1 days days Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] BH7-24-SS5 E484 22-Feb-2024 29-Feb-2024 7 days 1 29-Feb-2024 0 days ✓ 180 180 days days Metals: Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] E484 21-Feb-2024 1 ✓ BH5-24-SS1 29-Feb-2024 180 8 days 29-Feb-2024 180 0 days days days Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS7 E484 21-Feb-2024 29-Feb-2024 8 days 29-Feb-2024 0 days ✓ 180 180 davs days Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP] 1 BH3-24-SS1 E484 21-Feb-2024 29-Feb-2024 180 8 days 29-Feb-2024 180 1 days 1 days days Metals: Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry) Glass soil jar/Teflon lined cap [ON MECP]

21-Feb-2024

29-Feb-2024

8 days

180

days

E484

1 days

180

days

1

29-Feb-2024

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Client Lopers & Associates LOP23-029B Project



Matrix: Soil/Solid					Ev	/aluation: <mark>≭</mark> =	Holding time exce	edance ; •	= Within	Holding <sup>-</sup>
Analyte Group : Analytical Method	Method	Sampling Date	Ex	traction / P	reparation			Analys	Analysis	
Container / Client Sample ID(s)			Preparation	Analysis Date	Holding	Times	Eval			
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS1	E100-L	22-Feb-2024	29-Feb-2024	30	7 days	✓	29-Feb-2024	30 days	7 days	✓
				days						
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)									,	
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS4	E100-L	22-Feb-2024	29-Feb-2024	30	7 days	✓	29-Feb-2024	30 days	7 days	✓
				days						
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS1	E100-L	22-Feb-2024	29-Feb-2024	30	7 days	✓	29-Feb-2024	30 days	7 days	✓
				days						
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS5	E100-L	22-Feb-2024	29-Feb-2024	30	7 days	✓	29-Feb-2024	30 days	7 days	✓
				days						
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS1	E100-L	21-Feb-2024	29-Feb-2024	30	8 days	✓	29-Feb-2024	30 days	8 days	✓
				days						
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]							T			
BH5-24-SS7	E100-L	21-Feb-2024	29-Feb-2024	30	8 days	✓	29-Feb-2024	30 days	8 days	✓
				days				_	_	
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-24-SS1	E100-L	21-Feb-2024	29-Feb-2024	30	8 days	✓	29-Feb-2024	30 days	9 days	✓
				days				_	-	
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)								1		
Glass soil jar/Teflon lined cap [ON MECP]							T			
BH3-24-SS6	E100-L	21-Feb-2024	29-Feb-2024	30	8 days	1	29-Feb-2024	30 days	9 days	<b>✓</b>
				days	, ,-			. ,-	, ,	
Physical Tests : Moisture Content by Gravimetry				, 2				1		
Glass soil jar/Teflon lined cap [ON MECP]							I			
BH6-24-SS1	E144	22-Feb-2024					27-Feb-2024		5 days	
510 21 001		55 _0_						1	Jaays	

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Matrix: Soil/Solid

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)		, ,	Preparation	Holding	ling Times Eval A		Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH6-24-SS4	E144	22-Feb-2024					27-Feb-2024		5 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7-24-SS1	E144	22-Feb-2024					27-Feb-2024		5 days	
Physical Tests : Moisture Content by Gravimetry					1					
Glass soil jar/Teflon lined cap [ON MECP]	F444	00 5.1.0004					07 5 1 0004		5 J	
BH7-24-SS5	E144	22-Feb-2024					27-Feb-2024		5 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH3-24-SS1	E144	21-Feb-2024					27-Feb-2024		6 days	
BH3-24-351	L 144	21-1 65-2024					27-Feb-2024		0 uays	
Physical Tasks Maister Control by Continue										
Physical Tests : Moisture Content by Gravimetry Glass soil jar/Teflon lined cap [ON MECP]				<u> </u>			I	I		
BH3-24-SS6	E144	21-Feb-2024					27-Feb-2024		6 days	
5.10 2.7 550									J, -	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH4-24-SS2	E144	21-Feb-2024					27-Feb-2024		6 days	
Physical Tests : Moisture Content by Gravimetry								1		
Glass soil jar/Teflon lined cap [ON MECP]										
BH4-24-SS8	E144	21-Feb-2024					27-Feb-2024		6 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH5-24-SS1	E144	21-Feb-2024					27-Feb-2024		6 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]	F	04.5.1.000.								
BH5-24-SS7	E144	21-Feb-2024					27-Feb-2024		6 days	

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Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

Matrix: Soil/Solid						aluation. * -	Control in the exceedance;      ✓ = Within Holding Tire     Activity				
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	te Holding Times		Eval	
			Date	Rec	Actual			Rec	Actual		
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]											
BH6-24-SS1	E108A	22-Feb-2024	27-Feb-2024	30	6 days	✓	28-Feb-2024	30 days	7 days	✓	
				days							
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]											
BH6-24-SS4	E108A	22-Feb-2024	27-Feb-2024	30	6 days	✓	28-Feb-2024	30 days	7 days	✓	
				days							
Physical Tests: pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]											
BH7-24-SS1	E108A	22-Feb-2024	27-Feb-2024	30	6 days	✓	28-Feb-2024	30 days	7 days	✓	
				days					,		
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received				,							
Glass soil jar/Teflon lined cap [ON MECP]											
BH7-24-SS5	E108A	22-Feb-2024	27-Feb-2024	30	6 days	1	28-Feb-2024	30 days	7 days	✓	
BH 24-000	2.00/1		27 1 05 202 1	days	o dayo		201002021	oo aayo	, dayo	·	
				days							
Physical Tests: pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received				I	I						
Glass soil jar/Teflon lined cap [ON MECP] BH3-24-SS1	E108A	21-Feb-2024	28-Feb-2024	20	7 days	<b>√</b>	28-Feb-2024	30 days	8 days	<b>√</b>	
DN0-24-33 I	LIOOA	21-1 60-2024	20-1 eb-2024	30	1 days	•	20-1 65-2024	30 days	o uays	· ·	
				days							
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]	E400A	04 5-6 0004	00 5 1 0004		7.1	1	00 5 1 0004	00 1	0.1	<b>√</b>	
BH3-24-SS6	E108A	21-Feb-2024	28-Feb-2024	30	7 days	*	28-Feb-2024	30 days	8 days	•	
				days							
Physical Tests: pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]						,					
BH5-24-SS1	E108A	21-Feb-2024	27-Feb-2024	30	7 days	✓	28-Feb-2024	30 days	8 days	✓	
				days							
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received											
Glass soil jar/Teflon lined cap [ON MECP]											
BH5-24-SS7	E108A	21-Feb-2024	27-Feb-2024	30	7 days	✓	28-Feb-2024	30 days	8 days	✓	
				days							
Polychlorinated Biphenyls : PCB Aroclors by GC-MS											
Glass soil jar/Teflon lined cap [ON MECP]											
BH5-24-SS1	E687	21-Feb-2024	28-Feb-2024	365	7 days	✓	28-Feb-2024	40 days	0 days	✓	
				days							
	L			,							

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Lopers & Associates





Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Matrix: Soil/Solid					/aluation. * -	Holding time exceedance;    Within Holding Ti     Holding Time exceedance;    Holding Time     Holding Tim					
Analyte Group : Analytical Method	Method	Sampling Date	Ex	traction / Pr	reparation	1		Analys	sis		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Polychlorinated Biphenyls : PCB Aroclors by GC-MS											
Glass soil jar/Teflon lined cap [ON MECP]											
BH5-24-SS7	E687	21-Feb-2024	28-Feb-2024	365	7 days	✓	28-Feb-2024	40 days	0 days	✓	
				days							
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS											
Glass soil jar/Teflon lined cap [ON MECP]											
BH6-24-SS1	E641A	22-Feb-2024	27-Feb-2024	60	6 days	✓	28-Feb-2024	40 days	1 days	✓	
				days	-						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS											
Glass soil jar/Teflon lined cap [ON MECP]		1									
BH7-24-SS1	E641A	22-Feb-2024	27-Feb-2024	60	6 days	✓	28-Feb-2024	40 days	1 days	✓	
5 2 66.				days	,-			,-	, -		
				dayo							
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS											
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS1	E641A	21-Feb-2024	27-Feb-2024		7 days	✓	28-Feb-2024	40 days	1 days	<b>√</b>	
BH0-24-551	E041A	21-Feb-2024	27-Feb-2024	60	7 days	•	20-Feb-2024	40 days	Tuays	•	
				days							
Speciated Metals : Hexavalent Chromium (Cr VI) by IC											
Glass soil jar/Teflon lined cap [ON MECP]	F	00 5 1 0004	07.5.1.0004			,	00 5 1 0004		4 .	,	
BH6-24-SS1	E532	22-Feb-2024	27-Feb-2024	30	5 days	✓	28-Feb-2024	7 days	1 days	✓	
				days							
Speciated Metals : Hexavalent Chromium (Cr VI) by IC											
Glass soil jar/Teflon lined cap [ON MECP]											
BH6-24-SS4	E532	22-Feb-2024	27-Feb-2024	30	5 days	✓	28-Feb-2024	7 days	1 days	✓	
				days							
Speciated Metals : Hexavalent Chromium (Cr VI) by IC											
Glass soil jar/Teflon lined cap [ON MECP]											
BH7-24-SS1	E532	22-Feb-2024	27-Feb-2024	30	5 days	✓	28-Feb-2024	7 days	1 days	✓	
				days							
Speciated Metals : Hexavalent Chromium (Cr VI) by IC						I		1			
Glass soil jar/Teflon lined cap [ON MECP]	T	I					I				
BH7-24-SS5	E532	22-Feb-2024	27-Feb-2024	30	5 days	✓	28-Feb-2024	7 days	1 days	✓	
				days	1				,		
Cussisted Matels : Havevelant Chromium (Cv.VII) by IC				,-							
Speciated Metals: Hexavalent Chromium (Cr VI) by IC							I				
Glass soil jar/Teflon lined cap [ON MECP] BH3-24-SS1	E532	21-Feb-2024	27-Feb-2024	20	6 days	<b>√</b>	28-Feb-2024	7 days	1 days	✓	
DN-24-00 I	L332	21-1 GD-2024	21-F6b-2024	30	o uays	•	20-Feb-2024	1 uays	i uays	•	
				days							

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Aatrix: Soil/Solid			_			valuation. * =	Holding time exce			Holding I
Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pi	•			Analys		
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Hexavalent Chromium (Cr VI) by IC						I				
Glass soil jar/Teflon lined cap [ON MECP] BH3-24-SS6	E532	21-Feb-2024	27-Feb-2024	30 days	6 days	✓	28-Feb-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS1	E532	21-Feb-2024	27-Feb-2024	30 days	6 days	<b>✓</b>	28-Feb-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH5-24-SS7	E532	21-Feb-2024	27-Feb-2024	30 days	6 days	✓	28-Feb-2024	7 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH6-24-SS1	E611A	22-Feb-2024	26-Feb-2024	14 days	5 days	4	26-Feb-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH6-24-SS4	E611A	22-Feb-2024	26-Feb-2024	14 days	5 days	✓	26-Feb-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH7-24-SS1	E611A	22-Feb-2024	26-Feb-2024	14 days	5 days	4	26-Feb-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH7-24-SS5	E611A	22-Feb-2024	26-Feb-2024	14 days	5 days	✓	26-Feb-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH5-24-SS1	E611A	21-Feb-2024	26-Feb-2024	14 days	6 days	✓	26-Feb-2024	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-M	s									
Glass soil methanol vial [ON MECP] BH3-24-SS1	E611D	21-Feb-2024	25-Feb-2024	14 days	5 days	✓	25-Feb-2024	40 days	0 days	✓

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Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)  Preparation Date    Holding Times Rec   Actual   Analysis Date   Holding Times Rec   Actual   Eval   Analysis Date   Analysis Date   Analysis Date   Analysis Date   Eval   Analysis Date   Analysis Date								rioraning annie exteet	, ,		
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH3-24-SS6  Glass soil methanol vial [ON MECP]  BH4-24-SS2  E611D  21-Feb-2024  E611D  21-Feb-2024  25-Feb-2024  25-Feb-2024  14 5 days  ✓  25-Feb-2024  40 days  0 days  ✓  Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH4-24-SS2  E611D  21-Feb-2024  25-Feb-2024  14 5 days  ✓  25-Feb-2024  40 days  0 days  ✓  Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	Analyte Group : Analytical Method	Method	Sampling Date	Ext	raction / Pr	eparation					
Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH3-24-SS6  E611D  21-Feb-2024  25-Feb-2024  14 5 days  ✓  25-Feb-2024  40 days  ✓  Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH4-24-SS2  E611D  21-Feb-2024  25-Feb-2024  14 5 days  ✓  25-Feb-2024  40 days  0 days  ✓  Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	Container / Client Sample ID(s)			Preparation	Holding	Holding Times Eval		Analysis Date	Holding Times		Eval
Glass soil methanol vial [ON MECP] BH3-24-SS6  E611D 21-Feb-2024 25-Feb-2024 14 5 days ✓ 25-Feb-2024 40 days 0 days ✓ Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS Glass soil methanol vial [ON MECP] BH4-24-SS2  E611D 21-Feb-2024 25-Feb-2024 14 5 days ✓ 25-Feb-2024 40 days 0 days ✓ Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS Glass soil methanol vial [ON MECP]				Date	Rec	Actual			Rec	Actual	
BH3-24-SS6  E611D  21-Feb-2024  25-Feb-2024  14	Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH4-24-SS2  Feb-2024  Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  Glass soil methanol vial [ON MECP]	Glass soil methanol vial [ON MECP]										
Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]  BH4-24-SS2  E611D  21-Feb-2024  25-Feb-2024  14  5 days  ✓  25-Feb-2024  40 days  Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	BH3-24-SS6	E611D	21-Feb-2024	25-Feb-2024	14	5 days	✓	25-Feb-2024	40 days	0 days	✓
Glass soil methanol vial [ON MECP] BH4-24-SS2  E611D 21-Feb-2024 25-Feb-2024 14 5 days  ✓ 25-Feb-2024 40 days  Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS Glass soil methanol vial [ON MECP]					days						
BH4-24-SS2  E611D  21-Feb-2024  25-Feb-2024  14  days  ✓  25-Feb-2024  40 days  ✓  Volatile Organic Compounds: VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	Glass soil methanol vial [ON MECP]										
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS  Glass soil methanol vial [ON MECP]	BH4-24-SS2	E611D	21-Feb-2024	25-Feb-2024	14	5 days	✓	25-Feb-2024	40 days	0 days	✓
Glass soil methanol vial [ON MECP]					days						
	Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
BH4-24-SS8	Glass soil methanol vial [ON MECP]										
	BH4-24-SS8	E611D	21-Feb-2024	25-Feb-2024	14	5 days	✓	25-Feb-2024	40 days	0 days	✓
days					days						
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS	Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]	Glass soil methanol vial [ON MECP]										
BH5-24-SS7	BH5-24-SS7	E611D	21-Feb-2024	25-Feb-2024	14	5 days	✓	25-Feb-2024	40 days	0 days	✓
days					days						

### **Legend & Qualifier Definitions**

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

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# **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.

Quality Control Sample Type		Evaluati		ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1345622	2	20	10.0	5.0	1
BTEX by Headspace GC-MS	E611A	1345138	1	20	5.0	5.0	<b>√</b>
CCME PHC - F1 by Headspace GC-FID	E581.F1	1344270	2	36	5.5	5.0	<b>√</b>
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1345624	1	20	5.0	5.0	<b>√</b>
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1345618	2	25	8.0	5.0	<b>√</b>
Hexavalent Chromium (Cr VI) by IC	E532	1345392	1	20	5.0	5.0	<b>√</b>
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1345620	2	14	14.2	5.0	<b>√</b>
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1345621	2	30	6.6	5.0	<b>√</b>
Moisture Content by Gravimetry	E144	1345625	2	40	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1345623	1	5	20.0	5.0	✓
PCB Aroclors by GC-MS	E687	1346852	1	11	9.0	5.0	<b>√</b>
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1345619	2	40	5.0	5.0	<b>√</b>
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1345617	2	24	8.3	5.0	<b>√</b>
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1344269	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1346815	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1345622	4	20	20.0	10.0	✓
BTEX by Headspace GC-MS	E611A	1345138	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1344270	2	36	5.5	5.0	<b>√</b>
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1345624	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1345618	4	25	16.0	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1345392	2	20	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1345620	4	14	28.5	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1345621	4	30	13.3	10.0	✓
Moisture Content by Gravimetry	E144	1345625	2	40	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1345623	1	5	20.0	5.0	✓
PCB Aroclors by GC-MS	E687	1346852	1	11	9.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1345619	2	40	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1345617	4	24	16.6	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1344269	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1346815	1	20	5.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1345622	2	20	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1345138	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1344270	2	36	5.5	5.0	1

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Matrix: Soil/Solid		Evaluation	n: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	hin specificatior
Quality Control Sample Type			Co	unt		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1345624	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1345618	2	25	8.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1345392	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 μm)	E510C	1345620	2	14	14.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 μm)	E440C	1345621	2	30	6.6	5.0	✓
Moisture Content by Gravimetry	E144	1345625	2	40	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1345623	1	5	20.0	5.0	✓
PCB Aroclors by GC-MS	E687	1346852	1	11	9.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1345617	2	24	8.3	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1344269	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1346815	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1345138	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1344270	2	36	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1345624	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1345623	1	5	20.0	5.0	✓
PCB Aroclors by GC-MS	E687	1346852	1	11	9.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1344269	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1346815	1	20	5.0	5.0	✓

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# **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
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A  ALS Environmental -  Waterloo	Soil/Solid	MECP E3530	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.  This method is equivalent to ASTM D4972 and is acceptable for topsoil analysis.
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 HCI.  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.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487	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.
	ALS Environmental - Waterloo			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 HNO3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
	ALS Environmental - Waterloo			
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 -	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).
	Waterloo			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	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
	ALS Environmental - Waterloo			headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D  ALS Environmental -	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
	Waterloo			the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A  ALS Environmental -	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
	Waterloo			PAH Soil Quality Guidelines fact sheet (2010) or ABT1.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PCB Aroclors by GC-MS	E687	Soil/Solid	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
	ALS Environmental - Waterloo			
F1-BTEX	EC580	Soil/Solid	CCME PHC in Soil - Tier	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene,
	20000		1	ethylbenzene and xylenes (BTEX).
	ALS Environmental -			
2 544 54 (22 252)	Waterloo	0 3/0 1/1		
Sum F1 to F4 (C6-C50)	EC581	Soil/Solid	CCME PHC in Soil - Tier	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sq is not used within this calculation due to
	ALS Environmental -		!	overlap with other fractions.
	Waterloo			'
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108	Soil/Solid	BC WLAP METHOD:	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample
			PH, ELECTROMETRIC,	with deionized/distilled water at a 1:2 ratio of sediment to water.
	ALS Environmental - Waterloo		SOIL	
Leach 1:2 Soil : 0.01CaCl2 - As Received for	EP108A	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M
pH	21 100/1			calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is
i e	ALS Environmental -			separated from the soil by centrifuging, settling or decanting and then analyzed using a
	Waterloo			pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.
	ALS Environmental -			
	Waterloo			
Digestion for Metals and Mercury (355 μm Sieve)	EP440C	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.
,	ALS Environmental -			, ,
	Waterloo			
Boron-Hot Water Extractable	EP487	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.
	ALS Environmental -			
	Waterloo			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)	EP532	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as
for IC				described in EPA 3060A.
	ALS Environmental -			
	Waterloo	0.370.33	EDA 5005A (*** 1)	
VOCs Methanol Extraction for Headspace	EP581	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace
Analysis	ALS Environmental -			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
	Waterloo			law.
		<u>I</u>	1	( second

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane-Acetone Tumbler	EP601	Soil/Solid	CCME PHC in Soil - Tier	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted
Extraction			1 (mod)	with 1:1 hexane:acetone using a rotary extractor.
	ALS Environmental -			
	Waterloo			
Pesticides, PCB, PAH, and Neutral Extractable	EP660	Soil/Solid	EPA 3570 (mod)	A homogenized subsample is extracted with organic solvents using a mechanical
Chlorinated Hydrocarbons Extraction				shaker.
•	ALS Environmental -			
	Waterloo			

### **ALS Canada Ltd.**



# **QUALITY CONTROL REPORT**

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Client :Lopers & Associates :ALS Environmental - Waterloo
Contact :Luke Lopers :Account Manager :Costas Farassoglou

Contact : Luke Lopers : Costas Farassoglou

Address : 30 Lansfield Way : Address : 60 Northland Road, Unit 1

Ottawa ON Canada K2G 3V8 Waterloo, Ontario Canada N2V 2B8

Telephone : Telephone : 613 225 8279

Project : LOP23-029B Date Samples Received : 22-Feb-2024 12:30

PO :---- Date Analysis Commenced : 25-Feb-2024

C-O-C number :---- Issue Date : 29-Feb-2024 19:46

Sampler : CLIENT 613 327 9073

Site : SOA 2024

No. of samples received : 10

No. of samples analysed : 10

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	
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario	
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 Inorganics, Waterloo, Ontario	
Nik Perkio	Inorganics Analyst	Waterloo Metals, Waterloo, Ontario	
Niki Goebel	Inorganics Analyst	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.

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### 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											
WT2403940-006	BH5-24-SS7	Conductivity (1:2 leachate)		E100-L	5.00	μS/cm	1.39 mS/cm	1420	1.85%	20%	
Physical Tests (QC	Lot: 1345619)										
WT2403940-005	BH5-24-SS1	pH (1:2 soil:CaCl2-aq)		E108A	0.10	pH units	7.43	7.61	2.39%	5%	
Physical Tests (QC	Lot: 1345625)										
WT2403940-005	BH5-24-SS1	Moisture		E144	0.25	%	10.7	10.1	5.97%	20%	
Physical Tests (QC	Lot: 1345636)										
WT2403900-001	Anonymous	Moisture		E144	0.25	%	19.4	19.4	0.0810%	20%	
Physical Tests (QC	Lot: 1346893)										
WT2403940-001	BH3-24-SS1	pH (1:2 soil:CaCl2-aq)		E108A	0.10	pH units	7.83	7.84	0.128%	5%	
Physical Tests (QC	Lot: 1347031)										
WT2404042-001	Anonymous	Conductivity (1:2 leachate)		E100-L	5.00	μS/cm	0.178 mS/cm	188	5.64%	20%	
Cyanides (QC Lot:	1346815)										
WT2403940-001	BH3-24-SS1	Cyanide, weak acid dissociable		E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
Metals (QC Lot: 134	45617)										
WT2403940-006	BH5-24-SS7	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	13.1	13.3	1.52%	30%	
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	3.44	3.52	2.30%	30%	
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	244	249	2.03%	30%	
Metals (QC Lot: 134	45620)										
WT2403940-005	BH5-24-SS1	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0407	0.0405	0.369%	40%	
Metals (QC Lot: 134	45621)										
WT2403940-005	BH5-24-SS1	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	3.48	3.55	2.10%	30%	
		Barium	7440-39-3	E440C	0.50	mg/kg	119	125	4.40%	40%	
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.52	0.55	0.03	Diff <2x LOR	
		Boron	7440-42-8	E440C	5.0	mg/kg	12.2	12.9	0.7	Diff <2x LOR	
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.124	0.112	0.012	Diff <2x LOR	
		Chromium	7440-47-3	E440C	0.50	mg/kg	25.7	27.9	8.34%	30%	
		Cobalt	7440-48-4	E440C	0.10	mg/kg	8.94	9.20	2.88%	30%	
		Copper	7440-50-8	E440C	0.50	mg/kg	15.5	15.8	1.66%	30%	
		Lead	7439-92-1	E440C	0.50	mg/kg	9.03	8.51	5.87%	40%	

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number | Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Difference Limits Result Result Metals (QC Lot: 1345621) - continued WT2403940-005 BH5-24-SS1 Molybdenum 7439-98-7 E440C 0.10 mg/kg 0.72 0.74 2.41% 40% Nickel 7440-02-0 E440C 0.50 mg/kg 21.3 21.8 2.32% 30% 7782-49-2 E440C 0.20 <0.20 <0.20 0 Diff <2x LOR Selenium mg/kg 7440-22-4 E440C 0.10 0.008 Diff <2x LOR Silver mg/kg 0.14 0.15 Thallium 7440-28-0 E440C 0.050 mg/kg 0.215 0.212 0.003 Diff <2x LOR 7440-61-1 E440C 0.050 0.659 7.02% 30% Uranium 0.614 mg/kg Vanadium 7440-62-2 E440C 0.20 mg/kg 48.0 53.7 11.2% 30% 7440-66-6 E440C 2.0 37.2 37.5 0.630% 30% Zinc mg/kg ----Metals (QC Lot: 1345622) WT2403940-005 BH5-24-SS1 Boron, hot water soluble 7440-42-8 E487 0.10 0.19 0.21 0.02 Diff <2x LOR mg/kg Metals (QC Lot: 1347027) WT2403940-001 BH3-24-SS1 Boron, hot water soluble 7440-42-8 E487 mg/kg 0.19 0.20 0.004 Diff <2x LOR ----Metals (QC Lot: 1347028) WT2403940-001 BH3-24-SS1 Diff <2x LOR 7440-36-0 E440C 0.10 < 0.10 < 0.10 0 Antimony mg/kg Arsenic 7440-38-2 E440C 0.10 3.94 3.86 2.06% 30% mg/kg ----1.98% E440C 0.50 175 40% Barium 7440-39-3 172 mg/kg Beryllium 7440-41-7 E440C 0.10 mg/kg 0.78 0.75 3.79% 30% Diff <2x LOR Boron 7440-42-8 E440C 5.0 12.1 11.5 0.6 mg/kg 0.542% 30% 7440-43-9 E440C 0.020 0.168 0.168 Cadmium mg/kg Chromium 7440-47-3 E440C 0.50 mg/kg 46.8 45.8 2.12% 30% Cobalt 7440-48-4 E440C 3.65% 30% 0.10 mg/kg 12.2 11.7 7440-50-8 E440C 0.50 24.1 23.2 4.02% 30% Copper mg/kg Lead 7439-92-1 E440C 0.50 mg/kg 12.6 11.9 5.92% 40% Molybdenum 7439-98-7 E440C 0.10 mg/kg 0.71 0.70 1.07% 40% 7440-02-0 E440C 0.50 2.06% 30% Nickel 29.2 28.6 mg/kg 7782-49-2 Diff <2x LOR Selenium E440C 0.20 mg/kg < 0.20 < 0.20 0 7440-22-4 E440C 0.10 0.16 0.16 0.003 Diff <2x LOR Silver mg/kg 7440-28-0 E440C 0.050 Diff <2x LOR 0.246 0.232 0.014 Thallium mg/kg 7440-61-1 E440C 0.050 0.682 30% Uranium mg/kg 0.730 6.81% 7440-62-2 E440C 0.20 2.66% 30% Vanadium mg/kg 68.6 66.8 Zinc 7440-66-6 E440C 2.0 mg/kg 67.2 65.6 2.51% 30% \_\_\_\_ Metals (QC Lot: 1347029) WT2403940-001 BH3-24-SS1 7439-97-6 E510C 0.0050 0.0471 0.0449 4.82% 40% Mercury mg/kg Metals (QC Lot: 1347030)

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Laboratory Duplicate (DUP) Report Sub-Matrix: Soil/Solid Laboratory sample ID Client sample ID Analyte CAS Number | Method LOR Unit Original **Duplicate** RPD(%) or **Duplicate** Qualifier Result Result Difference Limits Polycyclic Aromatic Hydrocarbons (QC Lot: 1345623) - continued WT2403940-005 BH5-24-SS1 E641A Benzo(k)fluoranthene 207-08-9 0.050 mg/kg < 0.050 < 0.050 0 Diff <2x LOR Diff <2x LOR Chrysene 218-01-9 E641A 0.050 mg/kg < 0.050 < 0.050 0 Dibenz(a,h)anthracene 53-70-3 E641A 0.050 < 0.050 < 0.050 0 Diff <2x LOR mg/kg 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 193-39-5 E641A 0.050 <0.050 < 0.050 0 Diff <2x LOR Indeno(1,2,3-c,d)pyrene mg/kg 90-12-0 E641A < 0.030 0 Diff <2x LOR Methylnaphthalene, 1-0.030 mg/kg < 0.030 Methylnaphthalene, 2-91-57-6 E641A 0.030 mg/kg < 0.030 < 0.030 0 Diff <2x LOR 91-20-3 E641A 0.010 <0.010 < 0.010 0 Diff <2x LOR Naphthalene mg/kg \_\_\_\_ 85-01-8 E641A 0.050 < 0.050 < 0.050 Diff <2x LOR Phenanthrene mg/kg 0 Pyrene 129-00-0 E641A 0.050 mg/kg < 0.050 < 0.050 0 Diff <2x LOR Polychlorinated Biphenyls (QC Lot: 1346852) WT2404094-001 Anonymous 12674-11-2 Diff <2x LOR Aroclor 1016 E687 0.010 mg/kg < 0.010 < 0.010 0 11104-28-2 E687 0.010 mg/kg <0.010 < 0.010 0 Diff <2x LOR Aroclor 1221 \_\_\_\_ E687 0.010 <0.010 < 0.010 Diff <2x LOR Aroclor 1232 11141-16-5 mg/kg 0 Aroclor 1242 53469-21-9 E687 0.010 mg/kg <0.010 < 0.010 0 Diff <2x LOR E687 0.010 <0.010 Diff <2x LOR Aroclor 1248 12672-29-6 mg/kg <0.010 0 11097-69-1 E687 0.010 <0.010 Diff <2x LOR Aroclor 1254 mg/kg < 0.010 0 Aroclor 1260 11096-82-5 E687 0.010 mg/kg < 0.010 < 0.010 0 Diff <2x LOR Aroclor 1262 37324-23-5 E687 0.010 mg/kg <0.010 < 0.010 0 Diff <2x LOR ----11100-14-4 E687 0.010 < 0.010 < 0.010 0 Diff <2x LOR Aroclor 1268 mg/kg

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### 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.

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1345618)				nesun	
Conductivity (1:2 leachate)	E100-L	5	μS/cm	<5.00	
Physical Tests (QCLot: 1345625)					
Moisture	E144	0.25	%	<0.25	
Physical Tests (QCLot: 1345636)				,	
Moisture	E144	0.25	%	<0.25	
Physical Tests (QCLot: 1347031)					
Conductivity (1:2 leachate)	E100-L	5	μS/cm	<5.00	
yanides (QCLot: 1346815)					
Cyanide, weak acid dissociable	E336A	0.05	mg/kg	<0.050	
letals (QCLot: 1345617)					
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	
letals (QCLot: 1345620)					
Mercury	7439-97-6 E510C	0.005	mg/kg	<0.0050	
letals (QCLot: 1345621)					
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1345621) - continued						
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	
letals (QCLot: 1345622)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	
Metals (QCLot: 1347027)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	
Metals (QCLot: 1347028)						
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	
letals (QCLot: 1347029)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	
letals (QCLot: 1347030)						
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	
Speciated Metals (QCLot: 1345392)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	
/olatile Organic Compounds (QCLot: 1	344269)					
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	

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Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
olatile Organic Compounds (QCLot	: 1344269) - continued				
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	
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (Q	CLot: 1344269) - continued					
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 (Q	CLot: 1345138)					
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: 1344270)						
F1 (C6-C10)		E581.F1	5	mg/kg	<5.0	
Hydrocarbons (QCLot: 1345139)						
F1 (C6-C10)		E581.F1	5	mg/kg	<5.0	
Hydrocarbons (QCLot: 1345624)						
F2 (C10-C16)		E601.SG-L	10	mg/kg	<10	
F3 (C16-C34)		E601.SG-L	50	mg/kg	<50	
F4 (C34-C50)		E601.SG-L	50	mg/kg	<50	
Polycyclic Aromatic Hydrocarbo	ns (QCLot: 1345623)					
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	

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Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocar	bons (QCLot: 1345623) - conti	nued				
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	
olychlorinated Biphenyls (Q	CLot: 1346852)					
Aroclor 1016	12674-11-2	E687	0.01	mg/kg	<0.010	
Aroclor 1221	11104-28-2	E687	0.01	mg/kg	<0.010	
Aroclor 1232	11141-16-5	E687	0.01	mg/kg	<0.010	
Aroclor 1242	53469-21-9	E687	0.01	mg/kg	<0.010	
Aroclor 1248	12672-29-6	E687	0.01	mg/kg	<0.010	
Aroclor 1254	11097-69-1	E687	0.01	mg/kg	<0.010	
Aroclor 1260	11096-82-5	E687	0.01	mg/kg	<0.010	
Aroclor 1262	37324-23-5	E687	0.01	mg/kg	<0.010	
Aroclor 1268	11100-14-4	E687	0.01	mg/kg	<0.010	

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### 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 Co	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Physical Tests (QCLot: 1345618)									
Conductivity (1:2 leachate)		E100-L	5	μS/cm	1409 μS/cm	99.1	90.0	110	
Physical Tests (QCLot: 1345619)									
pH (1:2 soil:CaCl2-aq)		E108A		pH units	7 pH units	99.6	98.0	102	
Physical Tests (QCLot: 1345625)									
Moisture		E144	0.25	%	50 %	98.9	90.0	110	
Physical Tests (QCLot: 1345636)									
Moisture		E144	0.25	%	50 %	99.6	90.0	110	
Physical Tests (QCLot: 1346893)		E4004		11 "			00.2	400	1
pH (1:2 soil:CaCl2-aq)		E108A		pH units	7 pH units	99.6	98.0	102	
Physical Tests (QCLot: 1347031)		E400 I		24			00.0	440	
Conductivity (1:2 leachate)		E100-L	5	μS/cm	1409 μS/cm	97.3	90.0	110	
Cyanides (QCLot: 1346815)									
Cyanide, weak acid dissociable		E336A	0.05	mg/kg	1.25 mg/kg	95.5	80.0	120	
Metals (QCLot: 1345617)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	108	80.0	120	
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	103	80.0	120	
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	105	80.0	120	
Metals (QCLot: 1345620)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	110	80.0	120	
Metals (QCLot: 1345621)									
Antimony	7440-36-0		0.1	mg/kg	100 mg/kg	111	80.0	120	
Arsenic	7440-38-2		0.1	mg/kg	100 mg/kg	118	80.0	120	
Barium	7440-39-3		0.5	mg/kg	25 mg/kg	119	80.0	120	
Beryllium	7440-41-7		0.1	mg/kg	10 mg/kg	105	80.0	120	
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	102	80.0	120	
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	108	80.0	120	
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	116	80.0	120	
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	114	80.0	120	
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	114	80.0	120	
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	109	80.0	120	

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Metals (QCLot: 1345621) - continued Molybdenum 7439-98-7 E440C 80.0 120 0.1 mg/kg 25 mg/kg 109 0.5 7440-02-0 E440C mg/kg 0.08 120 Nickel 50 mg/kg 114 Selenium 7782-49-2 E440C 0.2 mg/kg 100 mg/kg 110 0.08 120 Silver 7440-22-4 E440C 0.1 mg/kg 10 mg/kg 107 80.0 120 7440-28-0 E440C 0.05 Thallium mg/kg 100 mg/kg 106 80.0 120 Uranium 7440-61-1 E440C 0.05 mg/kg 0.5 mg/kg 108 80.0 120 7440-62-2 E440C 0.2 Vanadium mg/kg 50 mg/kg 117 80.0 120 7440-66-6 E440C 2 mg/kg 110 80.0 120 Zinc 50 mg/kg Metals (QCLot: 1345622) 7440-42-8 E487 0.1 Boron, hot water soluble 70.0 130 mg/kg 1.33333 mg/kg 105 Metals (QCLot: 1347027) Boron, hot water soluble 7440-42-8 E487 0.1 mg/kg 108 70.0 130 1.33333 mg/kg Metals (QCLot: 1347028) Antimony 7440-36-0 E440C 0.1 mg/kg 100 mg/kg 113 80.0 120 Arsenic 7440-38-2 E440C 0.1 mg/kg 100 mg/kg 118 0.08 120 7440-39-3 E440C 0.5 Barium mg/kg 25 mg/kg 110 0.08 120 7440-41-7 E440C 0.1 80.0 120 Beryllium mg/kg 10 mg/kg 109 7440-42-8 E440C 80.0 120 Boron mg/kg 100 mg/kg 101 7440-43-9 E440C 0.02 mg/kg 102 80.0 120 Cadmium 10 mg/kg 7440-47-3 E440C 0.5 80.0 120 Chromium mg/kg 25 mg/kg 113 7440-48-4 E440C 0.1 80.0 120 Cobalt mg/kg 25 mg/kg 110 7440-50-8 E440C 0.5 mg/kg 109 80.0 120 Copper 25 mg/kg 7439-92-1 E440C 0.5 120 Lead mg/kg 50 mg/kg 108 80.0 Molybdenum 7439-98-7 E440C 0.1 mg/kg 25 mg/kg 106 0.08 120 Nickel 7440-02-0 E440C 0.5 mg/kg 50 mg/kg 109 80.0 120 7782-49-2 E440C 0.2 Selenium mg/kg 100 mg/kg 106 80.0 120 Silver 7440-22-4 E440C 0.1 mg/kg 97.0 80.0 120 10 mg/kg Thallium 7440-28-0 E440C 0.05 mg/kg 100 mg/kg 105 80.0 120 7440-61-1 E440C 0.05 80.0 120 Uranium mg/kg 0.5 mg/kg 97.3 7440-62-2 E440C 0.2 80.0 120 Vanadium mg/kg 50 mg/kg 116 7440-66-6 E440C mg/kg 80.0 120 Zinc 50 mg/kg 107 Metals (QCLot: 1347029) Mercury 7439-97-6 E510C 0.005 80.0 120 mg/kg 0.1 mg/kg 118 Metals (QCLot: 1347030) 7440-70-2 E484 0.5 300 mg/L 80.0 120 Calcium, soluble ion content mg/L 108 0.5 80.0 120 Magnesium, soluble ion content 7439-95-4 E484 mg/L 50 mg/L 103

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Metals (QCLot: 1347030) - continued 17341-25-2 E484 0.5 80.0 120 Sodium, soluble ion content mg/L 50 mg/L 106 Speciated Metals (QCLot: 1345392) Chromium, hexavalent [Cr VI] 18540-29-9 E532 0.1 mg/kg 0.8 mg/kg 97.4 80.0 120 Volatile Organic Compounds (QCLot: 1344269) Acetone 67-64-1 E611D 0.5 mg/kg 128 60.0 140 3.475 mg/kg 71-43-2 E611D 0.005 70.0 130 Benzene mg/kg 3.475 mg/kg 96.3 Bromodichloromethane 75-27-4 E611D 0.05 mg/kg 101 50.0 140 3.475 mg/kg Bromoform 75-25-2 E611D 0.05 70.0 130 mg/kg 3.475 mg/kg 102 Bromomethane 74-83-9 E611D 0.05 mg/kg 50.0 140 3.475 mg/kg 98.2 56-23-5 E611D 0.05 Carbon tetrachloride mg/kg 3.475 mg/kg 94.0 70.0 130 Chlorobenzene 108-90-7 E611D 0.05 mg/kg 3.475 mg/kg 94.6 70.0 130 67-66-3 E611D 0.05 70.0 Chloroform mg/kg 3.475 mg/kg 98.3 130 0.05 124-48-1 E611D 60.0 130 mg/kg Dibromochloromethane 3.475 mg/kg 100 106-93-4 E611D 0.05 70.0 130 Dibromoethane, 1,2mg/kg 3.475 mg/kg 102 95-50-1 E611D 0.05 70.0 130 Dichlorobenzene, 1,2mg/kg 3.475 mg/kg 95.0 Dichlorobenzene, 1,3-541-73-1 E611D 0.05 mg/kg 70.0 130 3.475 mg/kg 94.0 106-46-7 E611D 0.05 130 Dichlorobenzene, 1,4mg/kg 70.0 3.475 mg/kg 95.7 75-71-8 E611D 0.05 50.0 140 Dichlorodifluoromethane mg/kg 3.475 mg/kg 54.7 Dichloroethane, 1,1-75-34-3 E611D 0.05 mg/kg 3.475 mg/kg 91.8 60.0 130 107-06-2 E611D Dichloroethane, 1,2-0.05 mg/kg 3.475 mg/kg 108 60.0 130 Dichloroethylene, 1,1-75-35-4 E611D 0.05 mg/kg 60.0 130 3.475 mg/kg 91.1 156-59-2 E611D 0.05 70.0 Dichloroethylene, cis-1,2mg/kg 3.475 mg/kg 97.3 130 156-60-5 E611D 0.05 60.0 130 Dichloroethylene, trans-1,2mg/kg 3.475 mg/kg 94.6 75-09-2 E611D 0.045 70.0 130 Dichloromethane mg/kg 3.475 mg/kg 106 Dichloropropane, 1,2-78-87-5 E611D 0.05 mg/kg 98.5 70.0 130 3.475 mg/kg 10061-01-5 E611D 0.03 70.0 130 Dichloropropylene, cis-1,3mg/kg 3.475 mg/kg 105 10061-02-6 E611D 0.03 mg/kg 102 70.0 130 Dichloropropylene, trans-1,3-3.475 mg/kg 100-41-4 E611D 0.015 70.0 130 Ethylbenzene mg/kg 3.475 mg/kg 86.3 110-54-3 E611D 0.05 mg/kg 70.0 130 Hexane, n-3.475 mg/kg 81.2 Methyl ethyl ketone [MEK] 78-93-3 E611D 0.5 mg/kg 3.475 mg/kg 125 60.0 140 Methyl isobutyl ketone [MIBK] 108-10-1 E611D 0.5 mg/kg 105 60.0 140 3.475 mg/kg Methyl-tert-butyl ether [MTBE] 1634-04-4 E611D 0.04 mg/kg 3.475 mg/kg 94.2 70.0 130 100-42-5 E611D 0.05 70.0 Styrene mg/kg 3.475 mg/kg 91.1 130 630-20-6 E611D Tetrachloroethane, 1,1,1,2-0.05 mg/kg 3.475 mg/kg 95.4 60.0 130

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Volatile Organic Compounds (QCLot: 1344269) - continued Tetrachloroethane, 1,1,2,2-79-34-5 E611D 0.05 3.475 mg/kg 60.0 130 mg/kg 109 127-18-4 E611D 0.05 mg/kg 60.0 130 Tetrachloroethylene 3.475 mg/kg 93.0 Toluene 108-88-3 E611D 0.05 mg/kg 3.475 mg/kg 87.1 70.0 130 Trichloroethane, 1,1,1-71-55-6 E611D 0.05 mg/kg 3.475 mg/kg 93.3 60.0 130 79-00-5 E611D Trichloroethane, 1,1,2-0.05 mg/kg 3.475 mg/kg 100 60.0 130 Trichloroethylene 79-01-6 E611D 0.01 mg/kg 3.475 mg/kg 96.7 60.0 130 75-69-4 E611D 0.05 140 Trichlorofluoromethane mg/kg 3.475 mg/kg 86.7 50.0 75-01-4 E611D 0.02 mg/kg 85.3 60.0 140 Vinyl chloride 3.475 mg/kg 179601-23-1 E611D 0.03 70.0 130 Xylene, m+pmg/kg 6.95 mg/kg 92.5 Xylene, o-95-47-6 E611D 0.03 70.0 130 mg/kg 88.5 3.475 mg/kg Volatile Organic Compounds (QCLot: 1345138) Benzene 71-43-2 E611A 0.005 70.0 130 mg/kg 3.475 mg/kg 93.2 0.015 Ethylbenzene 100-41-4 E611A 70.0 130 mg/kg 85.3 3.475 mg/kg 108-88-3 E611A Toluene 0.05 70.0 130 mg/kg 3.475 mg/kg 95.7 179601-23-1 E611A 0.03 mg/kg 88.7 70.0 130 Xylene, m+p-6.95 mg/kg Xylene, o-95-47-6 E611A 0.03 mg/kg 3.475 mg/kg 88.9 70.0 130 Hydrocarbons (QCLot: 1344270) ---- E581.F1 5 69.1875 mg/kg 80.0 120 F1 (C6-C10) mg/kg 81.4 Hydrocarbons (QCLot: 1345139) ---- E581.F1 5 mg/kg 69.1875 mg/kg 96.3 80.0 120 Hydrocarbons (QCLot: 1345624) F2 (C10-C16) ---- E601.SG-L 10 70.0 130 mg/kg 671.175 mg/kg 115 F3 (C16-C34) ---- E601.SG-L 50 mg/kg 1384.058 mg/kg 117 70.0 130 ---- E601.SG-L 50 70.0 F4 (C34-C50) mg/kg 738.5 mg/kg 114 130 Polycyclic Aromatic Hydrocarbons (QCLot: 1345623) 83-32-9 E641A Acenaphthene 0.05 60.0 130 mg/kg 0.5 mg/kg 91.4 208-96-8 E641A Acenaphthylene 0.05 mg/kg 0.5 mg/kg 92.0 60.0 130 Anthracene 120-12-7 E641A 0.05 mg/kg 92.0 60.0 130 0.5 mg/kg 56-55-3 E641A 0.05 60.0 130 Benz(a)anthracene mg/kg 0.5 mg/kg 106 50-32-8 E641A 0.05 mg/kg 86.7 60.0 130 Benzo(a)pyrene 0.5 mg/kg n/a E641A 0.05 Benzo(b+j)fluoranthene mg/kg 0.5 mg/kg 99.0 60.0 130 Benzo(g,h,i)perylene 191-24-2 E641A 0.05 mg/kg 89.7 60.0 130 0.5 mg/kg Benzo(k)fluoranthene 207-08-9 E641A 0.05 mg/kg 101 60.0 130 0.5 mg/kg 218-01-9 E641A 0.05 60.0 130 Chrysene mg/kg 0.5 mg/kg 103

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Laboratory Control Sample (LCS) Report Sub-Matrix: Soil/Solid Spike Recovery (%) Recovery Limits (%) CAS Number Method LOR Unit Qualifier Analyte Concentration LCS Low High Polycyclic Aromatic Hydrocarbons (QCLot: 1345623) - continued 53-70-3 E641A 0.05 mg/kg 60.0 130 Dibenz(a,h)anthracene 0.5 mg/kg 86.5 206-44-0 E641A 0.05 60.0 Fluoranthene mg/kg 130 0.5 mg/kg 95.7 Fluorene 86-73-7 E641A 0.05 mg/kg 0.5 mg/kg 94.9 60.0 130 193-39-5 E641A 0.05 Indeno(1,2,3-c,d)pyrene mg/kg 0.5 mg/kg 93.9 60.0 130 Methylnaphthalene, 1-90-12-0 E641A 0.03 60.0 130 mg/kg 0.5 mg/kg 81.6 91-57-6 E641A 0.03 130 Methylnaphthalene, 2mg/kg 0.5 mg/kg 83.5 60.0 91-20-3 E641A 0.01 60.0 130 Naphthalene mg/kg 0.5 mg/kg 78.5 Phenanthrene 85-01-8 E641A 0.05 mg/kg 0.5 mg/kg 91.6 60.0 130 129-00-0 E641A 0.05 mg/kg 60.0 130 Pyrene 0.5 mg/kg 94.3 Polychlorinated Biphenyls (QCLot: 1346852) 12674-11-2 E687 Aroclor 1016 0.01 mg/kg 0.01 mg/kg 129 60.0 140 Aroclor 1221 11104-28-2 E687 0.01 mg/kg 0.01 mg/kg 129 60.0 140 11141-16-5 E687 Aroclor 1232 0.01 mg/kg 0.01 mg/kg 129 60.0 140 53469-21-9 E687 0.01 60.0 mg/kg 140 Aroclor 1242 0.01 mg/kg 119 12672-29-6 E687 0.01 60.0 140 Aroclor 1248 mg/kg 0.01 mg/kg 88.4 11097-69-1 E687 0.01 Aroclor 1254 mg/kg 0.01 mg/kg 100.0 60.0 140 Aroclor 1260 11096-82-5 E687 0.01 mg/kg 60.0 140 0.01 mg/kg 124 37324-23-5 E687 Aroclor 1262 0.01 mg/kg 60.0 140 0.01 mg/kg 65.7 Aroclor 1268 11100-14-4 E687 0.01 mg/kg 60.0 140 65.7 0.01 mg/kg

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#### 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.

ub-Matrix: Soil/So	lid							e (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
yanides (QCLc	ot: 1346815)									
/T2403940-001	BH3-24-SS1	Cyanide, weak acid dissociable		E336A	1.20 mg/kg	1.25 mg/kg	96.4	70.0	130	
olatile Organic	Compounds (QCLo	t: 1344269)								
VT2403970-001	Anonymous	Acetone	67-64-1	E611D	3.20 mg/kg	3.125 mg/kg	119	50.0	140	
		Benzene	71-43-2	E611D	2.69 mg/kg	3.125 mg/kg	100	50.0	140	
		Bromodichloromethane	75-27-4	E611D	2.76 mg/kg	3.125 mg/kg	103	50.0	140	
		Bromoform	75-25-2	E611D	2.78 mg/kg	3.125 mg/kg	104	50.0	140	
		Bromomethane	74-83-9	E611D	2.98 mg/kg	3.125 mg/kg	111	50.0	140	
		Carbon tetrachloride	56-23-5	E611D	2.65 mg/kg	3.125 mg/kg	98.9	50.0	140	
		Chlorobenzene	108-90-7	E611D	2.62 mg/kg	3.125 mg/kg	97.7	50.0	140	
		Chloroform	67-66-3	E611D	2.72 mg/kg	3.125 mg/kg	101	50.0	140	
		Dibromochloromethane	124-48-1	E611D	2.72 mg/kg	3.125 mg/kg	101	50.0	140	
		Dibromoethane, 1,2-	106-93-4	E611D	2.75 mg/kg	3.125 mg/kg	102	50.0	140	
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.64 mg/kg	3.125 mg/kg	98.4	50.0	140	
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.65 mg/kg	3.125 mg/kg	98.7	50.0	140	
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.68 mg/kg	3.125 mg/kg	100.0	50.0	140	
		Dichlorodifluoromethane	75-71-8	E611D	2.63 mg/kg	3.125 mg/kg	98.1	50.0	140	
		Dichloroethane, 1,1-	75-34-3	E611D	2.74 mg/kg	3.125 mg/kg	102	50.0	140	
		Dichloroethane, 1,2-	107-06-2	E611D	2.91 mg/kg	3.125 mg/kg	108	50.0	140	
		Dichloroethylene, 1,1-	75-35-4	E611D	2.69 mg/kg	3.125 mg/kg	100	50.0	140	
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.70 mg/kg	3.125 mg/kg	101	50.0	140	
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.69 mg/kg	3.125 mg/kg	100	50.0	140	
		Dichloromethane	75-09-2	E611D	2.93 mg/kg	3.125 mg/kg	109	50.0	140	
		Dichloropropane, 1,2-	78-87-5	E611D	2.72 mg/kg	3.125 mg/kg	102	50.0	140	
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.84 mg/kg	3.125 mg/kg	106	50.0	140	
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.74 mg/kg	3.125 mg/kg	102	50.0	140	
		Ethylbenzene	100-41-4	E611D	2.44 mg/kg	3.125 mg/kg	91.0	50.0	140	
		Hexane, n-	110-54-3	E611D	2.66 mg/kg	3.125 mg/kg	99.1	50.0	140	
		Methyl ethyl ketone [MEK]	78-93-3	E611D	3.06 mg/kg	3.125 mg/kg	114	50.0	140	
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.66 mg/kg	3.125 mg/kg	99.0	50.0	140	
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.66 mg/kg	3.125 mg/kg	99.4	50.0	140	
	1	Styrene	100-42-5	E611D	2.54 mg/kg	3.125 mg/kg	94.7	50.0	140	1

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Matrix Spike (MS) Report Sub-Matrix: Soil/Solid Recovery (%) Recovery Limits (%) Spike Laboratory sample Client sample ID Analyte **CAS Number** Method Concentration Target MS Low High Qualifier Volatile Organic Compounds (QCLot: 1344269) - continued WT2403970-001 Anonymous Tetrachloroethane, 1,1,1,2-630-20-6 E611D 2.64 mg/kg 3.125 mg/kg 98.4 50.0 140 Tetrachloroethane, 1,1,2,2-79-34-5 E611D 2.93 mg/kg 3.125 mg/kg 109 50.0 140 Tetrachloroethylene 127-18-4 E611D 2.62 mg/kg 3.125 mg/kg 97.8 50.0 140 Toluene 108-88-3 E611D 2.46 mg/kg 3.125 mg/kg 91.9 50.0 140 Trichloroethane, 1,1,1-71-55-6 E611D 2.62 mg/kg 3.125 mg/kg 97.7 50.0 140 Trichloroethane, 1,1,2-79-00-5 E611D 2.73 mg/kg 3.125 mg/kg 102 50.0 140 Trichloroethylene E611D 79-01-6 2.71 mg/kg 3.125 mg/kg 101 50.0 140 Trichlorofluoromethane 75-69-4 E611D 2.66 mg/kg 3.125 mg/kg 99.4 50.0 140 Vinyl chloride 75-01-4 E611D 2.85 mg/kg 3.125 mg/kg 106 50.0 140 Xylene, m+p-179601-23-1 E611D 5.20 mg/kg 97.0 50.0 140 6.25 mg/kg Xylene, o-95-47-6 E611D 2.48 mg/kg 3.125 mg/kg 924 50.0 140 Volatile Organic Compounds (QCLot: 1345138) TY2401690-002 Anonymous Benzene 71-43-2 E611A 2.55 mg/kg 3.125 mg/kg 140 93.1 60.0 Ethylbenzene 100-41-4 E611A 82.3 140 2.25 mg/kg 3.125 mg/kg 60.0 Toluene 108-88-3 E611A 91.5 2.50 mg/kg 3.125 mg/kg 60.0 140 Xylene, m+p-E611A 179601-23-1 4.62 mg/kg 6.25 mg/kg 84.4 60.0 140 Xylene, o-95-47-6 E611A 2.35 mg/kg 3.125 mg/kg 85.8 60.0 140 Hydrocarbons (QCLot: 1344270) WT2403970-001 Anonymous F1 (C6-C10) E581.F1 52.5 mg/kg 62.5 mg/kg 97.9 60.0 140 Hydrocarbons (QCLot: 1345139) TY2401690-002 Anonymous F1 (C6-C10) E581.F1 47.2 mg/kg 62.5 mg/kg 86.2 60.0 140 ----Hydrocarbons (QCLot: 1345624) BH5-24-SS1 WT2403940-005 F2 (C10-C16) E601.SG-L 585 mg/kg 671.175 mg/kg 106 60.0 140 F3 (C16-C34) E601.SG-L 1310 mg/kg 1384.058 mg/kg 114 60.0 140 F4 (C34-C50) 738.5 mg/kg E601.SG-L 754 mg/kg 124 60.0 140 Polycyclic Aromatic Hydrocarbons (QCLot: 1345623) BH5-24-SS1 WT2403940-005 Acenaphthene E641A 83-32-9 0.392 mg/kg 0.5 mg/kg 94.9 50.0 140 Acenaphthylene 208-96-8 E641A 0.391 mg/kg 0.5 mg/kg 94.7 50.0 140 Anthracene 120-12-7 E641A 0.386 mg/kg 0.5 mg/kg 93.4 50.0 140 Benz(a)anthracene 56-55-3 E641A 0.406 mg/kg 0.5 mg/kg 98.2 50.0 140 Benzo(a)pyrene E641A 50-32-8 0.366 mg/kg 0.5 mg/kg 88.6 50.0 140 Benzo(b+j)fluoranthene n/a E641A 0.411 mg/kg 99.4 50.0 140 0.5 mg/kg Benzo(g,h,i)perylene 191-24-2 E641A 0.366 mg/kg 0.5 mg/kg 88.6 50.0 140 Benzo(k)fluoranthene 207-08-9 E641A 0.419 mg/kg 0.5 mg/kg 101 50.0 140

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Matrix Spike (MS) Report Sub-Matrix: Soil/Solid Recovery (%) Spike Recovery Limits (%) Laboratory sample Client sample ID Analyte Method MS **CAS Number** Concentration Target Low High Qualifier Polycyclic Aromatic Hydrocarbons (QCLot: 1345623) - continued WT2403940-005 BH5-24-SS1 Chrysene 218-01-9 E641A 0.384 mg/kg 0.5 mg/kg 93.0 50.0 140 Dibenz(a,h)anthracene E641A 53-70-3 0.362 mg/kg 0.5 mg/kg 87.7 50.0 140 Fluoranthene E641A 206-44-0 0.400 mg/kg 0.5 mg/kg 96.9 50.0 140 Fluorene 86-73-7 E641A 0.402 mg/kg 0.5 mg/kg 50.0 140 97.4 Indeno(1,2,3-c,d)pyrene 193-39-5 E641A 0.379 mg/kg 0.5 mg/kg 91.7 50.0 140 Methylnaphthalene, 1-90-12-0 E641A 0.373 mg/kg 0.5 mg/kg 90.4 50.0 140 Methylnaphthalene, 2-91-57-6 E641A 0.384 mg/kg 0.5 mg/kg 92.9 50.0 140 Naphthalene E641A 91-20-3 50.0 0.346 mg/kg 0.5 mg/kg 83.9 140 Phenanthrene 85-01-8 E641A 0.387 mg/kg 93.7 50.0 140 0.5 mg/kg Pyrene E641A 129-00-0 0.392 mg/kg 0.5 mg/kg 95.0 50.0 140 Polychlorinated Biphenyls (QCLot: 1346852) WT2404094-001 Anonymous Aroclor 1016 12674-11-2 E687 0.012 mg/kg 0.01 mg/kg 119 50.0 150 Aroclor 1221 11104-28-2 E687 0.012 mg/kg 0.01 mg/kg 119 50.0 150 Aroclor 1232 11141-16-5 E687 0.012 mg/kg 50.0 150 0.01 mg/kg 119

E687

E687

E687

E687

0.01 mg/kg

0.01 mg/kg

0.01 mg/kg

0.01 mg/kg

50.0

50.0

50.0

50.0

111

119

165

179

150

150

150

150

Ε

Е

0.011 mg/kg

0.012 mg/kg

0.016 mg/kg

0.018 mg/kg

**Qualifiers** 

Ε

Qualifier Description

Aroclor 1242

Aroclor 1248

Aroclor 1254

Aroclor 1260

Matrix Spike recovery outside ALS DQO due to heterogeneous analyte background in sample.

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12672-29-6

11097-69-1

11096-82-5

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### 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).

ub-Matrix:						Refere	nce Material (RM) Re	port	
					RM Target	Recovery (%)	Recovery I	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
hysical Tests	QCLot: 1345618)								
	RM	Conductivity (1:2 leachate)		E100-L	1384 μS/cm	97.0	70.0	130	
hysical Tests	QCLot: 1347031)								
	RM	Conductivity (1:2 leachate)		E100-L	1384 μS/cm	98.8	70.0	130	
Metals (QCLot:	1345617)								
	RM	Calcium, soluble ion content	7440-70-2	E484	43.54 mg/L	104	70.0	130	
	RM	Magnesium, soluble ion content	7439-95-4	E484	15.24 mg/L	101	70.0	130	
	RM	Sodium, soluble ion content	17341-25-2	E484	33.47 mg/L	102	70.0	130	
Metals (QCLot:	1345620)								
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	106	70.0	130	
Metals (QCLot:	1345621)								
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	96.2	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	114	70.0	130	
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	105	70.0	130	
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	109	70.0	130	
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	106	70.0	130	
	RM	Chromium	7440-47-3	E440C	101 mg/kg	109	70.0	130	
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	106	70.0	130	
	RM	Copper	7440-50-8	E440C	123 mg/kg	105	70.0	130	
	RM	Lead	7439-92-1	E440C	267 mg/kg	97.3	70.0	130	
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	104	70.0	130	
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	108	70.0	130	
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	87.3	70.0	130	
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	101	70.0	130	
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	101	70.0	130	
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	107	70.0	130	
	RM	Zinc	7440-66-6	E440C	297 mg/kg	102	70.0	130	
Metals (QCLot:	1345622)								

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Sub-Matrix:						Refere	nce Material (RM) Re	port	
					RM Target	Recovery (%)	Recovery I	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1	345622) - continued								
	RM	Boron, hot water soluble	7440-42-8	E487	1.366 mg/kg	128	60.0	140	
Metals (QCLot: 1	347027)								
	RM	Boron, hot water soluble	7440-42-8	E487	1.366 mg/kg	104	60.0	140	
Metals (QCLot: 1	347028)								
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	96.9	70.0	130	
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	111	70.0	130	
	RM	Barium	7440-39-3	E440C	105 mg/kg	118	70.0	130	
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	112	70.0	130	
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	116	70.0	130	
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	105	70.0	130	
	RM	Chromium	7440-47-3	E440C	101 mg/kg	114	70.0	130	
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	108	70.0	130	
	RM	Copper	7440-50-8	E440C	123 mg/kg	111	70.0	130	
	RM	Lead	7439-92-1	E440C	267 mg/kg	99.8	70.0	130	
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	109	70.0	130	
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	107	70.0	130	
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	83.7	70.0	130	
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	104	70.0	130	
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	112	70.0	130	
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	113	70.0	130	
	RM	Zinc	7440-66-6	E440C	297 mg/kg	104	70.0	130	
Metals (QCLot: 1	347029)								
·	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	112	70.0	130	
Metals (QCLot: 1	347030)								
	RM	Calcium, soluble ion content	7440-70-2	E484	43.54 mg/L	105	70.0	130	
	RM	Magnesium, soluble ion content	7439-95-4	E484	15.24 mg/L	101	70.0	130	
	RM	Sodium, soluble ion content	17341-25-2	E484	33.47 mg/L	103	70.0	130	
Speciated Metals	(QCLot: 1345392)								
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	93.9	70.0	130	

Canada Toll Free: 1 800 668 9878

Environmental Division

Waterloo
Work Order Reference
WT2403940

ne: +1 519 886 6910

MPLES ON HOLD

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Failure of 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. BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

501-849,850

(ALS use only)

AL COOLER TEMPERATURES °C ody Seals Intact:

YES

IN/A

YES

COOLING INITIATED NO

# Appendix F

# **Qualifications of Assessors**



#### **PROFILE**

Mr. Lopers is an environmental engineer with over 16 years of experience in environmental engineering specializing in due diligence investigations. Mr. Lopers has extensive experience in Phase I and II Environmental Site Assessments; environmental remediation, and investigations; record of site condition submissions; asset inventory, designated substance surveys and abatement projects; environmental expertise on legal issues; and coordination of various monitoring programs (groundwater, surface water, air).

Mr. Lopers has participated in various Property Condition and Building Envelope mandates at various residential and commercial properties throughout Ontario.

Mr. Lopers has a strong commitment to health and safety, having experience leading a regional health and safety committee as a certified employee representative. Mr. Lopers has extensive training including OSHA 40-hour HAZWOPER, ASP Health and Safety on Construction Sites in Quebec, Ontario Working at Heights, Emergency First Aid/CPR and WHMIS.

#### CONTACT

EMAIL:

Luke@Lopers.ca

# LUKE LOPERS

### Principal

### LOPERS & ASSOCIATES

#### **EDUCATION**

University of Waterloo,

B.A.Sc., Honours Environmental Engineering

Management Science Option Designation - 2002 - 2008

#### **PROFESSIONAL EXPERIENCE**

### Lopers & Associates, Principal, Project Manager, Senior Environmental Engineer

Ottawa, Ontario - 2020–Present

Responsible for the management, coordination, supervision, completion and delivery of Phase I/1 and II/2 Environmental Site Assessments, Environmental Remediation Programs, Environmental litigation support, Designated Substance Surveys, scope of work development, cost estimates and proposals

### **GHD Limited, Project Manager, Senior Environmental Engineer** Ottawa, Ontario - 2013–2020

Responsible for the management, senior technical review, coordination, supervision, completion and delivery of Phase I/1 and II/2 Environmental Site Assessments, Environmental Remediation Programs, Environmental litigation support, Designated Substance Surveys, scope of work development, cost estimates and proposals Office Safety Captain and Joint Health and Safety Committee team leader

#### Paterson Group Inc., Project Manager, Environmental Engineer Ottawa, Ontario - 2009–2013

Responsible for supervision, completion and review for Phase I/1 and II/2 Environmental Site Assessments, Environmental Remediation Programs, Designated Substance Surveys

#### NEXT Environmental Inc., Site Investigation Staff

Burnaby, British Columbia - 2008–2009

Responsible for fieldwork and reporting for Stage/Phase I and II Environmental Site Assessments, Environmental Remediation Programs

#### **PROFESSIONAL DESIGNATIONS**

Licensed Professional Engineer (P.Eng.) with Professional Engineers Ontario (PEO) since 2012

Qualified Person (QP), Environmental Site Assessments with Ontario Ministry of the Environment, Conservation and Parks

#### PROJECT EXPERIENCE

### **Environmental Site Assessments**

Project Engineer/Manager
Phase 1 Environmental Site
Assessment | Various Clients |
Ontario, Quebec and British
Columbia | 2006-2020

Project Engineer/Manager
Phase Two Environmental Site
Assessments | Various Clients |
Various Locations | 2008-2020

Project Manager
Phase One, Phase Two
Environmental Site
Assessments, Environmental
Delineation Quality Assurance
Program | Costco Wholesale |
Ottawa, ON | 2014-2019

# **Environmental Remediation Programs**

Project Engineer
Underground Fuel Storage
Tank Removals and
Environmental Remediation
Programs in Vicinity of Active
Underground Services |
Ottawa, ON | 2010, 2012

Project Engineer/Manager for Phase I Environmental Site Assessments in support of acquisition/divestiture/regulatory requirements for various properties in Ontario, Quebec and British Columbia, including the following:

- Canadian Tire Retail Store and Gas Bar, CTR 417 2560 Princess Street, Kingston, Ontario
- Former Automotive Dealership and Service Garage, North Vancouver, British Columbia
- Former Philips Cable Plant, Brockville, Ontario
- Former Cornwall Cotton Mill, Cornwall, Ontario
- Retail Fuel Outlet and Automotive Service Garage, Ottawa, Ontario
- Jack Garland Airport Land, North Bay, Ontario
- Various Commercial/Residential Properties, Ontario and British Columbia
- Various Residential Properties, Ontario, Quebec and British Columbia
- Rochester Heights (811, 818 Gladstone Avenue), Ottawa, Ontario

Project Engineer/Manager for the following field investigation and/or regulatory reporting requirements for Phase II ESAs and other Site Investigations:

- Proposed Canadian Tire Development, CTR 693P Terry Fox Drive at Eagleson Road, Stittsville, Ontario
- Former Retail/Private Fuel Outlets, Ottawa/North Bay/Vancouver, Canada
- Operational/Former Industrial Facilities, Ottawa/Cornwall/Sarnia/Brockville/Gananoque, Ontario
- Existing Dry Cleaning Facilities, Ottawa/Arnprior, Ontario
- Automotive Service Garages, Ottawa/Vancouver, Canada
- Various Commercial/Residential Properties, Eastern Ontario
- Tetrachloroethylene Groundwater Plume, Commercial Property, Ottawa, Ontario
- Rochester Heights (811, 818 Gladstone Avenue), Ottawa, Ontario

Project Manager for the completion of a Phase One ESA for the potential acquisition of a commercial property. Upon discovery of APECs at the Site and significant data gaps in previous investigations, completed a Phase Two ESA to evaluate soil and groundwater quality at the Site. Further oversight of original owner's environmental consultants was completed to ensure adequate delineation and characterization of a dNAPL groundwater plume at the Site, present at significant depths in shale bedrock, which originated as a result of a former on-Site dry-cleaning operation.

Project Engineer for removal of underground heating oil storage tanks adjacent to residential buildings. Completed excavation supervision of contaminated soil around and below active underground services, including hydro, water and natural gas infrastructure at residential properties. Activities included oversight of removal of petroleum, impacted soil, and field screening and collection of confirmatory soil and groundwater samples for petroleum hydrocarbon analysis. Prepared Phase I, II and III Environmental Site Assessment reports.

Project Engineer Retail Fuel Outlet Decommissioning and Remediation | Ottawa, ON | 2012

Project Engineer/Manager Former Fuel Outlet Investigation and Remediation | Merrickville, ON | 2016-2017

#### **Record of Site Conditions**

Project Manager/Engineer Residential Redevelopment | Environmental Remediation Program and Record of Site Condition Submission | Ottawa | 2015

Project Manager/Engineer
Industrial Development |
Environmental Assessment and
Record of Site Condition
Submission | Township of
Edwardsburgh/Cardinal | 2015

#### **Excess Soil Management**

Project Engineer/Manager
Management of Excess Soil |
CTREL, Brigil, Ottawa
Community Housing
Corporation | Ottawa and
Pembroke, Ontario | 2016, 2018

### **Designated Substance Surveys**

**Project Manager** 

Designated Substance Surveys and Hazardous Building Materials Assessment | Ottawa, Pembroke, Southeastern Ontario | 2010-2020

# **Environmental Litigation Support**

Project Manager, Field Engineer, Expert Witness Ottawa, Ontario | 2014-2020 Project Engineer for UST removal and confirmatory soil sampling at former ESSO gas station in Ottawa, Ontario. Activities included oversight of removal of USTs and product lines, oversight of removal of petroleum-impacted soil and groundwater encountered and backfilling operations, and field screening and collection of confirmatory soil and groundwater samples for petroleum hydrocarbon analysis.

Project Engineer for confirmatory soil and groundwater sampling following UST removal at former Shell gas station. Activities included oversight of removal of petroleum-impacted soil, pumping of groundwater encountered and backfilling operations, and field screening and collection of confirmatory soil and groundwater samples for petroleum hydrocarbon analysis. Additional borehole/monitoring well drilling also completed.

Project Manager for delineation of soil contamination and groundwater sampling for a former automotive garage and gas station property in Ottawa, Ontario. Presented and implemented remedial action plan to remediate on-Site contamination. Directed staff in collection of post remediation confirmatory soil and groundwater samples for contaminants of concern. Prepared remediation closure report and record of site condition supporting documentation for submission to the Ministry of the Environment and Climate Change.

Project Manager for environmental assessments for a proposed industrial business park, in an existing industrial area within the Township of Edwardsburgh/Cardinal, Ontario. Prepared environmental assessment reports and record of site condition supporting documentation for submission to the Ministry of the Environment and Climate Change.

Project Engineer/Manager for sampling, analytical testing, development of soil management plans and monitoring during removal of excess soil generated as part of construction activities, including the following properties/facilities:

- Rochester Heights (811, 818 Gladstone Avenue), Ottawa, Ontario
- Residential redevelopment, 121 Parkdale Avenue, Ottawa, Ontario
- CTR 079, 1104 Pembroke Street East, Pembroke, Ontario
- CTR 297, 2010 Ogilvie Road, Ottawa, Ontario

Project Manager for asbestos containing material (ACM) surveys, designated substance surveys (DSSs), Hazardous Building Materials Assessments (HBMAs) or mould assessments at the following sites:

- DSSs at various municipal facilities for the City of Pembroke, Pembroke, Ontario. Preparation of Asbestos Management Plan.
- HBMAs at various institutional buildings for the Catholic District School Board of Eastern Ontario, Southeastern Ontario.
- DSSs and ACM surveys at various residential, buildings (dwellings and apartment buildings) for private residential clients, Ottawa, Ontario.
- DSS and abatement oversight during demolition, residential buildings (townhouses) for Ottawa Community Housing Corporation, 818 Gladstone Avenue, Ottawa, Ontario.

Project Manager, Field Engineer and Expert Witness for a fuel spill, remediation program, groundwater monitoring program and litigation review for redevelopment of a residential property adjacent to a central heating plant at an institutional facility.

#### **Education**

BEng Geological Engineering, École Polytechnique de Montreal, Montreal, Quebec, 1990

MSc Geophysics, University of British Columbia, Vancouver, British Columbia, 1983

BSc Geophysics, Honours, University of British Columbia, Vancouver, British Columbia, 1980

#### Certifications

Registered as PMP with Project Management Institute since 2012, requalified in 2018

Qualified Person (QP) for Environmental Site Assessments with Ontario Ministry of Environment and Conservation and Parks

#### **Professional Affiliations**

Licensed as P.Eng. with the Professional Engineers of Ontario (PEO) since 1994

Licensed as Ing. with l'Ordre des ingénieurs du Québec (OIQ), 1992

Licensed as P.Eng. with NAPEG (NWT and Nunavut), since 2009.

Licensed as P.Eng with Engineers Yukon since 2018

#### **Federal Clearance Level**

Secret ID # 95251065

### **DON PLENDERLEITH**

Senior Environmental Engineer and Project Manager

#### PROFESSIONAL SUMMARY

Mr. Plenderleith has been an environmental engineer for 30 years. From 1990 to 2000 he worked at specialty firms in Montreal and Ottawa where he gained field and reporting experience in site assessment and remediation of retail fuel outlets and railway yards. In 1991 and 1992 he worked on a CIDA sponsored project to assess additional water resource potential in two provinces in Indonesia. He worked for Golder for 19 years on projects in Ottawa, the North and overseas.

His expertise covers all steps in contaminated site management: Phase I, II and III environmental site assessments (ESAs), risk assessments, remedial options evaluations, remedial action plans, tender plans and specifications, remediation project oversight, long-term monitoring and project closure. He has largely concentrated on federal sites since 2002 and was Golder's initial point of contact on the Environmental Standing Offer Agreement with PSPC in the National Capital over that time.

Don led Golder's national client service team for Federal government and was responsible to Golder's management for maintaining strong relations with the federal government. Locally, he provided project management and technical direction of a variety of environmental projects from the Ottawa office. Don mentored several junior professionals. His site portfolio included: military bases, Northern sites, navigational sites, correctional facilities, research labs, commercial buildings and Canadian embassies abroad. On several multi-year projects (Kingston Penitentiary and Connaught Ranges landfill) he directed all steps of site management from initial investigations, through to site closure.

Don is equally experienced at providing strategic and portfolio-level assistance to clients as well as site-specific level work. He has written contaminated sites management plans for several federal Departments. He helped to develop components of the FCSAP project manager's tool kit and has trained federal project managers in its use. He has provided program-level assistance to the FCSAP Secretariat for funding demand forecasting and long-term strategy and risk management. For nine years he led a multi-disciplinary team that performed contaminated site liability peer reviews for the Office of the Auditor General of Canada.

Don completed his engineering degree in French and is licensed to practice in Quebec. He frequently coordinates the French language component at bilingual meetings and workshops.

#### PROJECT EXPERIENCE - STANDING OFFER MANAGER

Public Services and Procurement Canada, National Capital Region, Environmental Engineering Standing Offer (2002-2019). Don managed Golder's Environmental Standing Offer Agreement (SOA) with PSPC in the National Capital Region from 2002 to 2019. He was the first point of contact with PSPC for new call-ups. He formed project teams from the approved resources and reviewed the work plans under each call-up. He was responsible and accountable for Golder's overall project performance to PSPC.

#### PROJECT EXPERIENCE - SENIOR PROJECT MANAGER

Phase I, II, and III and Remediation at Pittsburgh Institution and Kingston Penitentiary for PSPC/CSC near Kingston, Ontario Environmental Site Assessment, Remediation Planning and Implementation for the Pittsburgh Institution and Kingston Penitentiary, Kingston, Ontario from 2007 to 2015 - Don was the Senior Project Manager and project reviewer for the Phase I, II and III of contaminated sites on two similar projects at these federal penitentiaries. Don performed project management and provided technical direction during the full suite of services from site assessment through to remediation. Federal project management tools, and FCSAP technical tools (GOST) were used to assist with procedural compliance. Don assisted PSPC with the tender specification for both remediation projects and performed on-site supervision during the fast-track remediation work at Pittsburgh. Don also performed senior review of the draft and final reports.

Peer Review and Liability Review of US Steel Site in Hamilton Harbour for PSPC and Transport Canada (July-August 2016) Don was the Senior Project Manager for a Peer Review of reports pertaining to the US Steel site on Hamilton Harbour that the Hamilton Port Authority (HPA) was considering purchasing. TC requested the peer review and liability review in its oversight role over the HPA. Don brought a senior expert in at steel industry at Golder onto the project team. With his input some important gaps in the previous site assessments, management plans and liability estimates were identified to TC.

Contaminated Site
Reporting and Review for
Department of National
Defence Ottawa, Ontario,
Canada

Don has managed several projects for DND's Director General Environment, related to the financial reporting of DND's contaminated sites. He managed the EcoNet validation project in 2006, in which the systems and procedures by which site cost and liability information are input to DND's Contaminated Site database, Econet. Several of DND's major projects being run out of headquarters were reviewed in that exercise. In 2008 he assisted DND by producing the 2008 update of their Contaminated Sites Management Plan (CSMP) for Treasury Board submission. Nine divisional CSMPs were reviewed, summarized and incorporated into the departmental CSMP.

## PROGRAM LEVEL WORK – FEDERAL CONTAMINATED SITES

Project Management Tools for Contaminated Sites, Ottawa, Ontario, Canada Mr. Plenderleith developed two of the FCSAP Project Management Tools: Status Reporting and Project Risk Management. He has provided training in the tools to federal project managers country-wide. He has delivered training sessions at RPIC National Contaminated Sites workshops on several occasions on the PM Tools, the Sustainable Development Tool (SDAT), and Guidance Tool for Selection of Technologies Tools (GOST).

Assistance to FCSAP for program-level Risk Management, PWGSC/ECCC Ottawa, Ontario

Don has led a team at Golder that provided assistance to the FCSAP Secretariat from 2013 to 2019 in the areas of cost projections for funding demand estimates. He devised a method of projecting the costs of unassessed sites based on closure costs of similar sites. This tool was used to estimate the funding demand for FCSAP Phase III and past Phase III. Don assisted the Secretariat with Long-Term Strategic planning for FSCAP post 2020 when the 15-year program is due to sunset.

Secondments to Federal Departments

Mr. Plenderleith has been seconded from Golder to the Department of Foreign Affairs and International Trade (now Global Affairs Canada "GAC") on three occasions to develop their Contaminated Sites Management Plans and to fill in while GAC was staffing their full-time environmental engineer position. Through these secondments he has developed a greater understanding of the role of federal custodians in managing their programs.

#### PROJECT EXPERIENCE - NORTHERN SITES

DEW Line Site Monitoring, Baffin Region, DND

(2015-19)

Mr. Plenderleith was the project director of Golder's DEW Line Monitoring contract with DND from four years 2015 to 2019. He was responsible for overall program quality and liaison with the client and management of Inuit subcontractors. The project was multi-disciplinary, involving geotechnical and environmental components. Mr. Plenderleith has developed a very positive working relationship with the hamlet of Qikiqtarjuaq and the Inuit staff from that community, many of whom have returned to work with Golder every year. All Inuit Participation Targets were exceeded.

Tundra Mine Remediation Monitoring PSPC/INAC (2016-2018)

Don was the Senior project director for Golder's Remediation Monitoring of Tundra Mine (NWT) for PSPC and INAC. This project is multi-disciplinary involving surface water and groundwater environmental monitoring and aquatic monitoring for the final stages of the remediation of Tundra Mine. Don has reviewed the monthly and annual monitoring reports produced for the Water Licence. His earlier experience with the RAP for Tundra has been valuable on this project.

Remedial Options Review and Remedial Action Planning Former Water Tanker Base, Inuvik Airport, NWT 2010-12 From 2010 to 2012, Mr. Plenderleith was the technical director for the Phase III ESA detailed site assessment and remediation planning of the former Water Tanker Base at the Inuvik Airport in NWT. The work included determining the contaminants of concern, delineation of contaminated soil and seasonal groundwater areas, and assessing remedial options. The remedial action plan reviewed chemical oxidation and removal & disposal options within the constraints of northern work season, and the distance to a disposal facility. Descriptions, costs, advantages and limitations were provided for several options. GNWT performed the remediation with own forces.