Phase Two Environmental Site Assessment

Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Schlegel Urban Developments

May 7, 2024

→ **The Power of Commitment**

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1. Executive Summary

GHD Limited (GHD) was retained by Schlegel Urban Developments (Schlegel) to conduct a Phase Two Environmental Site Assessment (ESA) of a parcel of land located north of Listowel Road and west of Arthur Street South in Elmira, Ontario. The land parcel includes three properties: 354 Arthur Street South, 1065 Listowel Road and 1103 Listowel Road, collectively referred to herein as the Site or Property. This report supersedes the report of the same title dated June 26, 2023, and addresses comments received during a peer review process completed by Terrapex on behalf of the Regional Municipality of Waterloo.

The Phase Two ESA was completed in accordance with Ontario Regulation 153/04, as amended (O. Reg. 153/04 or the Regulation). At the time the Phase I ESA was initiated the Site was owned by Syrier Holdings Inc. (354 Arthur Street South) and Birdland Developments Inc. (1065 and 1103 Listowel Road) and utilized as primarily agricultural land.

The Site is located in the southern portion of the community of Elmira, in the Township of Woolwich. The area to the north and east of the Site was primarily developed for mixed residential and commercial purposes in the 1970s. The portion of the Site known as 354 Arthur Street South is approximately 5.28 hectares (13.04 acres). This portion of the Property is utilized for agricultural purposes and previously contained a garage and two chicken barns located on the northeastern portion of the Property. The portion of the Site located at 1065 Listowel Road is approximately 11.31 hectares (27.94 acres) in size and is utilized for agricultural purposes. There are two large stockpiles of topsoil located on this portion of the Property. There have never been any structures located on this portion of the Property in the past. The portion of the Site located at 1103 Listowel Road is approximately 0.70 hectares (1.73 acres) in size and contains a residential dwelling, a storage garage and vacant land that was previously utilized for agricultural purposes.

GHD completed a Phase One ESA of the Site commencing November 2022. The purpose of the Phase One ESA was to identify, through a non-intrusive investigation, the existence of any Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) associated with the Site. The Phase One ESA was completed in accordance with O. Reg. 153/04, which defines PCAs and APECs. The Phase One ESA identified the following APECs to be associated with the Site:

- **APEC #1 – Adjacent Land Use to the Southeast:** Based on GHD observations and review of the environmental databases search report, a private fuel outlet with liquid fuel USTs is present 35 metres (m) southeast of the Site, south of Listowel Road, at 390 Arthur Street South. The operation of a private fuel outlet at 390 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 390 Arthur Street South to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the southeastern corner of the Property was identified as **APEC #1,** in the event that chemical releases have occurred at that property and migrated onto the Site.
- **APEC #2 – Adjacent Land Use to the East:** Based on GHD observations and interview with the property owner, a garage is utilized by Contour Direction Drilling and VHF Construction for storage and minor maintenance of equipment at 374 Arthur Street South, located adjacent to the east of the Site. The operation of a garage at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the operation of a garage at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2**, in the event that chemical releases have occurred at that property and migrated onto the Site. 374 Arthur Street South was historically occupied by a transportation company (Elmont Transportation, a division of Elmont Industrial Supply Inc., as confirmed by an internet search) and the garage

was used as a small cross dock. The historical operation of a transportation company at 374 Arthur Street South was identified as a PCA [#52 – Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a transportation company at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2,** in the event that chemical releases have occurred at that property and migrated onto the Site. According to the property owner, a 1,000-litre aboveground diesel fuel tank was previously located on the 374 Arthur Street South property, to the east of the garage building. The property owner stated that there were never any spills or releases associated with the storage tank. No visual evidence of any staining was noted in the area of the former diesel fuel AST; however, the ground was snow covered at the time of the site inspection. The historical operation of the diesel AST on the 374 Arthur Street South property was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a diesel AST at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2** in the event that chemical releases have occurred at that property and migrated onto the Site.

– **APEC #3 – Adjacent Land Use to the Northeast:** Based on GHD observations and interview with the property owner, the two-bay commercial building located on the east side of 346 Arthur Street South, located adjacent to the northeast of the Site, was historically occupied by Apple Auto Glass (also known as Syd's Auto Glass), an auto glass repair and replacement facility. The historical operation of an Apple Auto Glass at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 346 Arthur Street South to the Site, the historical operation of an Apple Auto Glass at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the Site. The property owner identified that two USTs were historically located on the eastern portion of the 346 Arthur Street South property, adjacent to the two-bay commercial building located along Arthur Street. GHD was allowed to review an engineering report that documented the closure by removal of the two USTs. This report was prepared by Rubicon Environmental (2008) Inc. and dated July 26, 2022. The report documents that one 3,800-litre UST and one 1,900-litre UST were removed from the property on June 23, 2022. At the time of removal, the steel USTs were observed to be in good condition with no perforations. The USTs were empty and there was no olfactory evidence of petroleum impacts in the fill surrounding the USTs. Eight soil samples were collected from the sidewalls and base of the excavation and analyzed for petroleum hydrocarbon (PHC) fractions F1-F4, and benzene, toluene, ethylbenzene, and xylenes (BTEX). Where detected, the concentrations of PHCs and BTEX were very low and in all samples met the Table 2: Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Industrial/Commercial/Community Property Use for coarse textures soils as contained in the document entitled, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Based on GHD's review of the UST closure report, there is no environmental impact to the property related to the past operation of the USTs, however, in accordance with O. Reg. 153/04, the area of the USTs must be identified as an APEC. The historical operation of the USTs at 346 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks]. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the Site.

  In addition, based on GHD observations and review of the environmental databases search report, a private fuel outlet with double walled liquid fuel USTs installed in 2013 is present 90 metres (m) northeast of the Site, east of Arthur Street South, at 110 Earl Martin Drive. The operation of a private fuel outlet at 110 Earl Martin Drive was

identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 110 Earl Martin Drive to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. Any impact to the Site from this PCA would occur within **APEC #3**.

- **APEC #4 – Groundwater Quality – NDMA:** Based on review of publicly available information, an area of groundwater impacted with N-Nitroso-dimethylamine (NDMA) exists beneath a significant portion of the Community of Elmira. The groundwater impact originated at the former Uniroyal facility to the north and east of the Site, at 25 Erb Street. Extensive investigations of this groundwater plume have been undertaken for more than 30 years in consultation with the Ministry of the Environment, Conservation and Parks (MECP). Regional groundwater contamination is monitored in three aquifer units including the Upper Municipal Aquifer (MU) (approximately 32 to 36 metres deep), Lower Municipal Aquifer (ML) (approximately 48 to 50 m deep), and the Bedrock Aquifer. The MU/ML are overlain by the Upper Aquifer (UA), which is the upper-most aquifer beneath Elmira, and the UA, MU, ML, and Bedrock Aquifer all are separated by aquitards. The current owner of the former Uniroyal property, Lanxess, operates a groundwater extraction and treatment system, a portion of which is located on the east side of Arthur Street, opposite the Site. At that location there are impacts to the groundwater in the MU and the ML. There are no impacts in the UA or Bedrock Aquifer at this location. Lanxess submits annual monitoring reports to the MECP detailing the treatment system operation and on-Site and off-Site groundwater quality. The 2022 monitoring of the regional groundwater plume shows that it could extend onto the eastern side of the Property within the MU and the ML. Lanxess has an access agreement to monitor two paired monitoring wells that are located centrally on the Site installed in the MU and ML, CH-72B and CH-72A, respectively, shown on Figure 2. NDMA has not been detected historically in CH-72A and CH-72B. NDMA concentration contours for the MU and ML for 2019 through 2022, showing the non-detect CH-72A and CH-72B results, are provided in Appendix A. The 2019/2020 figures are excerpted from the report entitled “2020 Annual Monitoring Report, Lanxess Canada Co./Cie, Elmira, Ontario” dated February 22, 2021, prepared by EarthCon Consultants Inc. (2020 AMR). The 2021/2022 figures are excerpted from the report entitled “2022 Annual Monitoring Report, Lanxess Canada Co./Cie, Elmira, Ontario” dated March 2023, prepared by WSP Canada Inc. (2022 AMR). Both reports have been submitted to the MECP and are publicly available. Because the regional groundwater plume extent has not been confirmed on the Site, the entire Site was identified as **APEC #4.** For context, it's important to note that the groundwater plume has been extensively studied in consultation with the MECP for over 30 years, that Lanxess is under an Order to monitor and remediate the groundwater in the MU and ML, that the groundwater impact in the MU and ML is deep and there is a Township of Woolwich Zoning By-law that prohibits the use of groundwater in Elmira for potable purposes.
  As described in the Conceptual Site Model (CSM) developed for this Phase Two ESA, the NDMA presence beneath the Site occurs within the MU and ML only and NDMA is not present in the UA (overlying the MU and ML) at the Site. NDMA is not related to the Site and there are no historical operations or uses at the Site or in its immediate vicinity that would have resulted in releases of NDMA to the subsurface and the UA. The NDMA presence in the MU and ML within Elmira is related to the regional groundwater plume sourced from the Lanxess facility in northern Elmira that is more than 1.5 kilometres (km) to the northeast of the Site. It is well understood by the MECP, and by all of the public advisory committees and all of the many consultants that have performed environmental investigations/evaluations over the last 30 years throughout Elmira, that NDMA beyond the Lanxess facility is present within the MU and ML only, and there is no NDMA in the overlying shallow UA. This is documented in the over 30-year long public record of the investigations and MECP-lead ongoing remediation of the regional groundwater plume within the MU and ML beneath Elmira. The only way for NDMA to be present in the UA at the Site is for NDMA to migrate 1.5 km to the southwest within the UA. However, throughout Elmira, the UA is recognized to be discontinuous. It is comprised of numerous different sand and gravel units separated by intermittent aquitards. The UA only has the common feature of being the first groundwater bearing zone encountered beneath ground surface throughout Elmira. Thus, there is no direct pathway for NDMA in UA

groundwater to migrate from the Lanxess facility to underneath the Site. Also, the UA groundwater beneath the Lanxess Facility does not migrate beyond the Lanxess Facility boundaries. UA groundwater beneath the Lanxess Facility either discharges laterally to the Canagagigue Creek that passes through the Lanxess Facility, or discharges vertically downward to the MU beneath the Lanxess facility (through a window in the Upper Aquitard in the southern portion of the Lanxess facility). For the Lanxess remedy of the regional groundwater plume, as approved by the MECP, it is recognized that there is no groundwater plume in the UA beyond the Lanxess facility boundaries, and thus, the remedy is not required to address groundwater in the UA beyond the Lanxess facility boundaries. This has been characterized by the more than 30 years of environmental investigation/evaluations completed throughout Elmira. As a result, the UA acts as a clean groundwater lens that overlies the MU and ML. The CSM developed for this Phase Two ESA supports that there are no pathways for human or ecological exposure associated with the presence of NDMA in MU/ML groundwater at the Site, as follows:

- The municipal bylaws prohibiting the use of groundwater in Elmira for potable purposes prevents human exposure to the presence of NDMA in MU/ML groundwater at the Site through potable water use (i.e., no ingestion and no dermal contact through household water use, such as washing/bathing). While the Township of Woolwich Zoning By-law on prohibiting private wells does not currently extend onto the Site, GHD understands discussions have been initiated between the Township of Woolwich and the Regional Municipality of Waterloo to apply the By-law to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment.
- While NDMA is considered sufficiently volatile to pose a potential vapour intrusion concern because it has a vapour pressure that is greater than 1 millimetre mercury (MECP, 2021[1]), the NDMA present in MU/ML groundwater does not represent a vapour intrusion concern since it is overlain by clean groundwater in the UA (i.e., there is an overlying clean groundwater lens condition).
- The NDMA presence in MU/ML groundwater is more than 30 metres deep and no excavation would extend to this depth (and there is no NDMA presence in the overlying UA). As a result, there is no potential for construction worker exposure to the NMDA presence in MU/ML groundwater through dermal contact or incidental ingestion when conducting excavation work.
- Groundwater within the MU/ML, at more than 30 metres deep, is well below plant root zones and does not discharge to any surface water bodies (and neither are any surface water bodies present at the Site or in the Site vicinity). Also, there is no NDMA presence in the overlying UA. Therefore, no ecological receptors would be exposed to the NDMA presence in MU/ML groundwater at the Site.

– **APEC #5 – Topsoil Stockpiles:** Based on discussions with the Site representative and GHD observations, two topsoil stockpiles are located on-Site along the eastern portion of the Site. According to the Site representatives, the topsoil was reportedly generated from the residential development activities on the adjacent property to the west. The northern topsoil pile was present on Site from at least the year 2000 (as identified in the 2000 aerial image) and the southern topsoil pile was present on Site from at least the year 2019 (as identified in the 2019 aerial image). No information was available regarding the quality of the material in the topsoil stockpiles. The presence of material of unknown quality in the topsoil stockpiles on-Site was identified as a PCA (#30 – Importation of Fill Material of Unknown Quality) in accordance with O. Reg. 153/04. As such the areas of the topsoil stockpiles along the eastern portion of the Property were identified as **APEC #5A** (northern topsoil stockpile) and **APEC #5B** (southern topsoil stockpile).

– **APEC #6 – Historical Burn Pile:** Based on discussions with the Site representative and GHD observations, a wood pile consisting of materials from the collapsed historical chicken barns on Site was burned on the northeastern portion of the Site approximately one month prior to the Site inspection. According to the Site

[1] Ministry of the Environment, Conservation and Parks (MECP), 2021. (Draft) Technical Guidance for Soil Vapour Intrusion Assessment, January 4.

representative, the ashes and approximately fifteen centimetres of topsoil were removed from the burn pile and disposed of off-Site. The burn pile area was restored with topsoil from the northern topsoil stockpile situated on the northwestern portion of the Site. Reportedly, the burn pile area covered an approximately 18 metre radii. The Site representative had no further information concerning the removal of the surficial soils in the burn pile area. The area of the burn pile was identified by the Site representative during the Site inspection and was identifiable by the area without any oat stalks in the tilled soil. The burn pile was identified as a potential source of impact to the soil quality (no PCA under O. Reg. 153/04), and as such was identified as **APEC #6**.

- **APEC #7 – Historical and Current Agricultural Use:** Based on discussions with the Site representatives and review of historical records, the Site was and is currently primarily utilized as agricultural land. No information was available regarding the types/quantities of pesticides or herbicides that may have been historically/currently used at the Site. The potential historical and current use of pesticides and herbicides at the Site is identified as a PCA (#40 – Pesticides [including Herbicides, Fungicides and Anti-Fouling Agents] Manufacturing, Processing, Bulk Storage and Large-Scale Applications) in accordance with O. Reg. 153/04. As such, the potential use of pesticides and herbicides has been identified as an area of potential environmental concern (**APEC #7**) on the entire Site.
- **APEC #8 – Heating Oil AST:** Based on discussions with the Site representative and GHD observations, one 910-litre heating oil AST was observed in the basement of the residential building located on the southern portion of the 1103 Listowel Road property. According to the Site representative, the AST was installed when the house was constructed in the 1950s, however due to the excellent condition of the observed tank, the original tank was likely replaced. No staining or evidence of releases from the tank was observed by GHD surrounding the AST or in the vicinity of the fill and vent pipes at ground surface, and the concrete floor in the vicinity of the AST was observed to be in good condition at the time of the Site inspection. However, the historical operation of the heating oil ASTs was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04, and the area of the AST must be identified as an APEC. As a result, the area of the AST at the residential dwelling at 1103 Listowel Road, on the southwestern portion of the Site, was identified as **APEC #8**.
- **APEC #9 – Chemical Storage:** Based on discussions with the Site representative and GHD observations, the previous owner of 354 Arthur Street South stored 208-litre drums and 1,250-litre totes of sodium silicate. The chemicals were stored on Site for operations related to a precast polymerized concrete company that the previous Site owner formerly operated off-Site. The drums were stored on skids in the northern portion of the southern chicken barn. Once the northern portion of southern barn was demolished approximately two weeks prior to the Site inspection, the drums were relocated to the location of the historical garage for temporary exterior storage. GHD observed four totes and twelve drums during the Site inspection. Numerous 20-litre pails and retail size jugs and paint cans containing various chemicals were also observed by GHD in the area of the historical garage and to the west of the historical northern chicken barn. Some of the chemical labels observed included clear W/R Gloss, synthetic gear oil, fast release “B” concentrate, delvo stabilizer and an open 20-litre pail of transmission and hydraulic oil. The Site representative indicated that the drums, totes and miscellaneous chemicals were to eventually be picked up by a chemical waste disposal company for off-Site disposal. The Site representative reported that, to the best of his knowledge, no significant spills or releases of any chemical products used or stored at the property have occurred. Snow cover precluded a detailed inspection of the ground surface for evidence of staining indicative of releases. The presence of current and historical chemical storage areas on-Site was identified as a PCA (#8 – Chemical Manufacturing, Processing and Bulk Storage) in accordance with O. Reg. 153/04. As such the areas of the current exterior chemical storage areas and the historical chemical storage areas in the barn located on the northeastern portion of the Property were identified as **APEC #9.**

Purpose of Phase Two ESA

The purpose of the Phase Two ESA was to investigate the above-noted APECs in accordance with O. Reg. 153/04.

Scope of Work

GHD completed a soil and groundwater investigation at the Site as part of the Phase Two ESA. Soil and groundwater samples were collected and analyzed for specific parameters, which included metals and inorganics, polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbon fractions (PHC) F1 to F4, volatile organic compounds (VOCs), organochlorine pesticides (OCs) and N-nitrosodimethylamine (NDMA). Inorganics analyses for soil samples included electrical conductivity (EC), cyanide (weak acid dissociable) (CN^-), pH, and sodium adsorption ratio (SAR). Inorganics analyses for groundwater samples included chloride (Cl^-) and CN^-. The analytical results were compared to the generic standards provided in the Ministry of the Environment, Conservation and Parks (MECP) document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 (hereinafter referred to as the "2011 MECP Standards"). The applicable standards were determined to be the Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (MECP Table 2 Standards). The soil analytical data were assessed with respect to the MECP Table 2 Standards for Residential/Parkland/Institutional Property Use and coarse-textured soil. The groundwater analytical data were assessed with respect to the MECP Table 2 Standards for All Types of Property Use and coarse-textured soil.

COCs in Soil

All soil samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations, with the exception of some slightly elevated electrical conductivity (EC) in six samples (TP-1 through TP-5 and TP-4A) in the area of the former burn pile. In supplemental sampling of soils within the burn pile area, all EC results were below the MECP Table 2 Standards, and across the Site, EC results were below the MECP Table 2 Standards in 50 of 56 samples analyzed. Elevated EC levels can be expected in agricultural fields due to any nutrients that have previously been applied for agricultural purposes. EC is a plant growth related COC, and elevated concentrations do not pose risks to human health. EC risks are limited to potential exposure pathways to ecological receptors. As the proposed future use of the Site is for residential purposes, in which soil exposure pathways to ecological receptors are expected to be minimal, the Qualified Person (QP_{ESA}) has determined that the EC results above the MECP Table 2 Standards are not of concern. As a result, EC was not identified as a COC in the Phase Two ESA.

Hot water extractable boron was originally detected in the soil samples collected from TP-2 and TP-4A in the area of the former burn pile, and in the soil sample collected from SS-19 on the eastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. In addition, some PAHs (acenaphthylene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a h]anthracene, fluoranthene and indeno[1 2 3-cd]pyrene) were originally detected in the soil sample collected from SS-25 in the area of the chemical storage on the northeastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. TP-2, TP4A, and SS-19 were resampled within a 2-m radius of the original sample, identified as SS-29, SS-30, SS-19R, respectively, for metals and inorganics, and SS-25 was resampled three times within a 2-m radius of the original sample identified as SS-25R1, SS-25R2 and SS-25R3 for PAHs. In accordance with Section 48(2) and 48(4) of O. Reg. 153/04, if two or more samples of soil are collected from sampling points at the same sampling location that are at the same depth on, in or under the property (within a 2-m radius of each other), the property meets a standard if the average of the sampling results meets the applicable site condition standard. The average of the original samples and resamples (including all applicable field duplicates) meet the MECP Table 2 Standards for hot water extractable boron and PAHs. Therefore, the hot water extractable boron and the PAH values greater than the MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O. Reg. 153/04, and hot water extractable boron and the PAHs were not identified as COCs in the Phase Two ESA.

Based on the above, no COCs were identified in soil and there is no evidence of soil impacts related to any of the APECs identified at the Site.

COCs in Groundwater

All groundwater samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations.

NDMA was detected in MU-1 above the Ontario Drinking Water Standards, Objectives and Guidelines (ODWS)[2] and detected in the groundwater sample at ML-1 below the ODWS, both located in the northeast corner of the Property. There is no MECP Table 2 Standard for NDMA. Because of the following reasons, NDMA was not identified as a COC at the Property:

– The groundwater plume has been extensively studied in consultation with the MECP for over 30 years.
– Lanxess is under an Order to monitor and remediate the groundwater.
– The groundwater impact is deep and there is a Township of Woolwich Zoning By-law that prohibits the use of groundwater in Elmira for potable purposes. The By-law will be extended to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment.
– A conceptual site model has determined that there are no exposure pathways for human or ecological concerns associated with the groundwater impact.

Based on the above, no COCs were identified in groundwater and there is no evidence of groundwater impacts related to any of the APECs identified at the Site.

Conclusion

Based on the results of the Phase Two ESA, no COCs were identified to be related to the APECs identified during the Phase One ESA.

2. Introduction

GHD Limited (GHD) was retained by Schlegel Urban Developments (Schlegel) to conduct a Phase Two Environmental Site Assessment (ESA) of a parcel of land located north of Listowel Road and west of Arthur Street South in Elmira, Ontario. This report supersedes the report of the same title dated June 26, 2023, and addresses comments received during a peer review process completed by Terrapex on behalf of the Regional Municipality of Waterloo. The land parcel includes three properties: 354 Arthur Street South, 1065 Listowel Road and 1103 Listowel Road, collectively referred to herein as the Site or Property. At the time the Phase I ESA was initiated the Site was owned by Syrier Holdings Inc. (354 Arthur Street South) and Birdland Developments Inc. (1065 and 1103 Listowel Road) and utilized as primarily agricultural land. A Site Location Map and a Site Plan are provided on Figure 1 and Figure 2, respectively. Compass directions (north, east, south, and west) described in this report are referenced to “Project North”, which is generally oriented perpendicular to Listowel Road.

GHD completed a Phase One ESA of the Site commencing in November 2022. The results of GHD’s Phase One ESA are summarized in the report entitled “Phase One Environmental Site Assessment, Listowel Road and Arthur Street South Development Lands, Elmira, Ontario”, dated March 19, 2024.

[2] Ministry of the Environment (MOE), Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, revised June 2003 (ODWS).

The Phase Two ESA was conducted in accordance with Ontario Regulation 153/04, as amended (O. Reg. 153/04). The objective of this Phase Two ESA was to investigate soil and groundwater quality in all potential areas of environmental impairment (APECs) identified during the Phase One ESA. This report summarizes the investigative activities completed as part of the Phase Two ESA, and presents the data generated therefrom.

This report has been prepared for the use of use of Schlegel and may not be relied upon by others without the written consent of GHD.

2.1 Site Description

The Site is located in the southern portion of the community of Elmira, in the Township of Woolwich. The area to the north and east of the Site was primarily developed for mixed residential and commercial purposes in the 1970s. The portion of the Site known as 354 Arthur Street South is approximately 5.28 hectares (13.04 acres) in size. This portion of the Property is utilized for agricultural purposes and previously contained a garage and two chicken barns located on the northeastern portion of the Property. The portion of the Site located at 1065 Listowel Road is approximately 11.31 hectares (27.94 acres) in size and is utilized for agricultural purposes. There are two large stockpiles of topsoil located on this portion of the Property. There have never been any structures located on this portion of the Property in the past. The portion of the Site located at 1103 Listowel Road is approximately 0.70 hectares (1.73 acres) in size and contains a residential dwelling, a storage garage and vacant land that was previously utilized for agricultural purposes.

The proposed future use of the Site is for residential purposes. No water bodies, as defined by O. Reg. 153/04, are located on the Site.

2.2 Property Ownership

At the time the Phase I ESA was initiated, the portion of the Property known as 354 Arthur Street South was owned by Syrier Holdings Inc. The portions of the Property located at 1065 Listowel Road and 1103 Listowel Road were owned by Birdlands Developments Ltd. Schlegel purchased the Property on June 28, 2023.

Contact information for the representatives of the Property owners at the time the Phase I ESA was completed are listed below:

354 Arthur Street South

Mr. Peter Syrier
Syrier Holdings Inc.
354 Arthur Street South
Elmira, Ontario N3B 2P5
(519) 536-1488
birdys@live.ca

1103 and 1065 Listowel Road

Mr. Gary Manser
Birdlands Development Ltd.
35 Earl Martin Drive
Elmira, Ontario N3B 3L4
(519) 500-9045
gmanser8965@rogers.com

2.3 Current and Proposed Future Uses

Based on the Phase One ESA, the Site has historically been utilized for primarily agricultural purposes. The 354 Arthur Street South property was also utilized for livestock purposes (chicken barns) from as early as the mid-1950s to 2019. The 1103 Listowel Road property contained a residential dwelling since at least 1966. It is GHD's understanding that Schlegel is interested in purchasing and redeveloping the Property for residential land use.

2.4 Applicable Site Condition Standards

The analytical results were compared to the generic standards provided in the Ministry of the Environment, Conservation and Parks (MECP) document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 (hereinafter referred to as the "2011 MECP Standards"). The 2011 MECP Standards provide generic soil and groundwater quality standards for certain chemicals, based on combinations of the following Site-specific conditions:

- **Property Use Type** – As the proposed future land use of the Property will include residential use, the standards for residential/parkland/institutional property use are considered applicable to the Site.
- **Restoration of Groundwater Quality** – The Property is located in an area designated in the Township of Woolwich Source Water Protection Plan as Wellhead Protection Area (WHPA) Area 7. Based on this, potable groundwater conditions are considered applicable to the Site.
- **Restoration Depth** – For comparative purposes, results were compared to full depth standards.
- **Soil Texture** – The soil analytical results were conservatively compared to the standards for coarse-textured soil.
- **Shallow Soil Property** – A shallow soil property means a property of which 1/3 or more of the area consists of soil equal to or less than 2 m in depth beneath the soil surface, excluding any non-soil surface treatment. Greater than 2.0 m of overburden soil exists across the Site. Therefore, the Property is not considered a shallow soil property.
- **Within 30 m of a Water Body** – A water body is not located on the Site and the Site is not located within 30 m of a water body. The closest water body to the Site is Canagagigue Creek, which is located approximately 1.6 kilometres (km) northeast of the Site.

The generic 2011 MECP Standards are not applicable if the Site is considered to be an environmentally sensitive area. The conditions for the above are presented in Section 41 of O. Reg. 153/04. Review of these conditions indicated that the Site is not considered to be environmentally sensitive based on the following:

- The Site is: i) not located within an area of natural significance, ii) does not include or is not adjacent to an area of natural significance, nor is it a part of such area, and iii) does not include land that is within 30 m of an area of natural significance nor is part of such an area. The Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre (NHIC)" database was reviewed to identify areas registered as Areas of Natural or Scientific Interest (ANSI) or for known occurrences of Species at Risk (NHIC Rare Occurrences) within a 1-km radius of the Site. The Wood Thrush, Red-headed Woodpecker and Bobolink were identified as species at risk; however, the Site features (ploughed fields) are not conducive to their habitats. No other ANSI or NHIC records were identified in the ANSI database to be within 1 km of the Site.
- The soil pH in surface (0 to 1.5 metres below ground surface (mBGS)) and subsurface (greater than 1.5 mBGS) ranged between 5.96 and 8.50 in soil samples that were collected. The soil pH was within the acceptable range of 5 and 9 for surface soils, and within the acceptable range of 5 and 11 for subsurface soils, as outlined in Section 41 of O. Reg. 153/04.

Based on the above Site-specific information, the applicable standards were determined to be the Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (MECP Table 2 Standards). The soil analytical data were assessed with respect to the MECP Table 2 Standards for Residential/Parkland/Institutional Property Use and coarse-textured soil. The groundwater analytical data were assessed with respect to the MECP Table 2 Standards for All Types of Property Use and coarse-textured soil.

3. Background Information

3.1 Physical Setting

The Site is located in an area of the community of Elmira, in the Township of Woolwich, Ontario adjacent to the northwest of the Listowel Road and Arthur Street South intersection. The area to the north and east of the Site was primarily developed for mixed residential and commercial purposes in the 1970s.

The elevation of the Site ranges from approximately 357 to 365 metres above mean sea level (mAMSL), based on the Phase Two ESA environmental investigations completed at the Site. Regional topography slopes steady downward to the north from 375 to 330 mAMSL towards the Conestoga River[3] located approximately 3.8 km south of the Site.

The Site is located in the broad physiographic region known as the Till Plains[4]. A review of published quaternary geologic mapping for the area of the Site indicates that the overburden consists predominantly of Tavistock Till[5]. Beneath the overburden deposits is bedrock consisting of limestone, dolostone, shale, sandstone, gypsum, and salt of the Salina Formation[6]. The thickness of the overburden deposits varies due to surficial topographic relief, but is on the order of 50 m in the vicinity of the Site when comparing overburden and bedrock topography in the area[7].

Extensive previous investigations of hydrogeologic conditions beneath Elmira have been undertaken for more than 30 years in consultation with the MECP. These investigations have been related to the N-Nitroso-dimethylamine (NDMA) impacts to regional groundwater beneath a significant portion of Elmira that originated at the former Uniroyal facility to the north and east of the Site, at 25 Erb Street. The previous investigations have advanced/installed hundreds of borings/monitoring wells throughout Elmira and the immediately surrounding area. Observations from these borings/monitoring wells have identified that the overburden deposits beneath Elmira consist of a series of glacial till and related deposits overlying bedrock. The bedrock is found at depths that range from 30 to 60 mBGS across Elmira. The glacial till deposits form a series of sheet-like layers of fine-grained materials (aquitards), composed of silt and clay till with varying intermittent amounts of sand and gravel. Between the layers of glacial till are glaciofluvial outwash and glaciolacustrine deposits composed of varying amounts of sand, gravel, silt, and clay (aquifers). The composition of these layers can vary both horizontally and vertically, but the following general sequence of regional hydrostratigraphic units are prevalent beneath Elmira (in descending order from ground surface):

– Surficial Aquitard (SAT) comprised of silt and/or clay with discontinuous sand and gravel lenses
– Upper Aquifer (UA) comprised of sand and gravel with discontinuous silt beds
– Upper Aquitard (UAT) comprised of silt and/or clay with discontinuous sand and gravel lenses

[3] Natural Resources Canada [map]. "The Atlas of Canada - Toporama", governed by version 2.3 of the Open Government License – Canada. July 27, 2022. http://atlas.gc.ca/toporama/en/index.html
[4] Chapman, L. J., and D. F., Putnam (1984), "The Physiography of Southern Ontario", Ontario Geological Survey.
[5] Karrow, P.F. 1993. Quaternary geology, Conestogo area; Ontario Geological Survey, Map 2558, scale 1:50 000.
[6] "Bedrock Geology of Ontario" [map]. Scale 1:250,000. OGS Earth Geoscience Data [computer files]. Sudbury, Ontario: Ontario Geological Survey & Ministry of Northern Development and Mines, 2010.
[7] Thomas, J., Holden, K.M. and Karrow, P. F., 1993. Bedrock topography, Conestogo area, Southern Ontario; Ontario Geological Survey, Preliminary Map P. 3210, Scale 1:50,000.

– Municipal Aquifer, which consists of the Upper Municipal Aquifer (MU) and Lower Municipal Aquifer (ML), both comprised of predominantly sand and gravel
– Municipal Aquitard (MAT) comprised of silt and/or clay that separates the MU and ML
– Lower Aquitard (LAT) comprised of silt and/or clay that underlies the ML
– Bedrock Aquifer

In general, regional groundwater in each hydrostratigraphic unit occurs from north to south through Elmira. Groundwater flow directions are altered locally by the groundwater extraction and treatment system operated by Lanxess, a portion of which is located on the east side of Arthur Street, opposite the Site. Lanxess is working closely with MECP under an Order to monitor and remediate the regional groundwater plume. The regional groundwater impact is deep and there is a Township of Woolwich Zoning By-law that prohibits the use of groundwater in Elmira for potable purposes.

No water bodies are located on the Site. The closest water body to the Site is Canagagigue Creek, which is located approximately 1.6 km northeast of the Site.

The Site is not within or adjacent to an “area of natural significance” as defined by O. Reg. 153/04, and there are no areas of natural significance within the Phase One ESA study area.

Currently, residential and commercial land uses surround the Site. The following buildings or features were located on the properties surrounding the Site:

North: The Site is bound to the north by residential properties and a stormwater management (SWM) pond located south of Burlwood Drive. Hoefler Door Systems Inc. is present adjacent to the northeast of the Site at 346 Arthur Street South.

East: The 354 Arthur Street South portion of the Site is bound to the east by VHF Construction Ltd. and Contour Directional Drilling Ltd. (Contour) located at 374 Arthur Street South, residential dwellings further north, and The Merchantile at the Crossroads (gift shop) further south.

South: The Site is bound to the south by Listowel Road, followed by agricultural lands. An ESSO gasoline station is present to the southeast of the Site, south of Listowel Road. The operation of a gasoline station at 390 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 390 Arthur Street South to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the southeastern corner of the Property was identified as **APEC #1,** in the event that chemical releases have occurred at that property and migrated onto the Site.

West: The Site bound to the west by a residential subdivision currently under development.

3.2 Past Investigations

GHD completed a Phase One ESA of the Site commencing in November 2022. The results of GHD’s Phase One ESA are summarized in the report entitled “Phase One Environmental Site Assessment, Listowel Road and Arthur Street South Development Lands, Elmira, Ontario”, dated March 19, 2024. The Phase One ESA identified the following APECs to be associated with the Site:

– **APEC #1 – Adjacent Land Use to the Southeast:** Based on GHD observations and review of the environmental databases search report, a private fuel outlet with liquid fuel USTs is present 35 m southeast of the Site, south of Listowel Road, at 390 Arthur Street South. The operation of a private fuel outlet at 390 Arthur Street South was

identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 390 Arthur Street South to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the southeastern corner of the Property was identified as **APEC #1,** in the event that chemical releases have occurred at that property and migrated onto the Site.

– **APEC #2 – Adjacent Land Use to the East:** Based on GHD observations and interview with the property owner, a garage is utilized by Contour Direction Drilling and VHF Construction for storage and minor maintenance of equipment at 374 Arthur Street South, located adjacent to the east of the Site. The operation of a garage at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the operation of a garage at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2**, in the event that chemical releases have occurred at that property and migrated onto the Site. 374 Arthur Street South was historically occupied by a transportation company (Elmont Transportation, a division of Elmont Industrial Supply Inc., as confirmed by an internet search) and the garage was used as a small cross dock. The historical operation of a transportation company at 374 Arthur Street South was identified as a PCA [#52 – Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a transportation company at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2,** in the event that chemical releases have occurred at that property and migrated onto the Site. According to the property owner, a 1,000-litre aboveground diesel fuel tank was previously located on the 374 Arthur Street South property, to the east of the garage building. The property owner stated that there were never any spills or releases associated with the storage tank. No visual evidence of any staining was noted in the area of the former diesel fuel AST; however, the ground was snow covered at the time of the site inspection. The historical operation of the diesel AST on the 374 Arthur Street South property was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a diesel AST at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2** in the event that chemical releases have occurred at that property and migrated onto the Site.

– **APEC #3 – Adjacent Land Use to the Northeast:** Based on GHD observations and interview with the property owner, the two-bay commercial building located on the east side of 346 Arthur Street South, located adjacent to the northeast of the Site, was historically occupied by Apple Auto Glass (also known as Syd's Auto Glass), an auto glass repair and replacement facility. The historical operation of an Apple Auto Glass at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 346 Arthur Street South to the Site, the historical operation of an Apple Auto Glass at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the site. The property owner identified that two USTs were historically located on the eastern portion of the 346 Arthur Street South property, adjacent to the two-bay commercial building located along Arthur Street. GHD was allowed to review an engineering report that documented the closure by removal of the two USTs. This report was prepared by Rubicon Environmental (2008) Inc. and dated July 26, 2022. The report documents that one 3,800-litre UST and one 1,900-litre UST were removed from the property on June 23, 2022. At the time of removal, the steel USTs were observed to be in good condition with no perforations. The USTs were empty and there was no olfactory

evidence of petroleum impacts in the fill surrounding the USTs. Eight soil samples were collected from the sidewalls and base of the excavation and analyzed for petroleum hydrocarbon (PHC) fractions F1-F4, and benzene, toluene, ethylbenzene, and xylenes (BTEX). Where detected, the concentrations of PHCs and BTEX were very low and in all samples met the Table 2: Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Industrial/Commercial/Community Property Use for coarse textures soils as contained in the document entitled, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Based on GHD's review of the UST closure report, there is no environmental impact to the property related to the past operation of the USTs, however, in accordance with O. Reg. 153/04, the area of the USTs must be identified as an APEC. The historical operation of the USTs at 346 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks]. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the Site.

In addition, based on GHD observations and review of the environmental databases search report, a private fuel outlet with double walled liquid fuel USTs installed in 2013 is present 90 metres (m) northeast of the Site, east of Arthur Street South, at 110 Earl Martin Drive. The operation of a private fuel outlet at 110 Earl Martin Drive was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 110 Earl Martin Drive to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. Any impact to the Site from this PCA would occur within **APEC #3.**

- **APEC #4 – Groundwater Quality – NDMA:** Based on review of publicly available information, an area of groundwater impacted with N-Nitroso-dimethylamine (NDMA) exists beneath a significant portion of the Community of Elmira. The groundwater impact originated at the former Uniroyal facility to the north and east of the Site, at 25 Erb Street. Extensive investigations of this groundwater plume have been undertaken for more than 30 years in consultation with the MECP. Regional groundwater contamination is monitored in three aquifer units including the MU (approximately 32 to 36 m deep), ML (approximately 48 to 50 m deep), and the Bedrock Aquifer. The MU/ML are overlain by the UA, which is the upper-most aquifer beneath Elmira, and the UA, MU, ML, and Bedrock Aquifer all are separated by aquitards. The current owner of the former Uniroyal property, Lanxess, operates a groundwater extraction and treatment system, a portion of which is located on the east side of Arthur Street, opposite the Site. At that location there are impacts to the groundwater in the MU and the ML. There are no impacts in the Bedrock Aquifer at this location. Lanxess submits annual monitoring reports to the MECP detailing the treatment system operation and on-Site and off-Site groundwater quality. The 2022 monitoring of the regional groundwater plume shows it could extend onto the eastern side of the Property within the MU and ML. Lanxess has an access agreement to monitor two paired monitoring wells that are located centrally on the Site installed in the Upper Municipal Aquifer and Lower Municipal Aquifers, CH-72B and CH-72A, respectively, shown on Figure 2. NDMA has not been detected historically in CH-72A and CH-72B. NDMA concentration contours for the upper and lower municipal aquifers for 2019 through 2022, showing the non-detect CH-72A and CH-72B results, are provided in Appendix A. The 2019/2020 figures are excerpted from the report entitled "2020 Annual Monitoring Report, Lanxess Canada Co./Cie, Elmira, Ontario" dated February 22, 2021, prepared by EarthCon Consultants Inc. (2020 AMR). The 2021/2022 figures are excerpted from the report entitled "2022 Annual Monitoring Report, Lanxess Canada Co./Cie, Elmira, Ontario" dated March 2023, prepared by WSP Canada Inc. (2022 AMR). Both reports have been submitted to the MECP and are publicly available. Because the regional groundwater plume extent has not been confirmed on the Site, the entire Site was identified as **APEC #4.** For context, it's important to note that the groundwater plume has been extensively studied in consultation with the MECP for over 30 years, that Lanxess is under an Order to monitor and remediate the groundwater in the MU and ML, that the groundwater impact in the MU and ML is deep and there is a Township of Woolwich Zoning By-law that prohibits the use of groundwater in Elmira for potable purposes. As described in the Conceptual Site Model (CSM) developed for this Phase Two ESA presented in Section 7, there are no

pathways for human or ecological exposure associated with the presence of NDMA in MU/ML groundwater at the Site.

- **APEC #5 – Topsoil Stockpiles:** Based on discussions with the Site representative and GHD observations, two topsoil stockpiles are located on-Site along the eastern portion of the Site. According to the Site representatives, the topsoil was reportedly generated from the residential development activities on the adjacent property to the west. The northern topsoil pile was present on Site from at least the year 2000 (as identified in the 2000 aerial image) and the southern topsoil pile was present on Site from at least the year 2019 (as identified in the 2019 aerial image). No information was available regarding the quality of the material in the topsoil stockpiles. The presence of material of unknown quality in the topsoil stockpiles on-Site was identified as a PCA (#30 – Importation of Fill Material of Unknown Quality) in accordance with O. Reg. 153/04. As such the areas of the topsoil stockpiles along the eastern portion of the Property were identified as **APEC #5A** (northern topsoil stockpile) and **APEC #5B** (southern topsoil stockpile).
- **APEC #6 – Historical Burn Pile:** Based on discussions with the Site representative and GHD observations, a wood pile consisting of materials from the collapsed historical chicken barns on Site was burned on the northeastern portion of the Site approximately one month prior to the Site inspection. According to the Site representative, the ashes and approximately fifteen centimetres of topsoil were removed from the burn pile and disposed of off-Site. The burn pile area was restored with topsoil from the northern topsoil stockpile situated on the northwestern portion of the Site. Reportedly, the burn pile area covered an approximately 18 metre radii. The Site representative had no further information concerning the removal of the surficial soils in the burn pile area. The area of the burn pile was identified by the Site representative during the Site inspection and was identifiable by the area without any oat stalks in the tilled soil. The burn pile was identified as a potential source of impact to the soil quality (no PCA under O. Reg. 153/04), and as such was identified as **APEC #6**.
- **APEC #7 – Historical and Current Agricultural Use:** Based on discussions with the Site representatives and review of historical records, the Site was and is currently primarily utilized as agricultural land. No information was available regarding the types/quantities of pesticides or herbicides that may have been historically/currently used at the Site. The potential historical and current use of pesticides and herbicides at the Site is identified as a PCA (#40 – Pesticides [including Herbicides, Fungicides and Anti-Fouling Agents] Manufacturing, Processing, Bulk Storage and Large-Scale Applications) in accordance with O. Reg. 153/04. As such, the potential use of pesticides and herbicides has been identified as an area of potential environmental concern (**APEC #7**) on the entire Site.
- **APEC #8 – Heating Oil AST:** Based on discussions with the Site representative and GHD observations, one 910-litre heating oil AST was observed in the basement of the residential building located on the southern portion of the 1103 Listowel Road property. According to the Site representative, the AST was installed when the house was constructed in the 1950s, however due to the excellent condition of the observed tank, the original tank was likely replaced. No staining or evidence of releases from the tank was observed by GHD surrounding the AST or in the vicinity of the fill and vent pipes at ground surface, and the concrete floor in the vicinity of the AST was observed to be in good condition at the time of the Site inspection. However, the historical operation of the heating oil ASTs was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04, and the area of the AST must be identified as an APEC. As a result, the area of the AST at the residential dwelling at 1103 Listowel Road, on the southwestern portion of the Site, was identified as **APEC #8**.
- **APEC #9 – Chemical Storage:** Based on discussions with the Site representative and GHD observations, the previous owner of 354 Arthur Street South stored 208-litre drums and 1,250-litre totes of sodium silicate The chemicals were stored on Site for operations related to a precast polymerized concrete company that the previous Site owner formerly operated off-Site. The drums were stored on skids in the northern portion of the southern chicken barn. Once the northern portion of southern barn was demolished approximately 2 weeks prior

to the Site inspection, the drums were relocated to the location of the historical garage for temporary exterior storage. GHD observed four totes and twelve drums during the Site inspection. Numerous 20-litre pails and retail size jugs and paint cans containing various chemicals were also observed by GHD in the area of the historical garage and to the west of the historical northern chicken barn. Some of the chemical labels observed included clear W/R Gloss, synthetic gear oil, fast release "B" concentrate, delvo stabilizer and an open 20-litre pail of transmission and hydraulic oil. The Site representative indicated that the drums, totes, and miscellaneous chemicals were to eventually be picked up by a chemical waste disposal company for off-Site disposal. The Site representative reported that, to the best of his knowledge, no significant spills or releases of any chemical products used or stored at the property have occurred. Snow cover precluded a detailed inspection of the ground surface for evidence of staining indicative of releases. The presence of current and historical chemical storage areas on-Site was identified as a PCA (#8 – Chemical Manufacturing, Processing and Bulk Storage) in accordance with O. Reg. 153/04. As such the areas of the current exterior chemical storage areas and the historical chemical storage areas in the barn located on the northeastern portion of the Property were identified as **APEC #9.**

4. Scope of Investigation

4.1 Overview of Site Investigation

The objective of the Phase Two ESA was to investigate soil and /or groundwater quality within the APECs identified during the Phase One ESA. The Phase Two ESA Sampling and Analysis Plan (SAP) is provided in Appendix B. The following section provides a summary of the investigative activities that were completed during the Phase Two ESA.

4.2 Media Investigated

GHD completed soil and groundwater investigations as part of the Phase Two ESA activities. Sediment sampling was not completed as no water bodies or associated sediment are present at the Site. The following field investigation activities were completed to characterize the Site:

– Advancement of eleven boreholes
– Instrumentation of the eleven boreholes as groundwater monitoring wells
– Excavation of nine test pits
– Collection of forty-one surface soil samples
– Field screening of soil and groundwater
– Hydraulic monitoring (groundwater level measurements and free-product measurements)
– Laboratory analysis of 69 soil samples (including 9 field duplicate samples), and 13 groundwater samples (including 2 field duplicate samples)

Groundwater and soil samples were submitted for laboratory analysis of one or more of the following: metals and inorganics, organochlorine pesticides (OCs), polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbon (PHC) fractions F1 to F4, volatile organic compounds (VOCs) and N-nitrosodimethylamine (NDMA).

A summary of groundwater and soil sampling locations and chemical analysis is provided in Table 1. The investigative locations are shown on Figure 2.

4.3 Phase One Conceptual Site Model

The Site is located in the southern portion of the community of Elmira, in the Township of Woolwich and has primarily been used for agricultural purposes in the past. The area to the north and east of the Site was primarily developed for mixed residential and commercial purposes in the 1970s. A Site Location Map is provided on Figure 1.

The portion of the Site known as 354 Arthur Street South is approximately 5.28 hectares (13.04 acres) in size. This portion of the Property is utilized for agricultural purposes and previously contained a garage and two chicken barns located on the northeastern portion of the Property. The portion of the Site located at 1065 Listowel Road is approximately 11.31 hectares (27.94 acres) in size and is utilized for agricultural purposes. There are two large stockpiles of topsoil located on this portion of the Property. There have never been any structures located on this portion of the Property in the past. The portion of the Site located at 1103 Listowel Road is approximately 0.70 hectares (1.73 acres) in size and contains a residential dwelling, a storage garage and vacant land that was previously utilized for agricultural purposes. A Site Plan is provided on Figure 2.

The elevation of the Site ranges from approximately 357 to 365 mAMSL, based on previous environmental investigations completed at the Site. Regional topography slopes steady downward to the north from 375 to 330 mAMSL towards the Conestoga River located approximately 3.8 km south of the Site. No water bodies are located on the Site. Based on previous hydrogeological report prepared by Pinchin in December 2022, the draft Report investigated soil and groundwater conditions at the Site to a depth of 6.7 m below ground surface. Soils encountered during shallow monitoring wells installed as part of that investigation consisted of topsoil overlying silt till and clayey silt, corresponding to the Surficial Aquitard (SAT). The Pinchin monitoring wells screened predominantly silt and clay soil types, within only one well screening sand and gravel. Groundwater was identified at depths ranging from 0.39 m to 3.08 mBGS on March 25, 2022. Based on these observations, shallow groundwater flow was identified to be to the southeast. However, subsequent groundwater monitoring conducted by Pinchin on May 19, August 10, and November 1, 2022, encountered dry conditions in all but one of their shallow monitoring wells. The one well where groundwater remained screens silt and clay that is not representative of a continuous groundwater system. The one well intersecting sand and gravel went dry. In GHD's opinion, the shallow groundwater identified in the Pinchin report is perched water that likely is present only on a seasonal basis and likely is representative of wet winter melt conditions within the SAT. Thus, the groundwater identified by Pinchin is not indicative of a true groundwater table. Shallow groundwater flow in the area of the Site is inferred to be in a southernly flow direction towards the Conestoga River.

The Site was identified as a part of the Source Water Well Head Protection Area 7, as identified in the Township's document entitled "The Corporation of the Township of Woolwich," consolidated in August 2022 (Municipal Official Plan). It is noted there are municipal bylaws prohibiting the use of groundwater for potable purposes in Elmira. While the Township of Woolwich Zoning By-law on prohibiting private wells does not currently extend onto the Site, GHD understands discussions have been initiated between the Township of Woolwich and the Regional Municipality of Waterloo to apply the By-law to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment. There were no areas of natural significance, as defined in O. Reg. 153/04, identified at the Site or within the Phase One ESA study area.

The Site is located in the broad physiographic region known as the Till Plains. A review of published quaternary geologic mapping for the area of the Site indicates that the overburden consists predominantly of Tavistock Till. Beneath the overburden deposits is bedrock consisting of limestone, dolostone, shale, sandstone, gypsum, and salt of the Salina Formation. The thickness of the overburden deposits varies due to surficial topographic relief, but is on the order of 50 m in the vicinity of the Site when comparing overburden and bedrock topography in the area.

A search of the MECP Water Well Information System (WWIS) database was conducted as a component of the environmental databases search outlined in the Phase One ESA. Thirteen records were identified in the WWIS database to be associated with wells installed at the Site. Four of the records were associated with monitoring wells at the Site between 1968 and 1990, three records were associated with three domestic water supply wells that were installed at the Site in 1952, 1954, and 1959 and six of the records were associated with wells abandoned between 2010 and 2019. Based on discussions with the Site representative and GHD observations, multiple observations also exist on Site installed by Pinchin for hydrogeological observations. In addition, Lanxess has an access agreement to monitor two paired monitoring wells that are located centrally on the Site installed in the Upper Municipal Aquifer and Lower Municipal Aquifers, CH-72B and CH-72A, respectively. These wells are monitored as part of the long-term NDMA groundwater plume monitoring program discussed in the Phase One ESA.

Based on discussions with the Site representative and review of Site records, no underground utilities are currently present on the 354 Arthur Street South or 1065 Listowel Road portions of the Property. The residential dwelling and storage garage at 1103 Listowel Road currently have electricity supplied by Enova Power Corp. (formerly Waterloo Hydro North) and the residential dwelling only has natural gas supplied by Enbridge Gas (formerly Union Gas). The residential dwelling is heated using a 910-litre heating oil AST located in the basement of the dwelling. The property is not serviced with municipal potable water, or municipal sanitary and storm sewer services. Potable water for the structures on the property is obtained from a water supply well located adjacent to the west of the dwelling. Domestic wastewater generated by the dwelling is discharged to a septic tank and associated septic bed located to the east of the dwelling.

The following APECs associated with the Site were identified by the Phase One ESA records review, interviews, and Site reconnaissance:

APEC	Location of the APEC on Phase One Property	PCA(s)	Location of PCA (on-site or off-site)
APEC #1 – Adjacent Land Use to the Southeast	Southeastern corner of the Property	#28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site
APEC #2 – Adjacent Land Use to the East	Eastern portion of the Property, surrounding 374 Arthur Street South	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles #28 – Gasoline and Associated Products Storage in Fixed Tanks #52 - Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-Site
APEC #3 – Adjacent Land Use to the Northeast	Northeast corner of the Property	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles #28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site
APEC #4 – Groundwater Quality - NDMA	Entire Property	PCA is not listed in O. Reg. 153/04	On-Site
APEC #5A – Northern Topsoil Stockpile	Northwestern portion of the Property	#30 – Importation of Fill Material of Unknown Quality	On-Site
APEC #5B – Southern Topsoil Stockpile	Southwestern portion of the Property	#30 – Importation of Fill Material of Unknown Quality	On-Site
APEC #6 – Historical Burn Pile	Northeastern portion of the Property	PCA is not listed in O. Reg. 153/04	On-Site

APEC	Location of the APEC on Phase One Property	PCA(s)	Location of PCA (on-site or off-site)
APEC #7 – Historical and Current Agricultural Use	Entire Property	#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site
APEC #8 – Heating Oil AST	Southwestern corner of the Property at the residential dwelling	#28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site
APEC #9 – Chemical Storage	Northeastern portion of the Property	#8 – Chemical Manufacturing, Processing and Bulk Storage	On-Site

Several off-Site PCAs were identified to be associated with properties located within the Phase One ESA study area (as noted on Figure 4) that were not interpreted to have the potential to contribute to an APEC at the Site. A summary of the off-Site PCAs that did not result in an AEPC at the Site is provided below:

Property Address(es)	PCA(s), in accordance with O. Reg. 153/04	Rationale
99 Earl Martin Drive (185 m northeast of the Site)	#34 – Metal Fabrication	Due to the distance between 99 Earl Martin Drive and the Site.
361 Arthur Street South (90 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	361 Arthur Street South is located hydraulically cross-gradient of the Site
371 Arthur Street South (90 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	371 Arthur Street South is located hydraulically cross-gradient of the Site
330 Arthur Street South (145 m northeast of the Site)	#28 – Gasoline and Associated Products Storage in Fixed Tanks	Due to the distance between 330 Arthur Street South and the Site.
25 Earl Martin Drive (215 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles #28 – Gasoline and Associated Products Storage in Fixed Tanks	Due to the distance between 25 Earl Martin Drive and the Site, and that it is located hydraulically cross-gradient of the Site.

Based on the results of the Phase One ESA, the contaminants of potential concern at the Site include metals/inorganics, PAHs, PHCs, VOCs, and OCs. The Phase One ESA Conceptual Site Model for the Site and the Phase One ESA study area are shown on Figure 3 and Figure 4, respectively.

4.4 Deviations from Sampling and Analysis Plan

The following deviation from the sampling and analysis plan occurred during the Phase Two ESA field activities:

– During advancement of UA-1 on the northeastern portion of the Site, a seam of saturated soil was encountered from 2.44 to 2.90 mBGS, which was assumed to be attributed to a swale in that vicinity. A shallow groundwater monitoring well UA-1(S) was installed at this location. Shallow groundwater was not encountered at the remaining UA wells. A soil and groundwater sample were collected from this location and analyzed for the same parameters as UA-1.

– Following installation, monitoring well UA-3 was found to be dry due to a blocked well screen. The monitoring well was reinstalled.

– Hot water extractable boron was detected in the soil samples collected from TP-2 and TP-4A in the area of the former burn pile, and in the soil sample collected from SS-19 on the eastern portion of the Site above the MECP Table 2 Standards during the Phase Two ESA investigations. TP-2 and TP4A were resampled, identified as SS-29 and SS-30, respectively, for metals and inorganics. Deeper samples were also collected at these locations (SS-29D and SS-30D) in case vertical delineation was required. Additional samples were also collected surrounding TP-2 and TP-4A, identified as SS-31 through SS-35, in case horizontal delineation was required. SS-19 was resampled, identified as SS-19R, for metals and inorganics.
– Some PAHs (acenaphthylene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a h]anthracene, fluoranthene and indeno[1 2 3-cd]pyrene) were detected in the soil sample collected from SS-25 in the area of the chemical storage on the northeastern portion of the Site above the MECP Table 2 Standards during the Phase Two ESA investigations. SS-25 was resampled three times, identified as SS-25R1, SS-25-R2 and SS-25R3 for PAHs.
– Four additional boreholes were advanced at the Site in the UA and instrumented as overburden monitoring wells (UA-5 through UA-8) and developed. This ancillary work was completed to support the hydrogeologic study required for the proposed residential development.
– Additional soil samples were collected in the shallow soil at UA-6, UA-7 and UA-8 for metals and inorganics to investigate if the hot water extractable boron exceedances initially identified at TP-2 and TP-4A extended further across the Site.
– An additional soil sample was collected in the vicinity of the fill and vent pipes associated with the heating oil AST (SS-22). No staining or evidence of releases from the tank was observed by GHD surrounding the AST or in the vicinity of the fill and vent pipes at ground surface, and the concrete floor in the vicinity of the AST was observed to be in good condition at the time of the Site inspection. Therefore, the ground surface in the vicinity of the fill and vent pipes was determined by GHD as the area most likely to have potentially impacted soil quality, in the event that a release occurred while filling the tank. Restricted space and entry to the basement with drilling equipment also prevented GHD from investigating the area directly beneath the AST.

The additional investigations completed are included in the SAP in Appendix B.

4.5 Impediments

No impediments or any denials of access were encountered by GHD during the Phase Two ESA.

5. Investigation Methods

5.1 General

GHD completed the Phase Two ESA field activities and additional investigations between February 27, 2023 and January 30, 2024 using a variety of investigation methods and sampling techniques. Investigations completed included the following, as described in detail in the following subsections:

– Completion of public and private utility locates
– Advancement of boreholes
– Installation of groundwater monitoring wells
– Excavation of test pits

– Collection of surface soil samples using a spade or hand auger
– Collection of field soil screening measurements and observations
– Collection of groundwater samples
– Field measurements of groundwater quality parameters
– Hydraulic monitoring (groundwater level measurements and measurements for non-aqueous phase liquid [NAPL], if present)
– Quality assurance and quality control (QA/QC) measures
– Elevation Surveying
– Analytical testing
– Residue management

The field investigation activities were completed in accordance with MECP protocols, GHD's standard operating procedures (SOPs), and standard good practice.

Prior to the start of the investigation activities, GHD prepared a Site-specific Health and Safety Plan (HASP). The purpose of the HASP was to provide specific guidelines and established procedures for the protection of personnel performing the Site investigation activities. In addition, GHD also completed the appropriate public utility notifications and retained a private utility locator to assist with on-Site utility clearance.

5.2 Drilling and Excavating

Test pitting activities were completed on December 16, 2022. Altech Drilling and Investigative Services Ltd. (Altech), a Ministry of the Environment, Conservation and Parks (MECP) licensed drilling contractor, was retained by GHD to advance nine test pits (TP-1 through TP-8 and TP-4A) to depths of up to 1.5 mBGS. Altech used a track-mounted CX37C mini excavator to advance the test pits.

Drilling activities were completed between February 23 and March 7, 2023. Choice Sonic Drilling Ltd. (Choice), an MECP-licensed well driller, was retained by GHD to advance the eleven boreholes (UA-1(s), UA-1 through UA-8, MU-1, and ML-1) to depths of up to 48.16 mBGS.

Choice used a Sonic Drill Systems 550 Track Mounted Drilling Rig 7822DT to advance the boreholes. This method uses sonic frequency to advance a core barrel into the ground, followed by a casing overtop to protect the integrity of the bored hole. Drilling water was required to lubricate between the core barrel and the drilling casing during borehole advancement at MU-1 and ML-1. Municipal water was supplied by Choice for use as drilling water. The volume of drilling water added to each well was recorded to ensure subsequent removal during well development activities. Soil core samples were collected continuously over 1.5-m (5-foot) intervals in the core barrels, which were then retrieved and whose contents were vibrated into plastic bags. Soil core samples were not collected for wells in which stratigraphy was already known from previously installed nested wells. Prior to use, and between each borehole location, non-dedicated drilling and sampling equipment was thoroughly steam cleaned and new plastic bags were used for each sampling interval.

Surface soil sampling activities were completed on May 3, 4, and 12, 2023, and January 17 and 30, 2024 . GHD advanced forty-one surface soil sampling locations (SS-1 through SS-35, SS-19R, SS-25R1, SS-25R2, SS-25R3, SS-29D and SS-30D) with a spade and/or hand auger to depths of up to 1.0 mBGS. The sampling equipment was decontaminated with potable water and detergent between each sampling location.

5.3 Soil Sampling

Soils recovered from each borehole, test pit and surface soil sampling location were logged using the Unified Soil Classification System (USCS), making special note of any visual or olfactory evidence of potential impacts.

Soil samples were qualitatively and quantitatively screened in the field for the presence of impact. Qualitative screening was based on visual and olfactory observations, while quantitative screening was based on the measurement of undifferentiated volatile organic vapours in the headspace of the soil samples collected. GHD field personnel screened the soil from the boreholes and select test pit and surface soil sampling locations by placing a portion of the soil core in a Ziploc® bag and measuring relative concentrations of undifferentiated volatile organic vapour readings in the headspace inside the bag using a photoionization detector (PID). For the test pits, the soil sample exhibiting the strongest field evidence of impact (i.e., high PID readings and visual and/or olfactory evidence of impact) was submitted for laboratory analyses. For UA-1(S) and UA-1 through UA-4, a soil sample immediately above the water table was submitted for laboratory analyses for each borehole. For UA-6 through UA-8, and SS-1 through SS-35, SS-19R, SS-25R1, SS-25R2, SS-25R3, SS-29D and SS-30D, surface soil samples (within the first one metre) were collected. Soil samples were collected in laboratory-supplied glass containers which were placed in a cooler containing ice for sample preservation. Undisturbed soil samples for PHC F1 and VOC analyses were placed directly in sample containers provided by the laboratory. Field screening measurement methods are described in Section 5.4. The geological conditions and qualitative and quantitative information (including PID measurements) collected at each investigative location are presented on stratigraphic and instrumentations logs provided in Appendix C. The investigative locations are shown on Figure 2.

5.4 Field Screening Measurements

GHD field personnel screened the soil from the boreholes and select test pits and surface soil sampling locations by placing a portion of the soil core in a Ziploc® bag and measuring relative concentrations of undifferentiated volatile organic vapour readings in the headspace inside the bag using a PID.

Prior to use, the PID was inspected and calibrated according to the manufacturer's recommendations. Calibrating the MiniRae 3000 is a two point process using "fresh air" and the standard reference gas (also known as span gas). A "fresh air" calibration, which contained no detectable VOC (0.0 parts per million [ppm]), was used to set the zero point for the sensor. Then, a standard reference gas (isobutylene) of known concentration (100 ppm) was used to set the second point of reference.

The PID model specifications are listed below:

Detector:	Photo ionization detector with 10.6 eV UV lamp
Measurement Accuracy (Isobutylene):	0 - 2,000 ppm: ±2 ppm or 10% of reading >2,000 ppm: ±20% of reading
Calibration:	Two point field calibration of zero and standard reference gas

The geological conditions and qualitative and quantitative information (including PID measurements) collected at each investigative locations are presented on the borehole stratigraphic and instrumentation logs provided in Appendix C.

5.5 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed within the annulus of all eleven of the boreholes that were advanced as part of the Phase Two ESA. The bottom screened depths of the monitoring wells ranged from 2.75 to 43.90 mBGS. A summary of monitoring well completion details is presented in Table 2.

The groundwater monitoring wells were constructed with a 51-mm (2-inch) diameter, Schedule 40 polyvinyl chloride (PVC) riser with a 1.5 m (5 feet) or 0.91 m (3 feet) long, No. 10 slot size well screen. The well screens were installed within saturated portions of the MU and ML for MU-1 and ML-1, respectively. The MU was identified at a depth of 26.83 mBGS and the aquifer was identified to be approximately 9.1 m in thickness. The ML was identified at a depth of 39.01 mBGS and the aquifer was identified to be approximately 6.1 m in thickness. For the UA wells, the well screens were installed to straddle the groundwater table based on wet/saturated soil conditions encountered during borehole advancement activities. At monitoring well locations UA-2, UA-3 and UA-4, saturated soils were identified at a depth of 17.68 mBGS. At UA-5, UA-6, UA-7, and UA-8, saturated soils were identified at 19.81, 21.64, 19.20, and 20.72 mBGS, respectively. At monitoring well location UA-1, a seam of saturated soil was also encountered from 2.44 to 2.90 mBGS. A shallow groundwater monitoring well UA-1(S) was installed at this location. Shallow groundwater was not encountered at the other UA wells.

A silica sand pack was placed in the annular space between the PVC screen/riser pipe and the borehole to a height of approximately 0.3 m above the top of the screen. A bentonite seal was placed directly above the sand pack and extended to within 0.3 m of the ground surface. To complete the instrumentation, an expandable J-plug was installed on the riser casing. A protective monument casing with a concrete collar was placed around each of the wells upon completion. Each groundwater monitoring well was equipped with dedicated sampling equipment consisting of Waterra™ tubing and inertial foot valves for monitoring well development.

Following installation, monitoring well UA-3 was found to be dry due to a blocked well screen. The monitoring well was reinstalled.

The monitoring wells were registered with the MECP in accordance with O. Reg. 903. A summary of monitoring well construction details are provided in Table 2. The locations of the monitoring wells are shown on Figure 2. The stratigraphic and instrumentation logs are provided in Appendix C.

5.6 Groundwater: Field Measurements of Water Quality Parameters

In order to ensure that samples representative of on-Site groundwater conditions were obtained, each monitoring well was developed upon completion of installation. GHD implemented the following protocol during well development activities:

– The groundwater monitoring wells were equipped with either dedicated Waterra™ tubing and an inertial foot valve or dedicated Waterra™ tubing for a monsoon pump for well development activities.
– The groundwater monitoring wells were purged of a minimum of 5 to 10 well volumes to remove the standing groundwater volume in the well.
– Field measurements of temperature, pH, and electrical conductivity were recorded after each purged well volume using a Horiba water quality metre until consistent field measurements were recorded indicating that water in the well was representative of groundwater conditions.

The purged water was temporarily contained in 205-litre drums or 1,000-litre plastic totes. At monitoring well locations MU-1 and ML-1, the volume of purge water was greater than the volume of municipal water added during borehole drilling.

5.7 Groundwater: Sampling

Prior to initiating groundwater sampling activities, depth to groundwater measurements and measurements for NAPL or free product were completed at each of the monitoring wells. No free product was observed at any of the monitoring wells.

A minimum 24-hour period was allowed subsequent to well development to permit well recovery prior to sampling. Sample collection was performed using disposable clear polyvinylchloride (PVC) bailers. Groundwater samples collected for metals analysis were field filtered using a 0.45-micron filter prior to sample collection.

A grab sample from the municipal water supplied by the driller was also collected for analysis of volatile organic compounds (VOCs), including trihalomethanes (THMs). All VOC parameters, including THMs, detected in the municipal water supply were also analyzed for in the groundwater samples. If these parameters were not detected in the groundwater samples, it was concluded that all of the municipal water added to the wells during drilling activities was fully removed.

Groundwater samples were collected in laboratory-supplied sample containers specific to the analytical parameters, stored in coolers chilled with ice, and submitted under chain-of-custody protocol for laboratory analysis. All groundwater samples were collected using the appropriate sampling techniques.

5.8 Sediment Sampling

Sediment sampling was not completed during the Phase Two ESA as no surface water bodies are located on the Site.

5.9 Analytical Testing

All groundwater samples were submitted under chain-of-custody protocol to ALS Laboratory Group (ALS) for chemical analysis. ALS is accredited by the Canadian Association for Laboratory Accreditation (CALA), a MECP-approved accreditation body.

A copy of the analytical laboratory reports is provided in Appendix D.

5.10 Residue Management Procedures

The groundwater purge water and wash water generated during drilling and development activities was contained in 205-litre drums or 1,000-litre plastic totes were stored on-Site, pending characterization and future off-Site disposal in accordance with applicable regulations. The soil cuttings generated during drilling, test pitting and surface sampling activities were redistributed onto the Property in the vicinity of the investigative locations.

5.11 Elevation Surveying

All monitoring well locations were surveyed for horizontal and vertical control relative to geodetic benchmark plaque 65-208, which is located at Red Brick Church (Emmanuel Missionary) on the west side of Waterloo Regional Road 21, 0.8 km south of the junction of Waterloo Regional Roads 86 and 21 in Elmira. Benchmark plaque 65-208 has an elevation of 362.562 mAMSL. The ground surface and top of riser pipe elevation of each of the groundwater

monitoring wells completed during the Phase Two ESA were surveyed with respect to the benchmark. The ground surface and top of riser elevations for the groundwater monitoring wells are presented in Table 2.

The test pit and surface soil sampling locations were surveyed for horizontal and vertical control using an RTK GPS.

5.12 Quality Assurance and Quality Control Measures

A Quality Assurance/Quality Control (QA/QC) program was implemented during the Phase Two ESA to ensure quality data was generated.

This program involved both field and laboratory QA/QC measures. The QA/QC program was initiated to ensure that if any form of sample contamination occurs, or if any lack of precision in the analytical methods employed is evident, the potential source and degree of the contamination or analytical imprecision can be identified and adequately addressed.

Samples were collected in clean laboratory-supplied sampling containers with the appropriate preservative and submitted under chain-of-custody protocol to ALS Laboratory Group for chemical analysis. Soil samples that were submitted for analysis of volatile parameters (e.g., VOCs and PHC F1) were collected using the methanol preservation method. From the time of sample collection to the time of submission to the laboratory, samples were stored in a cooler with ice or ice packs to maintain sample integrity.

The following field measures were taken for quality assurance purposes:

– Between collection of each soil and groundwater sample, GHD field personnel donned a new pair of disposable nitrile gloves.
– Prior to use, and between each borehole location, the drilling and non-dedicated sampling equipment was scrubbed clean using a hard bristled brush (where needed), Alconox® soap, and potable water followed by a potable water rinse.
– Wherever possible, dedicated sampling equipment (e.g., LDPE tubing, fittings, Ziploc® bags, etc.) was used to reduce the potential for cross contamination.
– Groundwater samples collected for metals analysis were field filtered using dedicated 0.45 micron filters during sample collection.

To validate the field analysis, a minimum of one QA/QC field duplicate sample was collected for every 10 samples for each analytical parameter of each media (soil and groundwater) and submitted for laboratory analysis. Trip blanks were also submitted (approximately one per laboratory submission) for groundwater samples where analysis of volatile parameters was required.

QC samples were also analyzed by the laboratory as required by their analytical methods. Analytical results received by GHD were reviewed and verified. The verification program consists of reviewing the following parameters:

– Sample holding times
– Surrogate spike recoveries
– Method blank analysis
– Matrix spike and matrix spike duplicate recoveries
– Laboratory control sample analysis
– Calibration verification sample analysis
– Laboratory duplicate analysis

– Field duplicate analysis
– Trip blank analysis

A copy of the data verification memorandum prepared by a GHD quality assurance officer is provided in Appendix E. Based on the review of verification provided in the data verification memorandum, the analytical data generated during the Phase Two ESA are of acceptable precision and accuracy for their intended use with the qualifications noted in Appendix E, with the exception of 4,4'-DDT and Methoxychlor in the SS-1 soil sample. The data was deemed unusable, and the sample results were rejected due to extremely low (<20%) recoveries on matrix spike results.

6. Review and Evaluation

This review and evaluation section describes the results of the Phase Two ESA. An overview of the contents of each subsection is provided in the following table:

Section	Title	Contents
6.1	Geology	– Locations of geologic cross-sections (Figure 6) – Geologic cross-sections (Figure 7 and Figure 8)
6.2	Groundwater: Elevations and Flow Direction	– Summary of monitoring well completion details (Table 2) – Groundwater level measurements and elevations (Table 3) – Groundwater elevation contours (Figure 5) – Evaluation of hydrogeological conditions from previous investigations and Phase Two ESA
6.3	Groundwater Hydraulic Gradients	– Description of hydraulic conditions – Horizontal and vertical hydraulic gradients
6.4	Hydraulic Conductivity	– Hydraulic conductivity determination
6.5	Soil Texture	– Rationale for not using the Standards for fine-medium textured soil
6.6	Soil: Field Screening	– Discussion of field screening results
6.7	Soil Quality	– Location and depths of soil samples – Evaluation of soil analytical data compared to MECP Table 2 Standards (Table 4) – Maximum soil concentrations (Table 5)
6.8	Groundwater Quality	– Locations and depths of groundwater samples – Evaluation of groundwater analytical data compared to MECP Table 2 Standards (Table 6) – Maximum groundwater concentrations (Table 7) – Evidence to demonstrate no presence of NAPL
6.9	Sediment Quality	– No water bodies are located on the Property. Therefore, no sediment samples were collected.
6.10	QA/QC Results	– Review and summary of QA/QC analytical data

6.1 Geology

The interpreted geological conditions at the Site are based on geologic conditions encountered during the Phase Two ESA completed by GHD and are consistent with the regional hydrogeologic conditions throughout Elmira described in

Section 3.1. The materials and geologic deposits generally encountered at the Site along the central and south-eastern portion of the Property (UA monitoring wells UA-2 through UA-5) during the Phase Two ESA consisted of the following:

- **Topsoil** – A surficial layer of topsoil was encountered at the ground surface that extended to a maximum depth of 1.5 mBGS.
- **Silty Clay** – The topsoil was underlain by clay with varying amount of silt and gravel that extended to approximately 4.0 mBGS corresponding to the SAT.
- **Silt** – Beneath the silty clay layer, a silt deposit, also corresponding to the SAT, extended to a maximum depth of 19.2 mBGS at monitoring well UA-5.
- **Sand and Gravel** – The silt deposit was underlain by a sand and gravel deposit corresponding to the UA that extended to a maximum depth of approximately 21.34 mBGS at monitoring well UA-5.
- **Sand** – The sand and gravel deposit was underlain by a sand deposit, also corresponding to the UA, at UA-3 that extended to 20.73 mBGS, and at UA-4 that extended to 20.42 mBGS.

Saturated soil conditions were encountered within the UA between 17.68 and 19.20 mBGS along the central and south-eastern portion of the Property.

The stratigraphy encountered in the northeastern corner of the Property consisted of topsoil to 0.61 mBGS underlain by clay with varying amount of silt and gravel that extended to approximately 21.04 mBGS. A seam of saturated soil was encountered from 2.44 to 2.90 mBGS, likely corresponding to a discontinuous lense, and a shallow groundwater monitoring well UA-1(S) was installed. Beneath the clay layer, a sand and gravel deposit extended to 23.78 mBGS. Saturated soil conditions in the UA were encountered at 21.04 mBGS. The sand and gravel deposit was underlain by a clay layer that extended to 26.83 mBGS corresponding to the UAT. Underneath the clay layer, the MU was encountered (MU monitoring well MU-1), which consisted of sand and gravel that extended to 35.97 mBGS. The MU was underlain by a seam of clay that extended to 36.58 mBGS, corresponding to the MAT, followed by a sand and gravel deposit that extended to 38.71 mBGS and by a seam of silty sand that extended to 39.01 mBGS. The ML was then encountered, which consisted of sandy gravel that extended to the end of the borehole at 48.16 mBGS..

The stratigraphy encountered at UA-6 located on the south-central portion of the Site, UA-7 located on the southwestern portion of the Site and UA-8 located on the west-central portion of the Site generally consisted of topsoil to approximately 0.4 mBGS, underlain by clay with varying amounts of silt and gravel that extended to a maximum depth of 6.09 mBGS at UA-7. Beneath the clay layer, a silt deposit extended to a maximum depth of 16.15 mBGS at UA-8. Beneath the silt deposit, a sand deposit extended to 20.72 mBGS at UA-7, 25.6 mBGS at UA-8 and to 16.15 mBGS at UA-6. The sand deposit at UA-6 was underlain by a silt layer to 21.64 mBGS, followed by sand and gravel layers to the end of the borehole at 26.82 mBGS. The sand deposit at UA-7 was underlain by a clay layer to 21.94 mBGS followed by a silt layer to the end of the borehole at 23.77 mBGS. The sand deposit at UA-7 was underlain by a clay layer to the end of the borehole at 26.82 mBGS. Saturated soil conditions were encountered between 19.20 and 21.64 mBGS at these locations on the western portion of the Property.

Bedrock was not encountered at the Site during the Phase Two ESA. A review of published bedrock geologic mapping completed as part of the Phase One ESA indicated that the bedrock in the area of the Site is anticipated to be at a depth of approximately 50 mBGS.

Two geologic cross-sections were developed for the Site. The locations of the geologic cross-sections are shown on Figure 6. Geologic Cross-Sections A-A' and B-B' are shown on Figure 7 and Figure 8, respectively. These cross-sections depict the generalized extent of the hydrostratigraphic units at the Site. The elevations displayed on the geologic cross-sections are in mAMSL.

6.2 Groundwater Elevations and Flow Direction

GHD was provided with a draft Preliminary Hydrogeological Investigation Report (Report) for the Site, prepared by Pinchin in December 2022. The draft Report investigated soil and groundwater conditions at the Site to a depth of

6.7 mBGS. Soils encountered during shallow monitoring wells installed as part of that investigation consisted of topsoil overlying silt till and clayey silt, corresponding to the SAT. The Pinchin monitoring wells screened predominantly silt and clay soil types, within only one well screening sand and gravel. Groundwater was identified at depths ranging from 0.39 m to 3.08 mBGS on March 25, 2022. Based on these observations, shallow groundwater flow was identified by Pinchin to be to the southeast. However, subsequent groundwater monitoring conducted by Pinchin on May 19, August 10, and November 1, 2022 encountered dry conditions in all but one of their shallow monitoring wells. The one well where groundwater remained screens silt and clay that is not representative of a continuous groundwater system. The one well intersecting sand and gravel went dry.

In GHD's opinion, the shallow groundwater identified in the Pinchin report is perched water that likely is present only on a seasonal basis and likely is representative of wet winter melt conditions within the SAT. This is consistent with GHD's monitoring well drilling observations of unsaturated conditions within the SAT until encountering saturated conditions in the underlying UA. Thus, the groundwater identified by Pinchin is not indicative of a true groundwater table.

The interpreted hydrogeological conditions at the Site are based on a review of the stratigraphic logs and groundwater elevations for the Site. The monitoring well completion details are provided in Table 2 and a summary of the groundwater level measurements and elevations is provided in Table 3. Based on a review of the Phase Two ESA stratigraphic logs, and consistent with the regional hydrostratigraphic units observed throughout Elmira, the saturated sand and gravel, silty sand and sand units of the UA comprises the groundwater table underlying the Site. GHD measured the depth to groundwater and completed a check for the presence of any NAPL at each accessible monitoring well on June 16, 2023. The depth to groundwater was measured relative to a specific reference point for the monitoring well (i.e., the top of the monitoring well riser pipe).

During drilling activities, groundwater was identified in the UA at depths ranging from 17.68 m to 21.64 mBGS. Groundwater was identified in the MU at 26.83 mBGS and in the ML at 39.01 mBGS. Based on the surveyed top of riser pipe elevations, the groundwater surface or potentiometric elevation was determined and used to prepare groundwater elevation contours for the Site. The groundwater level measurements indicate that the groundwater table is present within the UA at depths ranging from 15.82 mBGS at UA-5 to 21.71 mBGS at UA-8. The elevations of the UA groundwater table vary from 342.68 mAMSL at UA-1 to 341.15 mAMSL at UA-3. The groundwater level measurement in MU-1 was 18.51 mBGS and 18.49 mBGS in ML-1 (equating groundwater elevations of 341.17 mAMSL and 341.20 mAMSL, respectively). The groundwater level measurement at UA-1(S) indicates that shallow perched water is present at a depth of 1.55 mBGS (equating to a groundwater elevation of 358.19 mAMSL).

Groundwater elevation contours were prepared based on the groundwater level measurements collected in the UA wells on June 16, 2023, and are presented on Figure 5. The groundwater elevation contours indicate that groundwater flow in the UA is generally in a southern direction.

The potential presence of NAPL or free product was investigated through the use of an oil/water interface probe at each monitoring well location. NAPL was not encountered at any of the monitoring well locations.

6.3 Groundwater Hydraulic Gradients

The horizontal gradient across the Site in the UA were assessed using UA-1 and UA-6. Based on the groundwater elevations, the horizontal gradient is approximately 0.02 metres per metre (m/m).

Vertical hydraulic gradients were assessed at the following well pairs: UA-1 and MU-1, UA-1 and ML-1, and MU-1 and ML-1. The average vertical gradient for the Site is 0.06 m/m (downward).

6.4 Hydraulic Conductivity

Hydraulic conductivity values (commonly referred to as k-values) for the stratigraphic units were estimated using generally accepted ranges[8] for the stratigraphic conditions observed and recorded by field personnel in the UA. Estimated soil hydraulic conductivity ranges are as follows:

– Sand and Gravel/Sand/Silty Sand: 10^{-2} to 10^{-7} centimetres per second (cm/s)

6.5 Soil Texture

Soil grain size analysis was not completed as part of the Phase Two ESA. Therefore, when evaluating the soil and groundwater sample analytical results, GHD applied the more conservative MECP Table 2 Standards for coarse-textured soil.

6.6 Soil: Field Screening

During borehole advancement, and for select test pits and surface soil sampling locations, GHD completed soil field screening by monitoring the soil samples for organic vapours with a PID and documenting any visual or olfactory evidence of potential impact, as discussed in Sections 5.3 and 5.4.

The results of the soil field screening and corresponding sample depth intervals are provided on the stratigraphic and instrumentation logs provided in Appendix C.

PID measurements consistently were 0 ppm, which indicates no evidence of environmental impairment to the sub-surface (indicative of background conditions).

6.7 Soil Quality

A total of 69 soil samples (including 9 field duplicate samples) were collected and submitted for chemical analysis of one or more of the following parameters during the Phase Two ESA investigations completed at the Site:

– Metals
– PAHs
– PHC F1 to F4
– VOCs
– Inorganics (EC, CN^-, SAR, and pH)
– OCs

A summary of the investigative locations associated with each APEC is provided below:

Area of Potential Environmental Concern	Contaminants of Potential Concern in Soil	Investigative Locations
APEC #2 – Adjacent Land Use to the East	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-, pH, EC, SAR	UA-2, UA-3, UA-4
APEC #3 – Adjacent Land Use to the Northeast	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-, pH, EC, SAR	UA-1, UA-1(S)
APEC #5A – Northern Topsoil Stockpile	Metals, OCs, pH, EC, SAR	SS-1 through SS-5

[8] Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, 604 p.

Area of Potential Environmental Concern	Contaminants of Potential Concern in Soil	Investigative Locations
APEC #5B – Southern Topsoil Stockpile	Metals, OCs, pH, EC, SAR	SS-6 through SS-10
APEC #6 – Historical Burn Pile	Metals, PAHs, pH, EC, SAR	TP-1 through TP-5, TP-4A, SS-29, SS-29D, SS-30, SS-30D, SS-31 through SS-35
APEC #7 – Historical and Current Agricultural Use	Metals, OCs, pH, EC, SAR	SS-11 through SS-20, and SS-19R
APEC #8 – Heating Oil AST	PHCs, VOCs, PAHs	SS-21 and SS-22
APEC #9 – Chemical Storage	PHCs, VOCs, PAHs, Metals, CN^-, pH, EC, SAR	SS-23 through SS-25, and SS-25R1, SS-25R2 and SS-25R3

All soil samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations, with the exception of some slightly elevated electrical conductivity (EC) in six samples (TP-1 through TP-5 and TP-4A) in the area of the former burn pile. In supplemental sampling of soils within the burn pile area, all EC results were below the MECP Table 2 Standards, and across the Site, EC results were below the MECP Table 2 Standards in 50 of 56 samples analyzed. Elevated EC levels can be expected in agricultural fields due to any nutrients that have previously been applied for agricultural purposes. EC is a plant growth related COC, and elevated concentrations do not pose risks to human health. EC risks are limited to potential exposure pathways to ecological receptors. As the proposed future use of the Site is for residential purposes, in which soil exposure pathways to ecological receptors are expected to be minimal, the Qualified Person (QP_{ESA}) has determined that the EC results above the MECP Table 2 Standards are not of concern. As a result, EC was not identified as a COC in the Phase Two ESA.

Hot water extractable boron was originally detected in the soil samples collected from TP-2 and TP-4A in the area of the former burn pile, and in the soil sample collected from SS-19 on the eastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. In addition, some PAHs (acenaphthylene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a h]anthracene, fluoranthene and indeno[1 2 3-cd]pyrene) were originally detected in the soil sample collected from SS-25 in the area of the chemical storage on the northeastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. TP-2, TP4A and SS-19 were resampled within a 2-m radius of the original samples, identified as SS-29, SS-30 and SS-19R, respectively, for metals and inorganics, and SS-25 was resampled three times within a 2-m radius of the original sample identified as SS-25R1, SS-25R2 and SS-25R3 for PAHs.. In accordance with Section 48(2) and 48(4) of O. Reg. 153/04, if two or more samples of soil are collected from sampling points at the same sampling location that are at the same depth on, in or under the property (within a 2-m radius of each other), the property meets a standard if the average of the sampling results meets the applicable site condition standard. The average of the original samples and resamples (including all applicable field duplicates) meet the MECP Table 2 Standards for hot water extractable boron and PAHs. Therefore, the hot water extractable boron and the PAH values greater than the MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O. Reg. 153/04, and hot water extractable boron and the PAHs were not identified as COCs in the Phase Two ESA. The original sample values, resample values and average values are included in Table 4.

Based on the above, no COCs were identified in soil and there is no evidence of soil impacts related to any of the APECs identified at the Site.

6.8 Groundwater Quality

A total of thirteen groundwater samples (including two field duplicate samples) were collected and submitted for chemical analysis of one or more the following parameters during the Phase Two ESA completed at the Site:

– Metals
– PHC fractions F1 to F4
– VOCs
– Inorganics (CN^- and Cl^-)
– NDMA

A summary of groundwater sampling locations and chemical analysis is provided in Table 1.

A summary of the investigative locations associated with each APEC is provided below:

Area of Potential Environmental Concern	Contaminants of Potential Concern in Groundwater	Investigative Locations
APEC #1 – Adjacent Land Use to the Southeast	PHCs, VOCs	UA-5
APEC #2 – Adjacent Land Use to the East	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-	UA-2, UA-3, UA-4
APEC #3 – Adjacent Land Use to the Northeast	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-	UA-1, UA-1(S)
APEC #4 – Groundwater Quality - NDMA	NDMA	MU-1, ML-1

The groundwater analytical data, compared to the MECP Table 2 Standards, are provided in Table 6. A summary of the maximum groundwater concentration data is provided in Table 7.

All groundwater samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations.

NDMA was detected in MU-1 above the Ontario Drinking Water Standard (ODWS) for NDMA and detected in the groundwater sample at ML-1 below the ODWS, both located in the northeast corner of the Property. There is no MECP Table 2 Standard for NDMA. Prior to initiation of the Phase Two ESA, it was expected that the area wide NDMA plume in Elmira extended onto the Site. The area wide groundwater plume exists of a large area of Elmira that is developed for residential, commercial, industrial, institutional, and other uses. The area wide plume has been delineated and studied for many years, under the supervision of the MECP. As such, delineation of the NDMA impact to groundwater at the Site, was not an object of the Phase Two ESA.

The municipal water supply grab sample analytical results identified detections for bromodichloromethane, bromoform, chloroform and dibromochloromethane. These parameters are the four most commonly detected THMs in drinking water.[9] Therefore, these select parameters were also analyzed for in the groundwater samples. The municipal water supply grab sample analytical results were not compared to the MECP Table 2 Standards as they are not associated with the Site. The select THMs were not detected in samples collected from the four wells where municipal potable water was used during drilling, other than trace concentrations of chloroform at the detection limit at ML-1. This indicates that all of the municipal water added during drilling activities was removed during well development activities, with the possible exception of municipal water at ML-1. Chloroform was detected in the ML-1 groundwater sample at its detection limit of 0.50 µg/L, indicating potential for residual drilling water (municipal water) near the well screen. As a result, the analytical results for ML-1 could potentially be somewhat biased low. Since the overlying groundwater at MU-1 contains NDMA at a concentration above the OWDS, this potential bias in the reported NDMA concentration of ML-1 has no impact on the findings of this Phase Two ESA.

[9] Ministry of the Environment (MOE), Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, revised June 2003 (ODWS).

Because of the following reasons, NDMA was not identified as a COC at the Property:

– The groundwater plume has been extensively studied in consultation with the MECP for over 30 years.
– Lanxess is under an Order to monitor and remediate the groundwater.
– The groundwater impact is deep and there is a Township of Woolwich Zoning By-law that prohibits the use of groundwater in Elmira for potable purposes. The By-law will be extended to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment.
– As described in the CSM developed for this Phase Two ESA presented in Section 7, there are no pathways for human or ecological exposure associated with the presence of NDMA in MU/ML groundwater at the Site.

Based on the above, no COCs were identified in groundwater and there is no evidence of groundwater impacts related to any of the APECs identified at the Site.

6.9 Sediment Quality

Sediment sampling was not completed during the Phase Two ESA as no surface water bodies are located on the Site.

6.10 Quality Assurance and Quality Control (QA/QC) Results

One groundwater field duplicate sample and nine soil field duplicate samples were analyzed during the Phase Two ESA. One trip blank sample was submitted for each groundwater and soil sample submission that contained samples to be analyzed for either PHC fraction F1 or VOCs. The QA/QC samples were also analyzed by the laboratory as required by their analytical methods. Analytical results received by GHD were reviewed and verified. As noted previously in Section 5.12, a copy of the data quality assessment and verification memorandum is provided in Appendix E.

Based on the results of the data quality assessment and validation, the results are considered suitable for their intended use with applicable qualifications with the exception of 4,4'-DDT and Methoxychlor in the SS-1 soil sample. The data was deemed unusable, and the sample results were rejected due to extremely low (<20%) recoveries on matrix spike results. Qualifications associated with the analytical results are noted next to the respective data in Tables 5 and 6.

7. Phase Two Conceptual Site Model

The following presents the CSM for this Phase Two ESA prepared for the land parcel located north of Listowel Road and west of Arthur Street South in Elmira, Ontario, including 354 Arthur Street South, 1065 Listowel Road and 1103 Listowel Road, collectively referred to herein as the Site or Property. A Site Location Map and a Site Plan are provided on Figure 1 and Figure 2, respectively.

The Site is located in the southern portion of the community of Elmira, in the Township of Woolwich and has primarily been used for agricultural purposes in the past. The area to the north and east of the Site was primarily developed for mixed residential and commercial purposes in the 1970s. The portion of the Site known as 354 Arthur Street South is approximately 5.28 hectares (13.04 acres). This portion of the Property is utilized for agricultural purposes and previously contained a garage and two chicken barns located on the northeastern portion of the Property. The portion of the Site located at 1065 Listowel Road is approximately 11.31 hectares (27.94 acres) in size and is utilized for

agricultural purposes. There are two large stockpiles of topsoil located on this portion of the Property. There have never been any structures located on this portion of the Property in the past. The portion of the Site located at 1103 Listowel Road is approximately 0.70 hectares (1.73 acres) in size and contains a residential dwelling, a storage garage and vacant land that was previously utilized for agricultural purposes. The proposed future use of the Site is for residential purposes. The final locations of any proposed future buildings and/or structures on the Site are currently unknown.

The Phase Two ESA was completed in accordance with the requirements of O. Reg. 153/04. GHD previously completed a Phase One ESA of the Site commencing in November 2022 and summarized in a report dated February 23, 2024.

7.1 Potentially Contaminating Activities and Areas of Potential Environmental Concern

7.1.1 Potentially Contaminating Activities

Potentially contaminating activities (PCAs), as defined in O. Reg. 153/04, that have been identified on, in, or under the Property, or located within the Phase One ESA study area (which includes all properties located wholly or partially within a 250-m radius from the Site boundary), and having the potential to contribute to an area of potential environmental concern (APEC), identified in the Phase One ESA completed by GHD for the Site are summarized below:

PCA(s)	Location of PCA (on-site or off-site)	APEC	Location of the APEC on Phase Two ESA Property
28. Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	APEC #1 – Adjacent Land Use to the Southeast	Southeastern corner of the Property
27. Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles 28. Gasoline and Associated Products Storage in Fixed Tanks 52. Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-Site	APEC #2 – Adjacent Land Use to the East	Eastern portion of the Property, surrounding 374 Arthur Street South
27. Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles 28. Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	APEC #3 – Adjacent Land Use to the Northeast	Northeast corner of the Property
PCA is not listed in O. Reg. 153/04	On-Site	APEC #4 – Groundwater Quality – NDMA	Entire Property
30. Importation of Fill Material of Unknown Quality	On-Site	APEC #5A – Northern Topsoil Stockpile	Northwestern portion of the Property
30. Importation of Fill Material of Unknown Quality	On-Site	APEC #5B – Southern Topsoil Stockpile	Southwestern portion of the Property
PCA is not listed in O. Reg. 153/04	On-Site	APEC #6 – Historical Burn Pile	Northeastern portion of the Property

PCA(s)	Location of PCA (on-site or off-site)	APEC	Location of the APEC on Phase Two ESA Property
40. Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	APEC #7 – Historical and Current Agricultural Use	Entire Property
28. Gasoline and Associated Products Storage in Fixed Tanks	On-Site	APEC #8 – Heating Oil AST	Southwestern corner of the Property at the residential dwelling
8. Chemical Manufacturing, Processing and Bulk Storage	On-Site	APEC #9 – Chemical Storage	Northeastern portion of the Property

APECs identified at the Site are shown on Figure 3.

Several off-Site PCAs were identified to be associated with properties located within the Phase One ESA study area that were not interpreted to have the potential to contribute to an APEC at the Site. A summary of the off-Site PCAs that did not result in an APEC at the Site is provided below:

Property Address	PCA(s), in accordance with O. Reg. 153/04	Rationale for Exclusion
99 Earl Martin Drive (185 m northeast of the Site)	#34 – Metal Fabrication	Due to the distance between 99 Earl Martin Drive and the Site.
361 Arthur Street South (90 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	361 Arthur Street South is located hydraulically cross-gradient of the Site
371 Arthur Street South (90 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	371 Arthur Street South is located hydraulically cross-gradient of the Site
330 Arthur Street South (145 m northeast of the Site)	#28 – Gasoline and Associated Products Storage in Fixed Tanks	Due to the distance between 330 Arthur Street South and the Site.
25 Earl Martin Drive (215 m east of the Site)	#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles #28 – Gasoline and Associated Products Storage in Fixed Tanks	Due to the distance between 25 Earl Martin Drive and the Site, and that it is located hydraulically cross-gradient of the Site.

PCAs identified within the Phase One Study Area are shown on Figure 4.

7.1.2 Areas of Potential Environmental Concern

A description of each of the APECs identified in the Phase One ESA completed by GHD for the Site is provided below:

– **APEC #1 – Adjacent Land Use to the Southeast:** Based on GHD observations and review of the environmental databases search report, a private fuel outlet with liquid fuel USTs is present 35 m southeast of the Site, south of Listowel Road, at 390 Arthur Street South. The operation of a private fuel outlet at 390 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 390 Arthur Street South to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the southeastern corner of the Property was identified as **APEC #1,** in the event that chemical releases have occurred at that property and migrated onto the Site.

- **APEC #2 – Adjacent Land Use to the East:** Based on GHD observations and interview with the property owner, a garage is utilized by Contour Direction Drilling and VHF Construction for storage and minor maintenance of equipment at 374 Arthur Street South, located adjacent to the east of the Site. The operation of a garage at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the operation of a garage at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2**, in the event that chemical releases have occurred at that property and migrated onto the Site. 374 Arthur Street South was historically occupied by a transportation company (Elmont Transportation, a division of Elmont Industrial Supply Inc., as confirmed by an internet search) and the garage was used as a small cross dock. The historical operation of a transportation company at 374 Arthur Street South was identified as a PCA [#52 – Storage, maintenance, fueling and repair of equipment, vehicles, and material used to maintain transportation systems] in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a transportation company at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2,** in the event that chemical releases have occurred at that property and migrated onto the Site. According to the property owner, a 1,000-litre aboveground diesel fuel tank was previously located on the 374 Arthur Street South property, to the east of the garage building. The property owner stated that there were never any spills or releases associated with the storage tank. No visual evidence of any staining was noted in the area of the former diesel fuel AST; however, the ground was snow covered at the time of the site inspection. The historical operation of the diesel AST on the 374 Arthur Street South property was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04. Due to the close proximity of 374 Arthur Street South to the Site, the historical operation of a diesel AST at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the eastern portion of the Site surrounding the 374 Arthur Street South property was identified as **APEC #2** in the event that chemical releases have occurred at that property and migrated onto the Site.
- **APEC #3 – Adjacent Land Use to the Northeast:** Based on GHD observations and interview with the property owner, the two-bay commercial building located on the east side of 346 Arthur Street South, located adjacent to the northeast of the Site, was historically occupied by Apple Auto Glass (also known as Syd's Auto Glass), an auto glass repair and replacement facility. The historical operation of an Apple Auto Glass at 374 Arthur Street South was identified as a PCA [#27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles] in accordance with O. Reg. 153/04. Due to the close proximity of 346 Arthur Street South to the Site, the historical operation of an Apple Auto Glass at that property was identified as having the potential to contribute to an APEC at the Site. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the Site. The property owner identified that two USTs were historically located on the eastern portion of the 346 Arthur Street South property, adjacent to the two-bay commercial building located along Arthur Street. GHD was allowed to review an engineering report that documented the closure by removal of the two USTs. This report was prepared by Rubicon Environmental (2008) Inc. and dated July 26, 2022. The report documents that one 3,800-litre UST and one 1,900-litre UST were removed from the property on June 23, 2022. At the time of removal, the steel USTs were observed to be in good condition with no perforations. The USTs were empty and there was no olfactory evidence of petroleum impacts in the fill surrounding the USTs. Eight soil samples were collected from the sidewalls and base of the excavation and analyzed for petroleum hydrocarbon (PHC) fractions F1-F4, and benzene, toluene, ethylbenzene, and xylenes (BTEX). Where detected, the concentrations of PHCs and BTEX were very low and in all samples met the Table 2: Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, Industrial/Commercial/Community Property Use for coarse textures soils as contained in

the document entitled, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Based on GHD's review of the UST closure report, there is no environmental impact to the property related to the past operation of the USTs, however, in accordance with O. Reg. 153/04, the area of the USTs must be identified as an APEC. The historical operation of the USTs at 346 Arthur Street South was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks]. As a result, the northeastern corner of the Site was identified as **APEC #3** in the event that chemical releases have occurred at that property and migrated onto the Site.

In addition, based on GHD observations and review of the environmental databases search report, a private fuel outlet with double walled liquid fuel USTs installed in 2013 is present 90 metres (m) northeast of the Site, east of Arthur Street South, at 110 Earl Martin Drive. The operation of a private fuel outlet at 110 Earl Martin Drive was identified as a PCA [#28 – Gasoline and Associated Products Storage in Fixed Tanks] in accordance with O. Reg. 153/04. Due to the close proximity of 110 Earl Martin Drive to the Site, the operation of a private fuel outlet at that property was identified as having the potential to contribute to an APEC at the Site. Any impact to the Site from this PCA would occur within **APEC #3.**

– **APEC #4 – Groundwater Quality – NDMA:** Based on review of publicly available information, an area of groundwater impacted with N-Nitroso-dimethylamine (NDMA) exists beneath a significant portion of the Community of Elmira. The groundwater impact originated at the former Uniroyal facility to the north and east of the Site, at 25 Erb Street. Extensive investigations of this groundwater plume have been undertaken for more than 30 years in consultation with the Ministry of the Environment, Conservation and Parks (MECP). Regional groundwater contamination is monitored in three aquifer units including the MU (approximately 32 to 36 meters deep), ML (approximately 48 to 50 m deep), and the Bedrock Aquifer. The MU/ML are overlain by the UA, which is the upper-most aquifer beneath Elmira, and the UA, MU, ML, and Bedrock Aquifer all are separated by aquitards. The current owner of the former Uniroyal property, Lanxess, operates a groundwater extraction and treatment system, a portion of which is located on the east side of Arthur Street, opposite the Site. At that location there are impacts to the groundwater in the MU and the ML. There are no impacts in the UA or Bedrock Aquifer at this location. Lanxess submits annual monitoring reports to the MECP detailing the treatment system operation and on-Site and off-Site groundwater quality. The 2022 monitoring of the regional groundwater plume shows that it could extend onto the eastern side of the Property within the MU and the ML. However, the groundwater sample collected as part of this Phase Two ESA from the ML at the Site monitoring well MW-1 in the northeast corner of the Site shows that NDMA is below the ODWS. Lanxess has an access agreement to monitor two paired monitoring wells that are located centrally on the Site installed in the MU and ML, CH-72B and CH-72A, respectively, shown on Figure 2. NDMA has not been detected historically in CH-72A and CH-72B. NDMA concentration contours for the MU and ML for 2019 through 2022, showing the non-detect CH-72A and CH-72B results, are provided in Appendix A. The 2019/2020 figures are excerpted from the 2020 AMR. The 2021/2022 figures are excerpted from the 2022 AMR. Both reports have been submitted to the MECP and are publicly available. Because the regional groundwater plume extent has not been on the Site, the entire Site was identified as **APEC #4** (although NDMA at ML-1 is below the ODWS). For context, it's important to note that the groundwater plume has been extensively studied in consultation with the MECP for over 30 years, that Lanxess is under an Order to monitor and remediate the groundwater in the MU and ML,, that the groundwater impact in the MU and ML is deep and there there is a Township of Woolwich Zoning By-law prohibiting the use of groundwater in Elmira for potable purposes.
  The NDMA presence beneath the Site occurs within the MU and ML only and NDMA is not present in the UA (overlying the MU and ML) at the Site. NDMA is not related to the Site and there are no historical operations or uses at the Site or in its immediate vicinity that would have resulted in releases of NDMA to the subsurface and the UA. The NDMA presence in the MU and ML within Elmira is related to the regional groundwater plume sourced from the Lanxess facility in northern Elmira that is more than 1.5 km to the northeast of the Site. It is well understood by the MECP, and by all of the public advisory committees and all of the many consultants that have

performed environmental investigations/evaluations over the last 30 years throughout Elmira, that NDMA beyond the Lanxess facility is present within the MU and ML only, and there is no NDMA in the overlying shallow UA. This is documented in the over 30-year long public record of the investigations and MECP-lead ongoing remediation of the regional groundwater plume within the MU and ML beneath Elmira.

The only way for NDMA to be present in the UA at the Site is for NDMA to migrate 1.5 km to the southwest within the UA. However, throughout Elmira, the UA is recognized to be discontinuous. It is comprised of numerous different sand and gravel units separated by intermittent aquitards. The discontinuous nature of the UA is illustrated in Figure 1.2 excerpted from the 2022 AMR and included in Appendix A. Figure 1.2 of the 2022 AMR shows a schematic of the hydrogeologic units throughout Elmira and illustrates the discontinuous nature of the UA. The UA only has the common feature of being the first groundwater bearing zone encountered beneath ground surface throughout Elmira. Thus, there is no direct pathway for NDMA in UA groundwater to migrate from the Lanxess facility to underneath the Site.

Groundwater in the UA beneath the Lanxess Facility does not migrate beyond the Lanxess Facility boundaries. This is illustrated in Figure 3.2 excerpted from the 2022 AMR and included in Appendix A. Figure 3.2 of the 2022 AMR shows UA groundwater beneath the Lanxess Facility either discharges laterally to the Canagagigue Creek that passes through the Lanxess Facility, or discharges vertically downward to the MU beneath the Lanxess facility through a window in the Upper Aquitard in the southern portion of the Lanxess facility. This window in the Upper Aquitard is shown on Figure 1.2 of the 2022 AMR (adjacent to the Lanxess site extraction well PW5).

For the Lanxess remedy of the regional groundwater plume, as approved by the MECP, it is recognized that there is no groundwater plume in the UA beyond the Lanxess facility boundaries, and thus, the remedy is not required to address groundwater in the UA beyond the Lanxess facility boundaries. This has been characterized by the more than 30 years of environmental investigation/evaluations completed throughout Elmira.

Given the weight of evidence described above, the UA acts as a clean groundwater lens that overlies the MU and ML.

The CSM demonstrates that there are no pathways for human or ecological exposure associated with the presence of NDMA in MU/ML groundwater at the Site, as follows:

- The municipal bylaws prohibiting the use of groundwater in Elmira for potable purposes prevents human exposure to the presence of NDMA in MU/ML groundwater at the Site through potable water use (i.e., no ingestion and no dermal contact through household water use, such as washing/bathing). While the Township of Woolwich Zoning By-law on prohibiting private wells does not currently extend onto the Site, GHD understands discussions have been initiated between the Township of Woolwich and the Regional Municipality of Waterloo to apply the By-law to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment.
- While NDMA is considered sufficiently volatile to pose a potential vapour intrusion concern because it has a vapour pressure that is greater than 1 millimetre mercury (MECP, 2021), the NDMA present in MU/ML groundwater does not represent a vapour intrusion concern since it is overlain by clean groundwater in the UA (i.e., there is an overlying clean groundwater lens condition).
- The NDMA presence in MU/ML groundwater is more than 30 metres deep and no excavation would extend to this depth (and there is no NDMA presence in the overlying UA). As a result, there is no potential for construction worker exposure to the NMDA presence in MU/ML groundwater through dermal contact or incidental ingestion when conducting excavation work.
- Groundwater within the MU/ML, at more than 30 metres deep, is well below plant root zones and does not discharge to any surface water bodies (and neither are any surface water bodies present at the Site or in the Site vicinity). Also, there is no NDMA presence in the overlying UA. Therefore, no ecological receptors would be exposed to the NDMA presence in MU/ML groundwater at the Site.

- **APEC #5 – Topsoil Stockpiles:** Based on discussions with the Site representative and GHD observations, two topsoil stockpiles are located on-Site along the eastern portion of the Site. According to the Site representatives, the topsoil was reportedly generated from the residential development activities on the adjacent property to the west. The northern topsoil pile was present on Site from at least the year 2000 (as identified in the 2000 aerial image) and the southern topsoil pile was present on Site from at least the year 2019 (as identified in the 2019 aerial image). No information was available regarding the quality of the material in the topsoil stockpiles. The presence of material of unknown quality in the topsoil stockpiles on-Site was identified as a PCA (#30 – Importation of Fill Material of Unknown Quality) in accordance with O. Reg. 153/04. As such the areas of the topsoil stockpiles along the eastern portion of the Property were identified as **APEC #5A** (northern topsoil stockpile) and **APEC #5B** (southern topsoil stockpile).
- **APEC #6 – Historical Burn Pile:** Based on discussions with the Site representative and GHD observations, a wood pile consisting of materials from the collapsed historical chicken barns on Site was burned on the northeastern portion of the Site approximately one month prior to the Site inspection. According to the Site representative, the ashes and approximately fifteen centimetres of topsoil were removed from the burn pile and disposed of off-Site. The burn pile area was restored with topsoil from the northern topsoil stockpile situated on the northwestern portion of the Site. Reportedly, the burn pile area covered an approximately 18 metre radii. The Site representative had no further information concerning the removal of the surficial soils in the burn pile area. The area of the burn pile was identified by the Site representative during the Site inspection and was identifiable by the area without any oat stalks in the tilled soil. The burn pile was identified as a potential source of impact to the soil quality (no PCA under O. Reg. 153/04), and as such was identified as **APEC #6**.
- **APEC #7 – Historical and Current Agricultural Use:** Based on discussions with the Site representatives and review of historical records, the Site was and is currently primarily utilized as agricultural land. No information was available regarding the types/quantities of pesticides or herbicides that may have been historically/currently used at the Site. The potential historical and current use of pesticides and herbicides at the Site is identified as a PCA (#40 – Pesticides [including Herbicides, Fungicides and Anti-Fouling Agents] Manufacturing, Processing, Bulk Storage and Large-Scale Applications) in accordance with O. Reg. 153/04. As such, the potential use of pesticides and herbicides has been identified as an area of potential environmental concern (**APEC #7**) on the entire Site.
- **APEC #8 – Heating Oil AST:** Based on discussions with the Site representative and GHD observations, one 910-litre heating oil AST was observed in the basement of the residential building located on the southern portion of the 1103 Listowel Road property. According to the Site representative, the AST was installed when the house was constructed in the 1950s, however due to the excellent condition of the observed tank, the original tank was likely replaced. No staining or evidence of releases from the tank was observed by GHD surrounding the AST or in the vicinity of the fill and vent pipes at ground surface, and the concrete floor in the vicinity of the AST was observed to be in good condition at the time of the Site inspection. However, the historical operation of the heating oil ASTs was identified as a PCA (#28 – Gasoline and Associated Products Storage in Fixed Tanks) in accordance with O. Reg. 153/04, and the area of the AST must be identified as an APEC. As a result, the area of the AST at the residential dwelling at 1103 Listowel Road, on the southwestern portion of the Site, was identified as **APEC #8**.
- **APEC #9 – Chemical Storage:** Based on discussions with the Site representative and GHD observations, the previous owner of 354 Arthur Street South stored 208-litre drums and 1,250-litre totes of sodium silicate. The chemicals were stored on Site for operations related to a precast polymerized concrete company that the previous Site owner formerly operated off Site. The drums were stored on skids in the northern portion of the southern chicken barn. Once the northern portion of southern barn was demolished approximately two weeks prior to the Site inspection, the drums were relocated to the location of the historical garage for temporary exterior storage. GHD observed four totes and twelve drums during the Site inspection. Numerous 20-litre pails and retail

size jugs and paint cans containing various chemicals were also observed by GHD in the area of the historical garage and to the west of the historical northern chicken barn. Some of the chemical labels observed included clear W/R Gloss, synthetic gear oil, fast release "B" concentrate, delvo stabilizer and an open 20-litre pail of transmission and hydraulic oil. The Site representative indicated that the drums, totes, and miscellaneous chemicals were to eventually be picked up by a chemical waste disposal company for off-Site disposal. The Site representative reported that, to the best of his knowledge, no significant spills or releases of any chemical products used or stored at the property have occurred. Snow cover precluded a detailed inspection of the ground surface for evidence of staining indicative of releases. The presence of current and historical chemical storage areas on-Site was identified as a PCA (#8 – Chemical Manufacturing, Processing and Bulk Storage) in accordance with O. Reg. 153/04. As such the areas of the current exterior chemical storage areas and the historical chemical storage areas in the barn located on the northeastern portion of the Property were identified as **APEC #9.**

7.1.3 Potential Contaminant Distribution and Preferential Migration Pathways

No COCs were identified in groundwater at the Site.

7.2 Physical Setting of the Phase Two ESA Property

The elevation of the Site ranges from approximately 357 to 365 mAMSL, based on the Phase Two ESA environmental investigations completed at the Site. Regional topography slopes steady downward to the north from 375 to 330 mAMSL towards the Conestoga River[10] located approximately 3.8 km south of the Site.

The Site is located in the broad physiographic region known as the Till Plains[11]. A review of published quaternary geologic mapping for the area of the Site indicates that the overburden consists predominantly of Tavistock Till[12]. Beneath the overburden deposits is bedrock consisting of limestone, dolostone, shale, sandstone, gypsum, and salt of the Salina Formation[13]. The thickness of the overburden deposits varies due to surficial topographic relief, but is on the order of 50 m in the vicinity of the Site when comparing overburden and bedrock topography in the area[14].

7.2.1 Geological Characteristics

The interpreted geological conditions at the Site are based on geologic conditions encountered during the Phase Two ESA completed by GHD and are consistent with the regional hydrogeologic conditions throughout Elmira described in Section 3.1. The materials and geologic deposits generally encountered at the Site along the central and south-eastern portion of the Property (UA monitoring wells UA-2 through UA-5) during the Phase Two ESA consisted of the following:

– **Topsoil** – A surficial layer of topsoil was encountered at the ground surface that extended to a maximum depth of 1.5 mBGS.
– **Silty Clay** – The topsoil was underlain by clay with varying amount of silt and gravel that extended to approximately 4.0 mBGS corresponding to the SAT.

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10 Natural Resources Canada [map]. "The Atlas of Canada - Toporama", governed by version 2.3 of the Open Government License – Canada. July 27, 2022. http://atlas.gc.ca/toporama/en/index.html
11 Chapman, L. J., and D. F., Putnam (1984), "The Physiography of Southern Ontario", Ontario Geological Survey.
12 Karrow, P.F. 1993. Quaternary geology, Conestogo area; Ontario Geological Survey, Map 2558, scale 1:50 000.
13 "Bedrock Geology of Ontario" [map]. Scale 1:250,000. OGS Earth Geoscience Data [computer files]. Sudbury, Ontario: Ontario Geological Survey & Ministry of Northern Development and Mines, 2010.
14 Thomas, J., Holden, K.M. and Karrow, P. F., 1993. Bedrock topography, Conestogo area, Southern Ontario; Ontario Geological Survey, Preliminary Map P. 3210, Scale 1:50,000.

- **Silt** – Beneath the silty clay layer, a silt deposit, also corresponding to the SAT, extended to a maximum depth of 19.2 mBGS at monitoring well UA-5.
- **Sand and Gravel** – The silt deposit was underlain by a sand and gravel deposit corresponding to the UA that extended to a maximum depth of approximately 21.34 mBGS at monitoring well UA-5.
- **Sand** – The sand and gravel deposit was underlain by a sand deposit, also corresponding to the UA, at UA-3 that extended to 20.73 mBGS, and at UA-4 that extended to 20.42 mBGS.

Saturated soil conditions were encountered within the UA between 17.68 and 19.20 mBGS along the central and south-eastern portion of the Property.

The stratigraphy encountered in the northeastern corner of the Property consisted of topsoil to 0.61 mBGS underlain by clay with varying amount of silt and gravel that extended to approximately 21.04 mBGS. A seam of saturated soil was encountered from 2.44 to 2.90 mBGS, likely corresponding to a discontinuous lense, and a shallow groundwater monitoring well UA-1(S) was installed. Beneath the clay layer, a sand and gravel deposit extended to 23.78 mBGS. Saturated soil conditions in the UA were encountered at 21.04 mBGS. The sand and gravel deposit was underlain by a clay layer that extended to 26.83 mBGS corresponding to the UAT. Underneath the clay layer, the MU was encountered (MU monitoring well MU-1), which consisted of sand and gravel that extended to 35.97 mBGS. The MU was underlain by a seam of clay that extended to 36.58 mBGS, corresponding to the MAT, followed by a sand and gravel deposit that extended to 38.71 mBGS and by a seam of silty sand that extended to 39.01 mBGS. The ML was then encountered, which consisted of sandy gravel that extended to the end of the borehole at 48.16 mBGS..

The stratigraphy encountered at UA-6 located on the south-central portion of the Site, UA-7 located on the southwestern portion of the Site and UA-8 located on the west-central portion of the Site generally consisted of topsoil to approximately 0.4 mBGS, underlain by clay with varying amounts of silt and gravel that extended to a maximum depth of 6.09 mBGS at UA-7. Beneath the clay layer, a silt deposit extended to a maximum depth of 16.15 mBGS at UA-8. Beneath the silt deposit, a sand deposit extended to 20.72 mBGS at UA-7, 25.6 mBGS at UA-8 and to 16.15 mBGS at UA-6. The sand deposit at UA-6 was underlain by a silt layer to 21.64 mBGS, followed by sand and gravel layers to the end of the borehole at 26.82 mBGS. The sand deposit at UA-7 was underlain by a clay layer to 21.94 mBGS followed by a silt layer to the end of the borehole at 23.77 mBGS. The sand deposit at UA-7 was underlain by a clay layer to the end of the borehole at 26.82 mBGS. Saturated soil conditions were encountered between 19.20 and 21.64 mBGS at these locations on the western portion of the Property.

Bedrock was not encountered at the Site during the Phase Two ESA. A review of published bedrock geologic mapping completed as part of the Phase One ESA indicated that the bedrock in the area of the Site is anticipated to be at a depth of approximately 50 mBGS.

Two geologic cross-sections were developed for the Site. The locations of the geologic cross-sections are shown on Figure 6. Geologic Cross-Sections A-A' and B-B' are shown on Figure 7 and Figure 8, respectively. These cross-sections depict the generalized extent of the hydrostratigraphic units at the Site. The elevations displayed on the geologic cross-sections are in mAMSL.

7.2.2 Hydrogeological Characteristics

The monitoring well completion details are provided in Table 2. GHD was provided with a draft Preliminary Hydrogeological Investigation Report (Report) for the Site, prepared by Pinchin in December 2022. The draft Report investigated soil and groundwater conditions at the Site to a depth of 6.7 mBGS. Soils encountered during shallow monitoring wells installed as part of that investigation consisted of topsoil overlying silt till and clayey silt, corresponding to the SAT. The Pinchin monitoring wells screened predominantly silt and clay soil types, within only one well screening sand and gravel. Groundwater was identified at depths ranging from 0.39 m to 3.08 mBGS on March 25, 2022. Based on these observations, shallow groundwater flow was identified by Pinchin to be to the southeast. However, subsequent groundwater monitoring conducted by Pinchin on May 19, August 10, and November 1, 2022 encountered dry conditions in all but one of their shallow monitoring wells. The one well where

groundwater remained screens silt and clay that is not representative of a continuous groundwater system. The one well intersecting sand and gravel went dry.

In GHD's opinion, the shallow groundwater identified in the Pinchin report is perched water that likely is present only on a seasonal basis and likely is representative of wet winter melt conditions within the SAT. This is consistent with GHD's monitoring well drilling observations of unsaturated conditions within the SAT until encountering saturated conditions in the underlying UA. Thus, the groundwater identified by Pinchin is not indicative of a true groundwater table. Based on a review of the Phase Two ESA stratigraphic logs, and consistent with the regional hydrostratigraphic units observed throughout Elmira, the saturated sand and gravel, silty sand and sand units of the UA comprises the groundwater table underlying the Site. Groundwater was identified in the UA at depths ranging from 17.68 m to 21.64 mBGS. Groundwater was identified in the MU at 26.83 mBGS and in the ML at 39.01 mBGS.

Groundwater elevation contours were prepared based on the groundwater level measurements collected on June 16, 2023, and are presented on Figure 5. The groundwater elevation contours indicate that shallow groundwater flow is generally in a southern direction. The southern groundwater flow direction is consistent with the regional groundwater flow direction based on the location of the Conestoga River and local topography.

The horizontal hydraulic gradient across the Site, based on groundwater elevations, is approximately 0.02 metres per metre (m/m).

Vertical hydraulic gradients were assessed at the following well pairs: UA-1 and MU-1, UA-1 and ML-1, and MU-1 and ML-1. The average vertical gradient for the Site is 0.06 m/m (downward).

Hydraulic conductivity values (commonly referred to as k-values) for the stratigraphic units were estimated using generally accepted ranges[15] for the stratigraphic conditions observed and recorded by field personnel in the UA. Estimated soil hydraulic conductivity ranges are as follows:

– Sand and Gravel/Sand/Silty Sand: 10^{-2} to 10^{-7} centimetres per second (cm/s).

The presence of NAPL or free product was determined through the use of an oil/water interface probe at each monitoring well location. NAPL was not encountered at any of the monitoring well locations.

7.2.3 Depth to Water Table

Based on a review of the Phase Two ESA stratigraphic logs, and consistent with the regional hydrostratigraphic units observed throughout Elmira, the saturated sand and gravel, silty sand and sand units of the UA comprises the groundwater table underlying the Site. During drilling activities, groundwater was identified in the UA at depths ranging from 17.68 m to 21.64 mBGS. Groundwater was identified in the MU at 26.83 mBGS and in the ML at 39.01 mBGS. In addition, a seam of saturated soil was identified at 2.90 mBGS in the UA at UA-1(S) located in the northeastern corner of the Site, which was assumed to be attributed to a swale in that vicinity. Shallow groundwater was not encountered at the other UA wells.

Depth to groundwater measurements at the monitoring wells were collected at the Site on June 16, 2023. The depth to groundwater was measured relative to the top of the monitoring well riser pipe. The groundwater level measurements indicate that the groundwater table is present within the UA at depths ranging from 15.82 mBGS at UA-5 to 21.71 mBGS at UA-8. The elevations of the UA groundwater table vary from 342.68 mAMSL at UA-1 to 341.15 mAMSL at UA-3. The groundwater level measurement in MU-1 was 18.51 mBGS and 18.49 mBGS in ML-1 (equating groundwater elevations of 341.17 mAMSL and 341.20 mAMSL, respectively). The groundwater level

[15] Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, 604 p.

measurement at UA-1(S) indicates that shallow perched water is present at a depth of 1.55 mBGS (equating to a groundwater elevation of 358.19 mAMSL).

7.2.4 Depth to Bedrock

Bedrock was not encountered at the Site during the Phase Two ESA. A review of published bedrock geologic mapping indicates that the bedrock in the area of the Site consists of limestone, dolostone, shale, sandstone, gypsum, and salt of the Salina Formation[16]. The thickness of the overburden deposits varies due to surficial topographic relief, but is on the order of 50 m in the vicinity of the Site when comparing overburden and bedrock topography in the area[17].

7.2.5 Application of Section 35, 41, 42.1 or 43.1 – Site Condition Standards, Non Potable Site Condition Standards

Application of Section 35 – Non Potable Site Condition Standards

Section 35 of O. Reg. 153/04 is not applicable to the Site and a letter of consent for the use of non-potable groundwater has not been requested or required from the municipality.

The Property is located in an area designated in the Township of Woolwich Source Water Protection Plan as Wellhead Protection Area (WHPA) Area 7. Based on this, potable groundwater conditions are considered applicable to the Site.

Application of Section 41 – Environmentally Sensitive Areas

The Site is: i) not located within an area of natural significance, ii) does not include or is not adjacent to an area of natural significance, nor is it a part of such area, and iii) does not include land that is within 30 m of an area of natural significance nor is part of such an area. The Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre (NHIC)" database was reviewed to identify areas registered as Areas of Natural or Scientific Interest (ANSI) or for known occurrences of Species at Risk (NHIC Rare Occurrences) within a 1-kilometre radius of the Site. The Wood Thrush, Red-headed Woodpecker and Bobolink were identified as species at risk; however, the Site features (ploughed fields) are not conducive to their habitats. No other ANSI or NHIC records were identified in the ANSI database to be within 1-km of the Site.

The soil pH in surface (0 to 1.5 mBGS) and subsurface (greater than 1.5 mBGS) ranged between 5.96 and 8.50 in soil samples that were collected. The soil pH was within the acceptable range of 5 and 9 for surface soils, and within the acceptable range of 5 and 11 for subsurface soils, as outlined in Section 41 of O. Reg. 153/04.

As a results, the Site is not considered to be environmentally sensitive, as defined in Section 41 of O. Reg. 153/04.

Application of Section 42.1 – Fine-Medium or Coarse Texture Conditions

Analytical results were conservatively compared to the standards for coarse-textured conditions.

Application of Section 43.1 – Shallow Soil Property or Water Body

A water body is not located on the Site and the Site is not located within 30 m of a water body. The closest water body to the Site is Canagagigue Creek, which is located approximately 1.6 km northeast of the Site.

[16] "Bedrock Geology of Ontario" [map]. Scale 1:250,000. OGS Earth Geoscience Data [computer files]. Sudbury, Ontario: Ontario Geological Survey & Ministry of Northern Development and Mines, 2010.

[17] Thomas, J., Holden, K.M. and Karrow, P. F., 1993. Bedrock topography, Conestogo area, Southern Ontario; Ontario Geological Survey, Preliminary Map P. 3210, Scale 1:50,000.

A shallow soil property means a property of which 1/3 or more of the area consists of soil equal to or less than 2 m in depth beneath the soil surface, excluding any non-soil surface treatment. Greater than 2.0 m of overburden soil exists across the Site. Therefore, the Property is not considered a shallow soil property.

As such, Ministry of the Environment, Conservation and Parks (MECP) Table 2 Standards[18] were determined to be applicable Site Condition Standards.

7.2.6 Areas Where Excess Soil has been brought from Another Property

Based on the results of the Phase One and the Phase Two ESAs, two topsoil stockpiles are located on-Site along the eastern portion of the Site (see Figures 2 and 3). The topsoil was reportedly generated from the residential development activities on the adjacent property to the west. The northern topsoil pile was present on Site from at least the year 2000 (as identified in the 2000 aerial image) and the southern topsoil pile was present on Site from at least the year 2019 (as identified in the 2019 aerial image). No information was available regarding the quality of the material in the topsoil stockpiles. The presence of material of unknown quality in the topsoil stockpiles on-Site was identified as a PCA (#30 – Importation of Fill Material of Unknown Quality) in accordance with O. Reg. 153/04. As such the areas of the topsoil stockpiles along the eastern portion of the Property were identified as **APEC #5A** (northern topsoil stockpile) and **APEC #5B** (southern topsoil stockpile).

7.2.7 Proposed Buildings or Structures

The final locations of any proposed future potential buildings and/or structures on the Site are currently unknown.

7.3 Areas Where Impacts Were Identified

GHD completed a soil and groundwater investigation as part of the Phase Two ESA. Based on the results of the Phase Two ESA, the applicable Site Condition Standards were determined to be the Table 2: Generic Site Condition Standards in a Potable Ground Water Condition (MECP Table 2 Standards). The soil analytical data were assessed with respect to the MECP Table 2 Standards for Residential/Parkland/Institutional Property Use and coarse-textured soil. The groundwater analytical data were assessed with respect to the MECP Table 2 Standards for All Types of Property Use and coarse-textured soil. As discussed in Sections 6.7 and 6.8, no COCs were identified in the soil or groundwater at the Site.

7.4 Nature and Extent of Impacts

Soil Quality

A total of 62 soil samples (including 8 field duplicate samples) were collected and submitted for chemical analysis of one or more of the following parameters during the Phase Two ESA investigations completed at the Site:

– Metals
– PAHs
– PHC F1 to F4
– VOCs

[18] "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", prepared by MECP, dated April 15, 2011. Table 2 – Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (MECP Table 2 Standards).

– Inorganics (EC, CN^-, SAR, and pH)
– OCs

A summary of the investigative locations associated with each APEC is provided below:

Area of Potential Environmental Concern	Contaminants of Potential Concern in Soil	Investigative Locations
APEC #2 – Adjacent Land Use to the East	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-, pH, EC, SAR	UA-2, UA-3, UA-4
APEC #3 – Adjacent Land Use to the Northeast	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-, pH, EC, SAR	UA-1, UA-1(S)
APEC #5A – Northern Topsoil Stockpile	Metals, OCs, pH, EC, SAR	SS-1 through SS-5
APEC #5B – Southern Topsoil Stockpile	Metals, OCs, pH, EC, SAR	SS-6 through SS-10
APEC #6 – Historical Burn Pile	Metals, PAHs, pH, EC, SAR	TP-1 through TP-5, TP-4A, SS-29, SS-29D, SS-30, SS-30D, SS-31 through SS-35
APEC #7 – Historical and Current Agricultural Use	Metals, OCs, pH, EC, SAR	SS-11 through SS-20, and SS-19R
APEC #8 – Heating Oil AST	PHCs, VOCs, PAHs	SS-21 and SS-22
APEC #9 – Chemical Storage	PHCs, VOCs, PAHs, Metals, CN^-, pH, EC, SAR	SS-23 through SS-25, and SS-25R1, SS-25R2 and SS-25R3

As discussed in Sections 6.7, no COCs were identified in the soil and there is no evidence of soil impacts related to any of the APECs identified at the Site.

Groundwater Quality

A total of thirteen groundwater samples (including two field duplicate samples) were collected and submitted for chemical analysis of one or more the following parameters during the Phase Two ESA completed at the Site:

– Metals
– PHC fractions F1 to F4
– VOCs
– Inorganics (Cl^- and CN^-)
– NDMA

A summary of groundwater sampling locations and chemical analysis is provided in Table 1.

A summary of the investigative locations associated with each APEC is provided below:

Area of Potential Environmental Concern	Contaminants of Potential Concern in Groundwater	Investigative Locations
APEC #1 – Adjacent Land Use to the Southeast	PHCs, VOCs	UA-5
APEC #2 – Adjacent Land Use to the East	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-	UA-2, UA-3, UA-4
APEC #3 – Adjacent Land Use to the Northeast	Metals, PAHs, PHCs, VOCs, Cl^-, CN^-	UA-1, UA-1(S)
APEC #4 – Groundwater Quality - NDMA	NDMA	MU-1, ML-1

As discussed in Sections 6.8, no COCs were identified in the soil and there is no evidence of soil impacts related to any of the APECs identified at the Site.

8. Conclusions

The following conclusions are provided based on the results of the Phase Two ESA:

COCs in Soil

All soil samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations, with the exception of some slightly elevated electrical conductivity (EC) in six samples (TP-1 through TP-5 and TP-4A) in the area of the former burn pile. In supplemental sampling of soils within the burn pile area, all EC results were below the MECP Table 2 Standards, and across the Site, EC results were below the MECP Table 2 Standards in 50 of 56 samples analyzed. Elevated EC levels can be expected in agricultural fields due to any nutrients that have previously been applied for agricultural purposes. EC is a plant growth related COC, and elevated concentrations do not pose risks to human health. EC risks are limited to potential exposure pathways to ecological receptors. As the proposed future use of the Site is for residential purposes, in which soil exposure pathways to ecological receptors are expected to be minimal, the Qualified Person (QP_{ESA}) has determined that the EC results above the MECP Table 2 Standards are not of concern. As a result, EC was not identified as a COC in the Phase Two ESA.

Hot water extractable boron was originally detected in the soil samples collected from TP-2 and TP-4A in the area of the former burn pile, and in the soil sample collected from SS-19 on the eastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. In addition, some PAHs (acenaphthylene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a h]anthracene, fluoranthene and indeno[1 2 3-cd]pyrene) were originally detected in the soil sample collected from SS-25 in the area of the chemical storage on the northeastern portion of the Site at concentrations slightly above the MECP Table 2 Standards during the Phase Two ESA investigations. TP-2, TP4A and SS-19 were resampled within a 2 m radius of the original sample, identified as SS-29, SS-30 and SS-19R, respectively, for metals and inorganics, and SS-25 was resampled three times within a 2-m radius of the original sample identified as SS-25R1, SS-25R2 and SS-25R3 for PAHs. In accordance with Section 48(2) and 48(4) of O. Reg. 153/04, if two or more samples of soil are collected from sampling points at the same sampling location that are at the same depth on, in or under the property (within a 2-m radius of each other), the property meets a standard if the average of the sampling results meets the applicable site condition standard. The average of the original samples and resamples (including all applicable field duplicates) meet the MECP Table 2 Standards for hot water extractable boron and PAHs. Therefore, the hot water extractable boron and the PAHs values greater than the MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O. Reg. 153/04, and hot water extractable boron and the PAHs were not identified as COCs in the Phase Two ESA.

Based on the above, no COCs were identified in soil and there is no evidence of soil impacts related to any of the APECs identified at the Site.

COCs in Groundwater

All groundwater samples submitted for laboratory analysis met the applicable MECP Table 2 Standards at all investigative locations.

NDMA was detected in MU-1 above the Ontario Drinking Water Standards, Objectives and Guidelines (ODWS)[19] and detected in the groundwater sample at ML-1 below the ODWS, both located in the northeast corner of the Property. There is no MECP Table 2 Standard for NDMA. Because of the following reasons, NDMA was not identified as a COC at the Property:

– The groundwater plume has been extensively studied in consultation with the MECP for over 30 years.
– Lanxess is under an Order to monitor and remediate the groundwater.
– The groundwater impact is deep within the MU and ML and is overlain by a clean groundwater lens in the UA.
– There is a Township of Woolwich Zoning By-law on prohibiting private wells in Elmira for the use of groundwater for potable purposes. The By-law will be extended to the Site prior to/in conjunction with draft approvals that would initiate any redevelopment.
– The CSM developed for this Phase Two ESA presented in Section 7 demonstrates there are no pathways for human or ecological exposure associated with the presence of NDMA in MU/ML groundwater at the Site.

Based on the above, no COCs were identified in groundwater and there is no evidence of groundwater impacts related to any of the APECs identified at the Site.

Conclusion

Based on the results of the Phase Two ESA, no COCs were identified to be related to the APECs identified during the Phase One ESA.

[19] Ministry of the Environment (MOE), Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, revised June 2003 (ODWS).

All of Which is Respectfully Submitted,

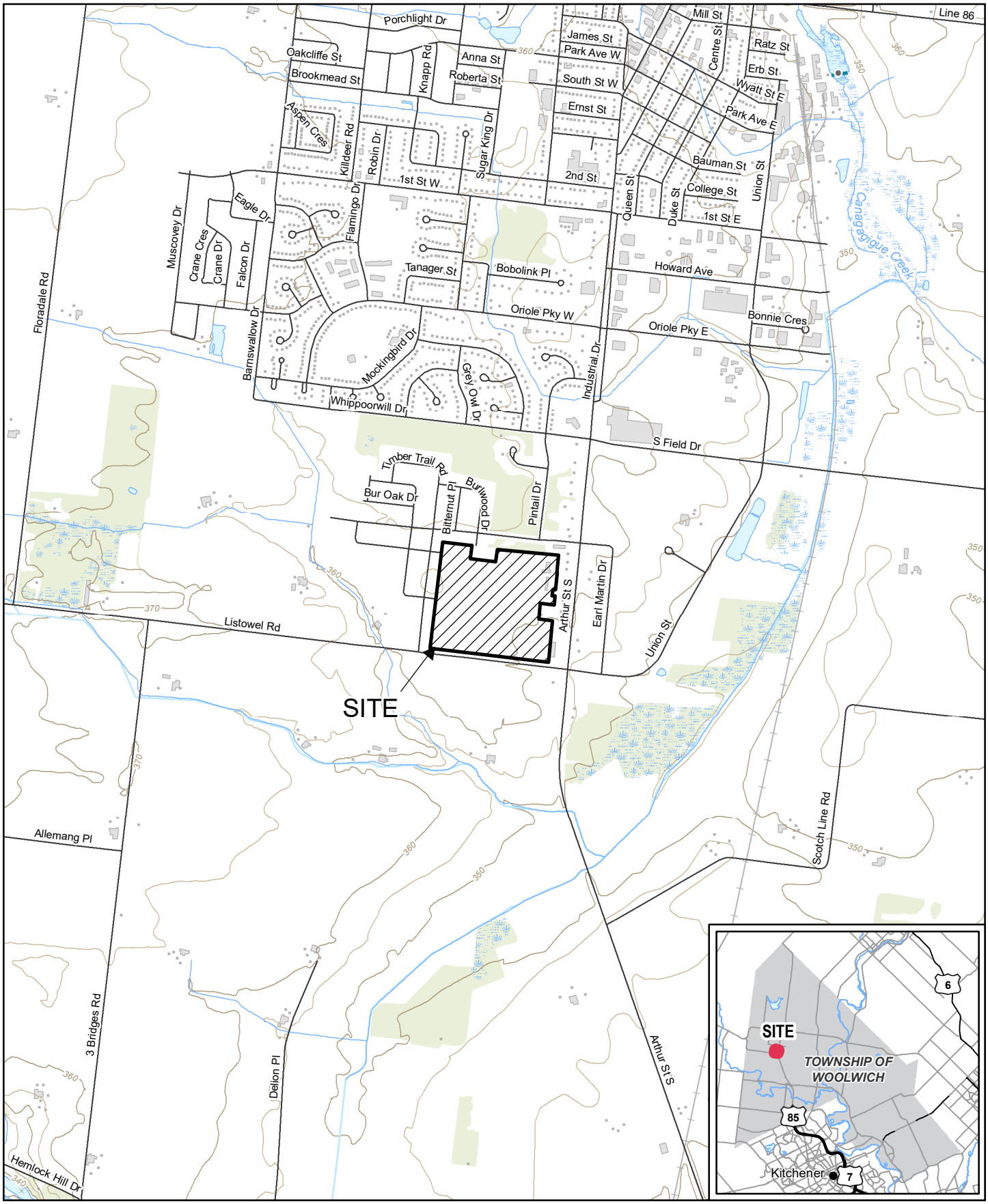
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Figures



Paper Size ANSI A

0 130 260 390 520

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

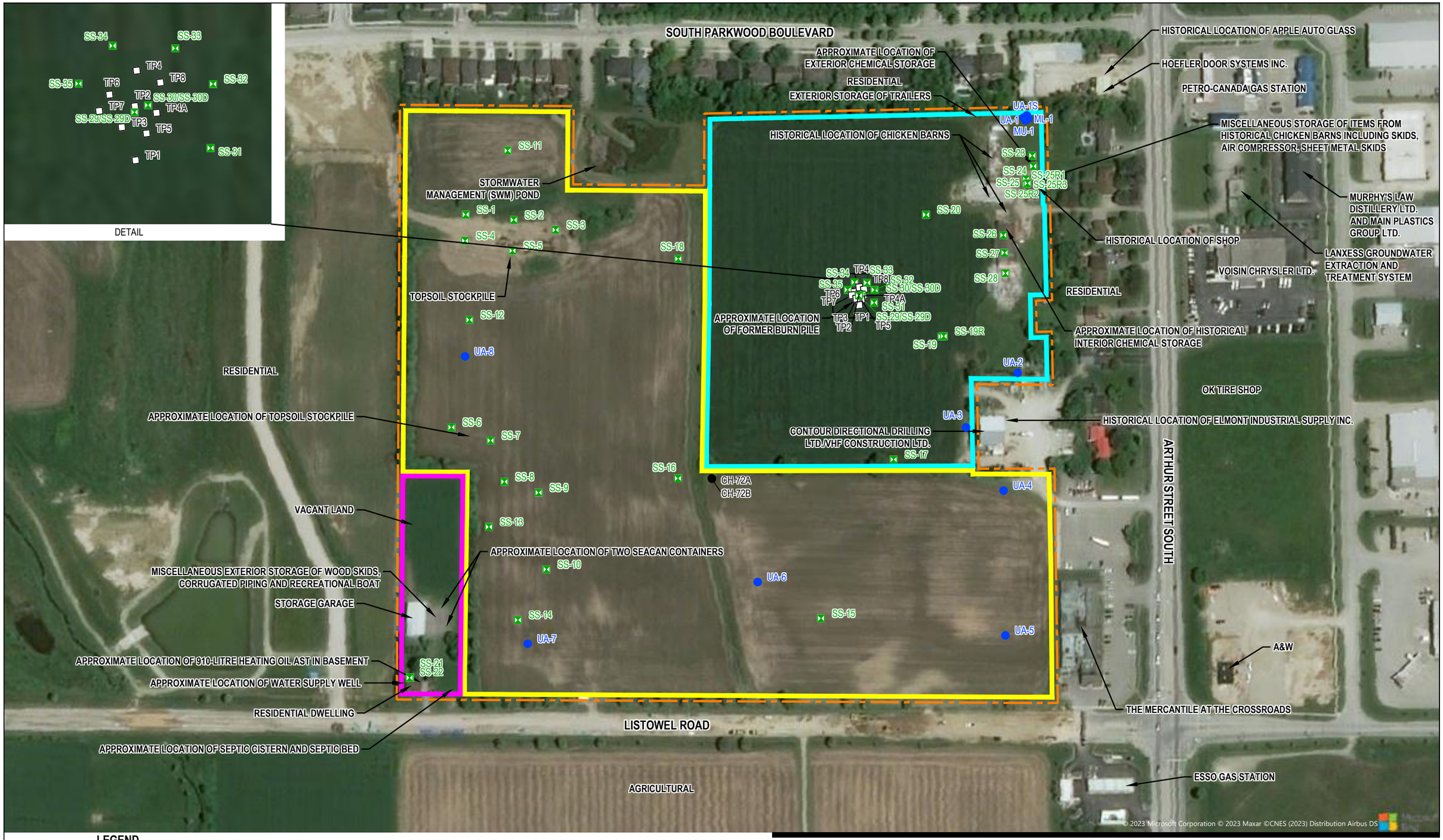
Project No. **12598913**
Revision No. **-**
Date **Feb 22, 2024**

SITE LOCATION MAP

FIGURE 1

O:\GIS\PROJECTS\12598000s\12598913\GIS\Maps\Deliverables\202402_RPT006\12598913_001_RPT006_SiteLocationMap.mxd
Print date: 22 Feb 2024 - 15:54

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LEGEND

- SITE BOUNDARY
- TEST PIT LOCATION
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION
- LANXESS MONITORING WELL LOCATION
- 354 ARTHUR STREET SOUTH PROPERTY BOUNDARY
- 1065 LISTOWEL ROAD PROPERTY BOUNDARY
- 1103 LISTOWEL ROAD PROPERTY BOUNDARY

0 25 50 75m

1:2500

Coordinate System: UTM ZONE 17 NAD83 METRES

Plan North

GHD

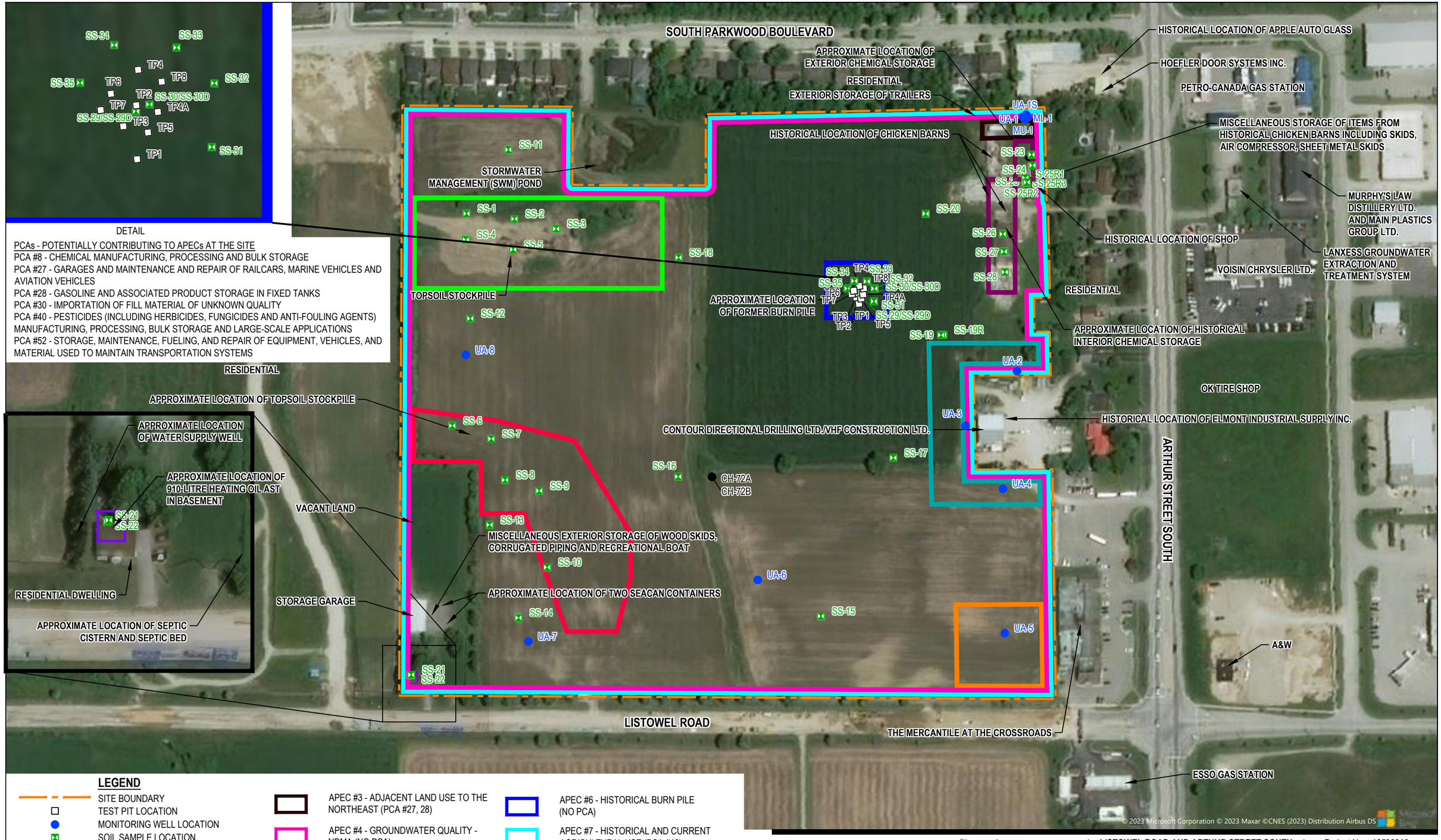
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

SITE PLAN AND INVESTIGATIVE LOCATIONS

Project No. **12598913**
Date **February 2024**

FIGURE 2

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D101_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



DETAIL

PCAs - POTENTIALLY CONTRIBUTING TO APECs AT THE SITE
PCA #8 - CHEMICAL MANUFACTURING, PROCESSING AND BULK STORAGE
PCA #27 - GARAGES AND MAINTENANCE AND REPAIR OF RAILCARS, MARINE VEHICLES AND AVIATION VEHICLES
PCA #28 - GASOLINE AND ASSOCIATED PRODUCT STORAGE IN FIXED TANKS
PCA #30 - IMPORTATION OF FILL MATERIAL OF UNKNOWN QUALITY
PCA #40 - PESTICIDES (INCLUDING HERBICIDES, FUNGICIDES AND ANTI-FOULING AGENTS) MANUFACTURING, PROCESSING, BULK STORAGE AND LARGE-SCALE APPLICATIONS
PCA #52 - STORAGE, MAINTENANCE, FUELING, AND REPAIR OF EQUIPMENT, VEHICLES, AND MATERIAL USED TO MAINTAIN TRANSPORTATION SYSTEMS

LEGEND

- SITE BOUNDARY
- TEST PIT LOCATION
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION
- LANXESS MONITORING WELL LOCATION
- APEC #1 - ADJACENT LAND USE TO THE SOUTHEAST (PCA #28)
- APEC #2 - ADJACENT LAND USE TO THE EAST (PCA #27, 28, 52)
- APEC #3 - ADJACENT LAND USE TO THE NORTHEAST (PCA #27, 28)
- APEC #4 - GROUNDWATER QUALITY - NDMA (NO PCA)
- APEC #5A - NORTHERN TOPSOIL STOCKPILE (PCA #30)
- APEC #5B - SOUTHERN TOPSOIL STOCKPILE (PCA #30)
- APEC #6 - HISTORICAL BURN PILE (NO PCA)
- APEC #7 - HISTORICAL AND CURRENT AGRICULTURAL USE (PCA #40)
- APEC #8 - HEATING OIL AST (PCA #28)
- APEC #9 - CHEMICAL STORAGE (PCA #8)

0 25 50 75m
1:2500
Coordinate System: UTM ZONE 17 NAD83 METRES

Plan North

GHD

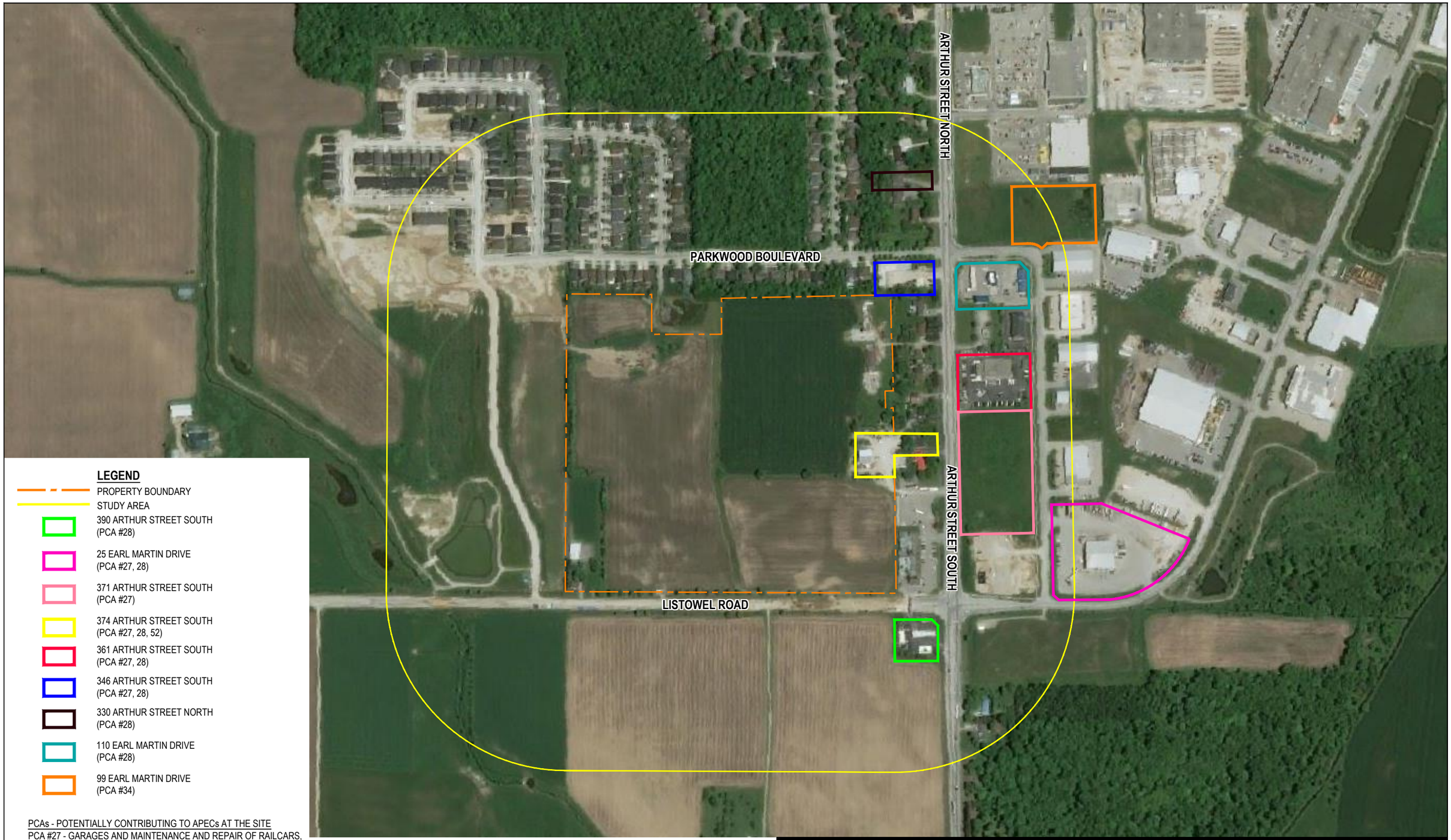
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

PHASE ONE CONCEPTUAL SITE MODEL - SITE

Project No. **12598913**
Date **February 2024**

FIGURE 3

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D102_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



LEGEND

- PROPERTY BOUNDARY
- STUDY AREA
- 390 ARTHUR STREET SOUTH (PCA #28)
- 25 EARL MARTIN DRIVE (PCA #27, 28)
- 371 ARTHUR STREET SOUTH (PCA #27)
- 374 ARTHUR STREET SOUTH (PCA #27, 28, 52)
- 361 ARTHUR STREET SOUTH (PCA #27, 28)
- 346 ARTHUR STREET SOUTH (PCA #27, 28)
- 330 ARTHUR STREET NORTH (PCA #28)
- 110 EARL MARTIN DRIVE (PCA #28)
- 99 EARL MARTIN DRIVE (PCA #34)

PCAs - POTENTIALLY CONTRIBUTING TO APECs AT THE SITE
PCA #27 - GARAGES AND MAINTENANCE AND REPAIR OF RAILCARS, MARINE VEHICLES AND AVIATION VEHICLES
PCA #28 - GASOLINE AND ASSOCIATED PRODUCT STORAGE IN FIXED TANKS
PCA #34 - METAL FABRICATION
PCA #52 - STORAGE, MAINTENANCE, FUELLING, AND REPAIR OF EQUIPMENT, VEHICLES, AND MATERIAL USED TO MAINTAIN TRANSPORTATION SYSTEMS

0 50 100 150m
1:5000
Coordinate System: UTM ZONE 17 NAD83 METRES

Plan North

GHD

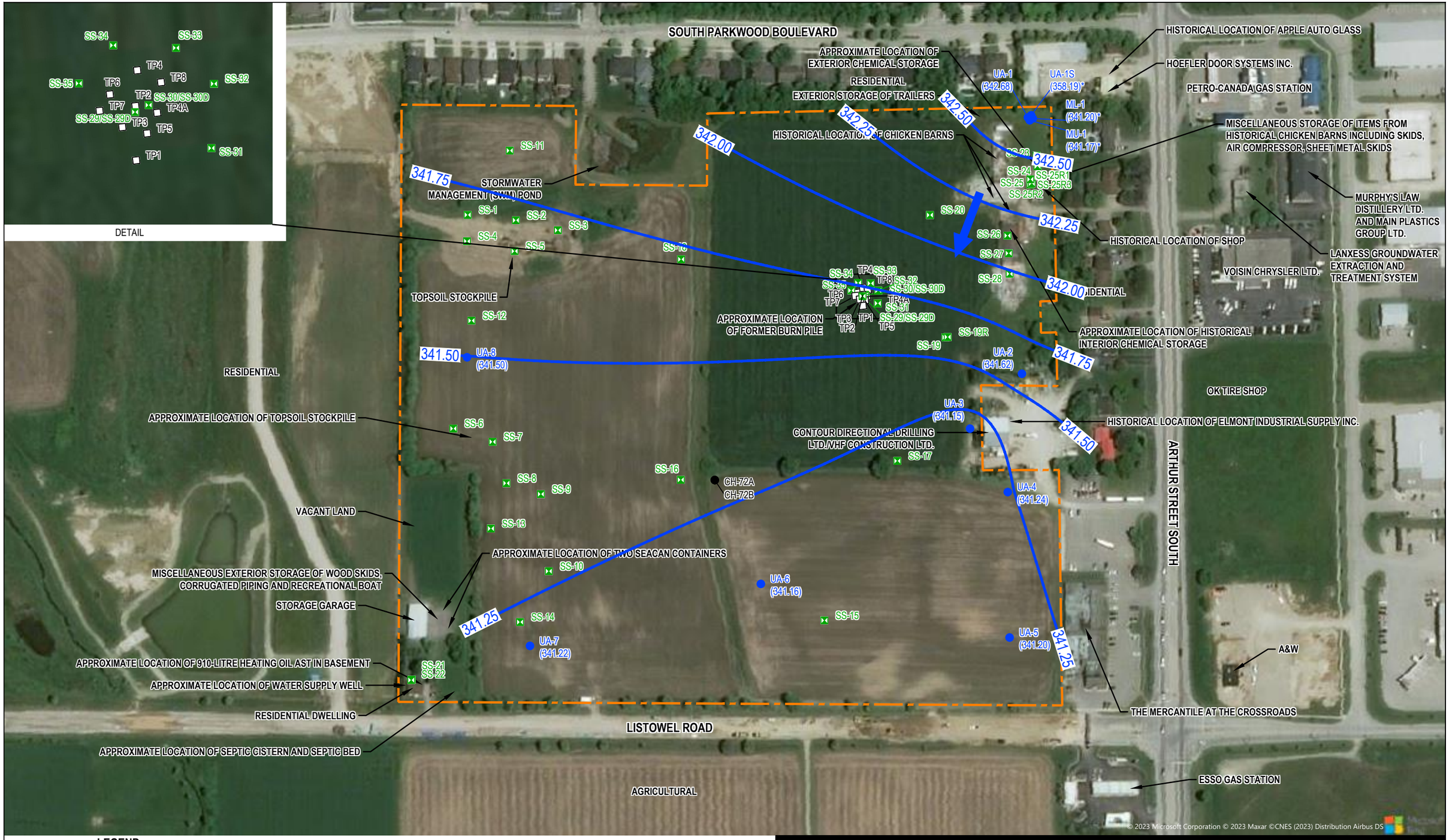
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

PHASE ONE CONCEPTUAL SITE MODEL - STUDY AREA

Project No. **12598913**
Date **February 2024**

FIGURE 4

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D103_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



LEGEND

- SITE BOUNDARY
- TEST PIT LOCATION
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION
- LANXESS MONITORING WELL LOCATION
- (342.68) GROUNDWATER ELEVATION (mAMSL)
- * VALUE NOT USED TO DEVELOP GROUNDWATER ELEVATION CONTOURS
- 341.25 GROUNDWATER ELEVATION CONTOUR (mAMSL)
- GROUNDWATER FLOW DIRECTION

0 25 50 75m

1:2500

Coordinate System: UTM ZONE 17 NAD83 METRES

Plan North

GHD

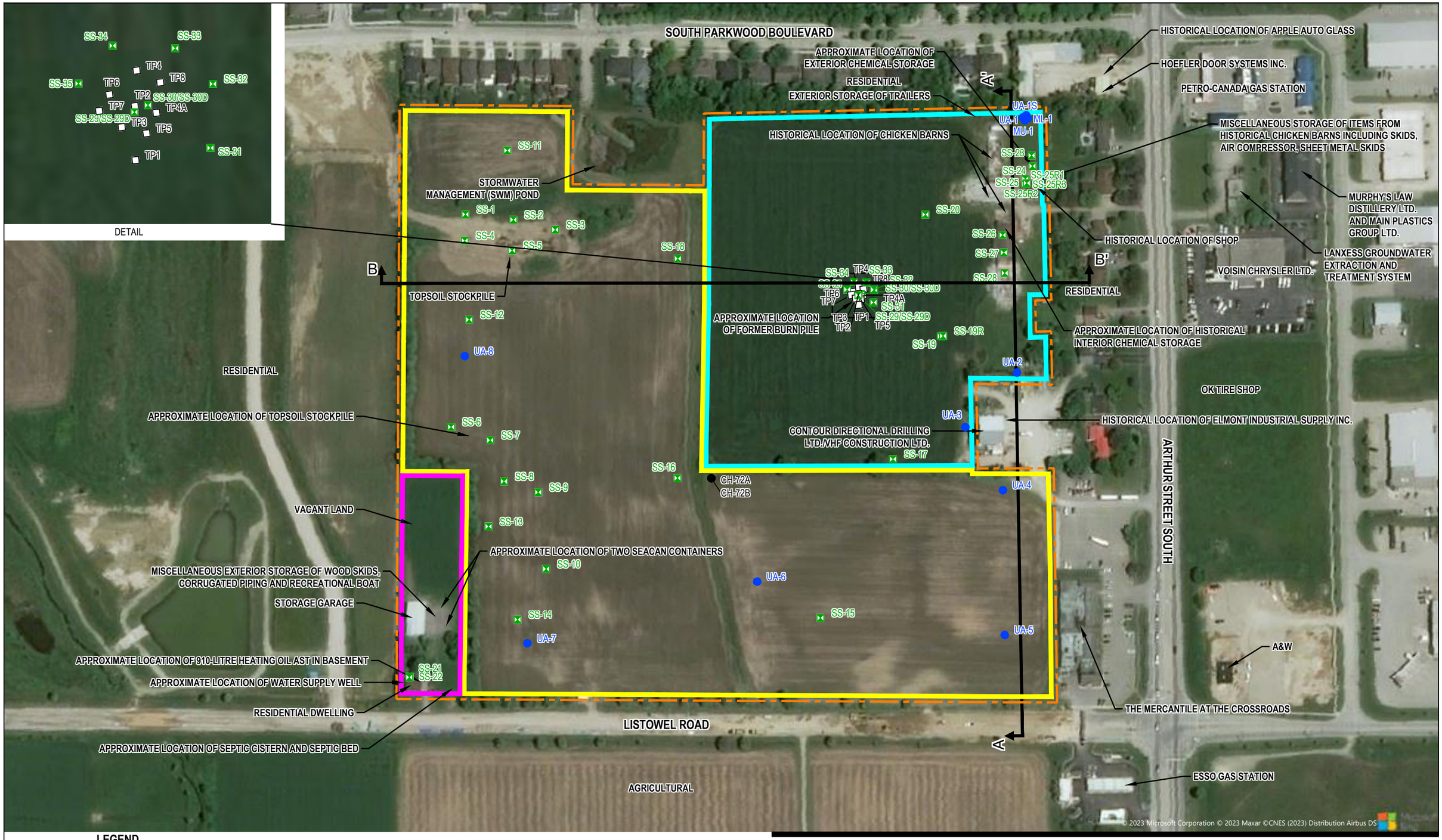
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GROUNDWATER ELEVATION CONTOURS (UA) (JUNE 16, 2023)

Project No. **12598913**
Date **February 2024**

FIGURE 5

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D105_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



LEGEND

- SITE BOUNDARY
- TEST PIT LOCATION
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION
- LANXESS MONITORING WELL LOCATION
- A A' CROSS SECTION LOCATION
- 354 ARTHUR STREET SOUTH PROPERTY BOUNDARY
- 1065 LISTOWEL ROAD PROPERTY BOUNDARY
- 1103 LISTOWEL ROAD PROPERTY BOUNDARY

0 25 50 75m

1:2500

Coordinate System: UTM ZONE 17 NAD83 METRES

Plan North

GHD

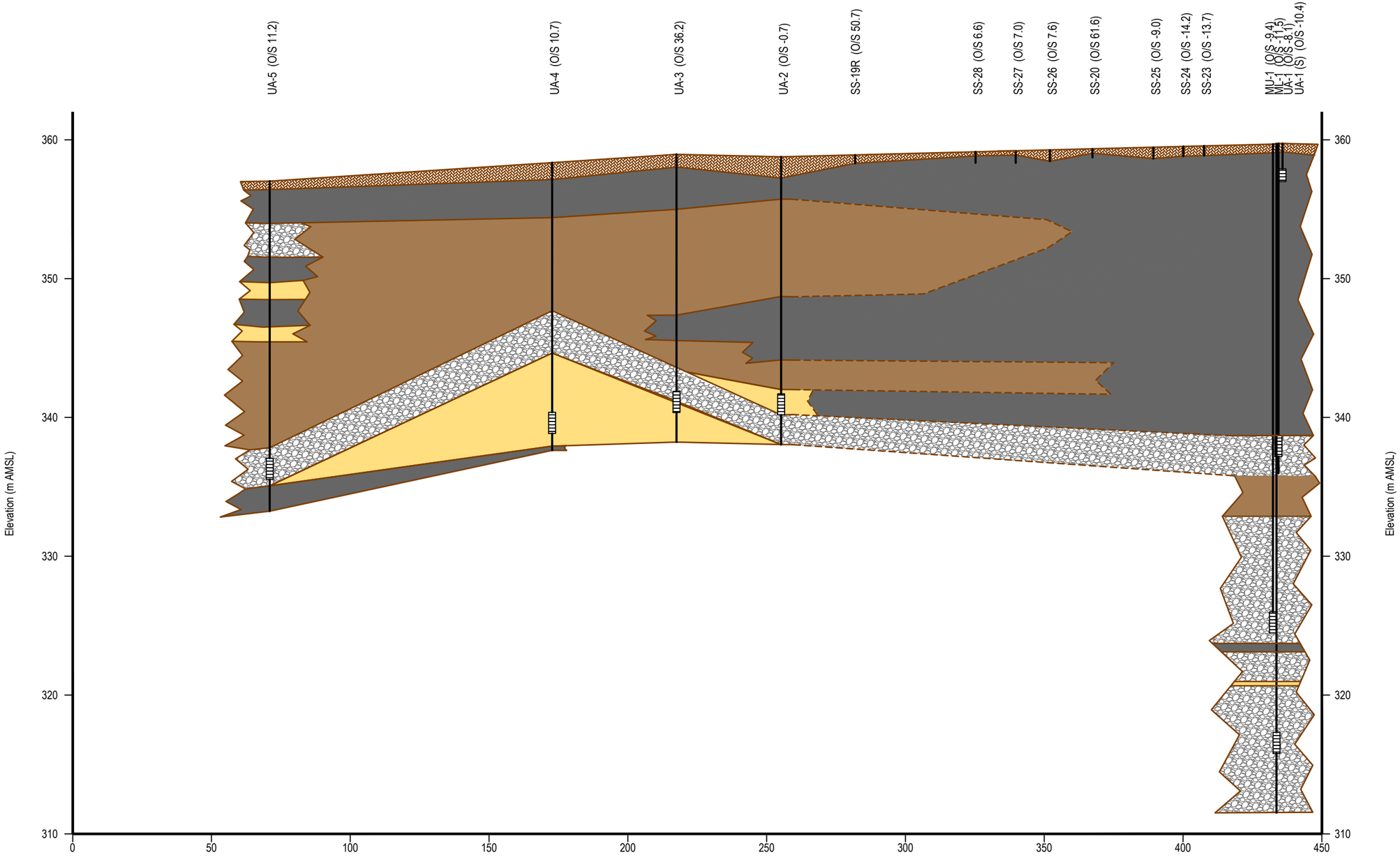
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GEOLOGIC CROSS-SECTION

Project No. **12598913**
Date **February 2024**

FIGURE 6

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D104_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



LEGEND

MU-1

WELL DESIGNATION

GROUND SURFACE

SCREENED INTERVAL

TOPSOIL

SAND AND GRAVEL

CLAY

SILT

SAND

HORIZONTAL
1:1500
0 15 30 45
0 3 6 9
VERTICAL
1:300

GHD

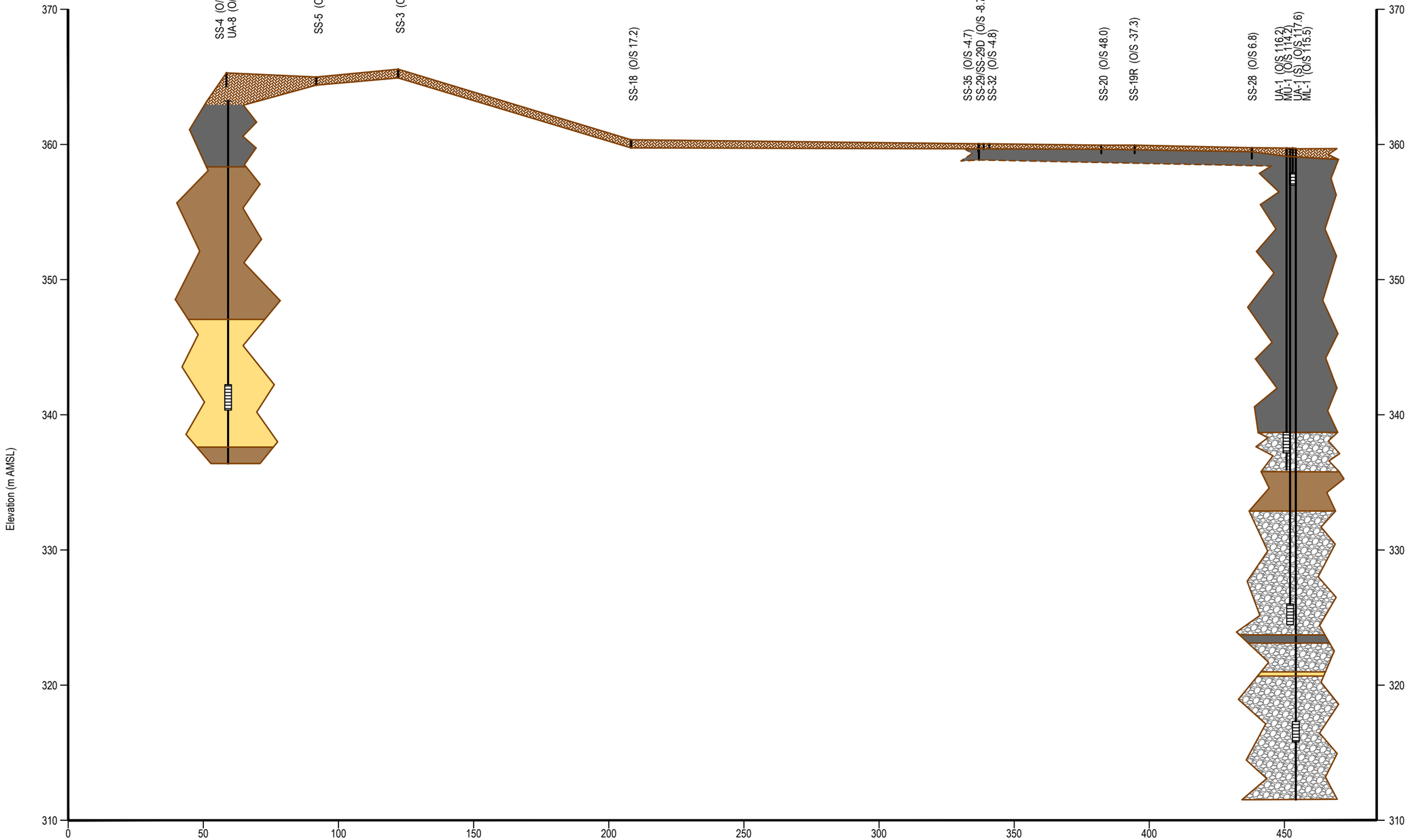
LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CROSS-SECTION A-A'

Project No. **12598913**
Date **February 2024**

FIGURE 7

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D104_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM



LEGEND

MU-1

WELL DESIGNATION

GROUND SURFACE

SCREENED INTERVAL

TOPSOIL
FILL
CLAY
SILT
SAND

HORIZONTAL
1:1500
0 15 30 45

VERTICAL
1:300
0 3 6 9

LISTOWEL ROAD AND ARTHUR STREET SOUTH DEVELOPMENT LANDS, ELMIRA, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CROSS-SECTION B-B'

Project No. **12598913**
Date **February 2024**

FIGURE 8

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\12598913\Digital_Design\ACAD\Figures\RPT006\12598913-GHD-00-00-RPT-EN-D104_WA-006.dwg
Plot Date: 22 February 2024 3:38 PM

Tables

Table 1

Summary of Investigative Locations and Chemical Analysis
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

						Chemical Analysis						
	Location	Sample Date	Sample Identification	Sample Interval (mBGS)	Laboratory Report No.	Metals and Inorganics [2]	OCs	PAHs	PHCs F1 to F4	VOCs	Select VOCs [3]	NDMA
Soil Samples	UA-1	24-Feb-23	S-12598913-022423-CH-004	20.7 - 21.0	WT2304664	√		√	√	√		
		24-Feb-23	S-12598913-022423-CH-005[1]	20.7 - 21.0	WT2304664	√		√	√	√		
	UA-1(S)	27-Feb-23	S-12598913-022723-CH-006	1.5 - 1.8	WT2304876	√		√	√	√		
	UA-2	24-Feb-23	S-12598913-022423-CH-003	17.4 - 17.7	WT2304664	√		√	√	√		
	UA-3	23-Feb-23	S-12598913-022323-CH-002	17.4 - 17.7	WT2304664	√		√	√	√		
	UA-4	23-Feb-23	S-12598913-022323-CH-001	17.4 - 17.7	WT2304664	√		√	√	√		
	UA-6	9-Mar-23	S-12598913-030923-CH-011	0.6 - 0.9	WT2305801	√						
	UA-7	8-Mar-23	S-12598913-030823-CH-010	0.6 - 0.9	WT2305801	√						
	UA-8	8-Mar-23	S-12598913-030823-CH-009	0.6 - 0.9	WT2305801	√						
	SS-1	4-May-23	S-12598913-050423-ZCV-001	0.3 - 1. 0	WT2311844	√	√					
	SS-2	4-May-23	S-12598913-050423-ZCV-002	0.3 - 1.0	WT2311844	√	√					
	SS-3	4-May-23	S-12598913-050423-ZCV-003	0.3 - 0.6	WT2311844	√	√					
	SS-4	4-May-23	S-12598913-050423-ZCV-004	0.3 - 1.0	WT2311844	√	√					
	SS-5	4-May-23	S-12598913-050423-ZCV-005	0.3 - 0.6	WT2311844	√	√					
	SS-6	4-May-23	S-12598913-050423-ZCV-006	0.25 - 0.6	WT2311844	√	√					
	SS-7	4-May-23	S-12598913-050423-ZCV-007	0.3 - 1.0	WT2311844	√	√					
	SS-8	4-May-23	S-12598913-050423-ZCV-008	0.3 - 0.8	WT2311844	√	√					
		4-May-23	S-12598913-050423-ZCV-009[1]	0.3 - 0.8	WT2311844	√	√					
	SS-9	4-May-23	S-12598913-050423-ZCV-010	0.3 - 0.9	WT2311844	√	√					
	SS-10	4-May-23	S-12598913-050423-ZCV-011	0.3 - 1.0	WT2311844	√	√					
	SS-11	4-May-23	S-12598913-050423-ZCV-012	0.3 - 0.6	WT2311844	√	√					
	SS-12	4-May-23	S-12598913-050423-ZCV-013	0.3 - 0.5	WT2311844	√	√					
	SS-13	4-May-23	S-12598913-050423-ZCV-014	0.3 - 0.5	WT2311844	√	√					
	SS-14	4-May-23	S-12598913-050423-ZCV-015	0.3 - 0.5	WT2311844	√	√					
	SS-15	4-May-23	S-12598913-050423-ZCV-016	0.3 - 0.6	WT2311844	√	√					
	SS-16	4-May-23	S-12598913-050423-ZCV-017	0.3 - 0.6	WT2311844	√	√					
		4-May-23	S-12598913-050423-ZCV-018[1]	0.3 - 0.6	WT2311844	√	√					
	SS-17	4-May-23	S-12598913-050423-ZCV-019	0.3 - 0.6	WT2311844	√	√					
	SS-18	4-May-23	S-12598913-050423-ZCV-020	0.3 - 0.6	WT2311844	√	√					
	SS-19	4-May-23	S-12598913-050423-ZCV-021	0.3 - 0.6	WT2311844	√	√					
	SS-19R (SS-19 Resample)	12-May-23	S-12598913-051223-ZCV-001	0.3 - 0.6	WT2312825	√						
	SS-20	4-May-23	S-12598913-050423-ZCV-022	0.3 - 0.6	WT2311844	√	√					
	SS-21	4-May-23	S-12598913-050423-ZCV-023	0.3 - 0.7	WT2311844				√	√		
		17-Jan-24	S-12598913-011724-ZCV-001	0.3 - 0.7	WT2401203V0			√				
	SS-22	12-May-23	S-12598913-051223-ZCV-002	0.3 - 0.8	WT2312825	√			√	√		
		17-Jan-24	S-12598913-011724-ZCV-002	0.3 - 0.8	WT2401203V0			√				
	SS-23	3-May-23	S-1259813-050323-ZCV-001	0.3 - 0.7	WT2311679				√	√		
		17-Jan-24	S-12598913-011724-ZCV-003	0.3 - 0.7	WT2401203V0	√		√				
	SS-24	3-May-23	S-1259813-050323-ZCV-002	0.3 - 0.7	WT2311679				√	√		
		17-Jan-24	S-12598913-011724-ZCV-004	0.3 - 0.7	WT2401203V0	√		√				

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Phase Two Environmental Site Assessment
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Elmira, Ontario

						Chemical Analysis						
	Location	Sample Date	Sample Identification	Sample Interval (mBGS)	Laboratory Report No.	Metals and Inorganics [2]	OCs	PAHs	PHCs F1 to F4	VOCs	Select VOCs [3]	NDMA
Soil Samples	SS-25	3-May-23	S-1259813-050323-ZCV-003	0.4 - 0.8	WT2311679				√	√		
		17-Jan-24	S-12598913-011724-ZCV-005	0.4 - 0.8	WT2401203V0	√		√				
	SS-25R1 (SS-25 Resample)	30-Jan-24	S-12598913-013024-ZCV-001	0.4 - 0.8	WT2402154V0			√				
	SS-25R2 (SS-25 Resample)	30-Jan-24	S-12598913-013024-ZCV-004	0.4 - 0.8	WT2402154V0			√				
	SS-25R3 (SS-25 Resample)	30-Jan-24	S-12598913-013024-ZCV-005	0.4 - 0.8	WT2402154V0			√				
	SS-26	3-May-23	S-1259813-050323-ZCV-004	0.3 - 0.7	WT2311679				√	√		
		17-Jan-24	S-12598913-011724-ZCV-006	0.3 - 0.7	WT2401203V0	√		√				
		17-Jan-24	S-12598913-011724-ZCV-007[1]	0.3 - 0.7	WT2401203V0	√		√				
	SS-27	3-May-23	S-1259813-050323-ZCV-005	0.3 - 0.8	WT2311679				√	√		
		17-Jan-24	S-12598913-013024-ZCV-008	0.3 - 0.8	WT2401203V0	√		√				
	SS-28	3-May-23	S-1259813-050323-ZCV-006	0.3 - 0.8	WT2311679				√	√		
		3-May-23	S-1259813-050323-ZCV-007[1]	0.3 - 0.8	WT2311679				√	√		
		17-Jan-24	S-12598913-013024-ZCV-009	0.3 - 0.8	WT2401203V0	√		√				
	TP-1	16-Dec-22	S-12598913-121622-JPF-001	0.3 - 0.6	WT2225373	√		√				
	TP-2	16-Dec-22	S-12598913-121622-JPF-002	0.3 - 0.6	WT2225373	√		√				
		16-Dec-22	S-12598913-121622-JPF-003[1]	0.3 - 0.6	WT2225373	√		√				
	SS-29 (TP-2 Resample)	3-May-23	S-1259813-050323-ZCV-008	0.3 - 0.6	WT2311679	√						
	SS-29D	3-May-23	S-1259813-050323-ZCV-009	0.6 - 1.0	WT2311679	√						
	TP-3	16-Dec-22	S-12598913-121622-JPF-004	0.3 - 0.6	WT2225373	√		√				
	TP-4A	16-Dec-22	S-12598913-121622-JPF-005	0.3 - 0.6	WT2225373	√		√				
	SS-30 (TP-4A Resample)	3-May-23	S-1259813-050323-ZCV-010	0.3 - 0.6	WT2311679	√						
		3-May-23	S-1259813-050323-ZCV-011[1]	0.3 - 0.6	WT2311679	√						
	SS-30D	3-May-23	S-1259813-050323-ZCV-012	0.6 - 1.0	WT2311679	√						
	TP-5	16-Dec-22	S-12598913-121622-JPF-006	0.3 - 0.6	WT2225373	√		√				
	SS-31	3-May-23	S-1259813-050323-ZCV-013	0.0 - 0.3	WT2311679	√						
	SS-32	3-May-23	S-1259813-050323-ZCV-014	0.0 - 0.3	WT2311679	√						
	SS-33	3-May-23	S-1259813-050323-ZCV-015	0.0 - 0.3	WT2311679	√						
	SS-34	3-May-23	S-1259813-050323-ZCV-016	0.4 - 0.6	WT2311679	√						
	SS-35	3-May-23	S-1259813-050323-ZCV-017	0.4 - 0.6	WT2311679	√						

Table 1

Summary of Investigative Locations and Chemical Analysis
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

						Chemical Analysis						
	Location	Sample Date	Sample Identification	Sample Interval (mBGS)	Laboratory Report No.	Metals and Inorganics [2]	OCs	PAHs	PHCs F1 to F4	VOCs	Select VOCs [3]	NDMA
Groundwater Samples	UA-1	6-Mar-23	GW-12598913-230306-JB-UA1	21.0 - 22.6	WT2305360	√			√	√		
	UA-1(S)	6-Mar-23	GW-12598913-230306-JB-UA1(S)	1.8 - 2.7	WT2305360	√			√	√		
	UA-2	6-Mar-23	GW-12598913-230306-JB-UA2	17.1 - 18.6	WT2305360	√			√	√		
	UA-3	6-Mar-23	GW-12598913-230306-JB-UA3	17.1 - 18.6	WT2305360	√			√	√		
		6-Mar-23	GW-12598913-230306-JB-DUP01[1]	17.1 - 18.6	WT2305360	√			√	√		
	UA-4	6-Mar-23	GW-12598913-230306-JB-UA4	18.0 - 19.5	WT2305360	√			√	√		
	UA-5	4-May-23	GW-12598913-050423-ZCV-001	20.0 - 21.5	WT2311846				√	√		
		4-May-23	GW-12598913-050423-ZCV-002[1]	20.0 - 21.5	WT2311846				√	√		
	Municipal water supply grab	28-Feb-23	W-12598913-022823-CH-001	-	WT2304877					√		
	MU-1	17-Mar-23	GW-12598913-230317-JB-MU1	33.7 - 35.2	WT2306573						√	
	MU-1	20-Mar-23	GW-12598913-230320-JB-MU-1	33.7 - 35.2	WT2306784							√
	ML-1	17-Mar-23	GW-12598913-230317-JB-ML1	44.2 - 43.9	WT2306573						√	
	ML-1	20-Mar-23	GW-12598913-230320-JB-ML-1	44.2 - 43.9	WT2306784							√

Notes:

(1) Field Duplicate Sample

(2) Inorganics parameters in soil included cyanide, electrical conductivity (EC), sodium adsorption ratio (SAR), and pH; inorganics parameter in groundwater included chloride (Cl^-) and cyanide (CN^-).

(3) Select VOCs include bromodichloromethane, bromoform, chloroform and dibromochloromethane.

mBGS Metres below ground surface

PAHs Polycyclic aromatic hydrocarbons

PHCs Petroleum hydrocarbons

VOCs Volatile organic compounds

OCs Organochlorine pesticides

NDMA N-nitrosodimethylamine

Table 2

Summary of Monitoring Well Completion Details
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Location	Completion Date	Ground Elevation (mAMSL)	Top of Riser Elevation (mAMSL)	Total Depth (mBGS)	Screened Interval Depth (mBGS)	Screened Interval Elevation (mAMSL)	Sandpack Interval Depth (mBGS)	Sandpack Interval Elevation (mAMSL)	Geologic Material at Screened Interval
UA-1	27-Feb-23	359.74	360.74	23.77	21.04 - 22.56	338.70 - 337.18	20.58 - 22.56	339.16 - 337.18	Sand and gravel
UA-1(S)	27-Feb-23	359.74	360.63	2.74	1.82 - 2.75	357.91 - 356.99	1.53 - 2.75	358.21 - 356.99	Silty clay
UA-2	24-Feb-23	358.77	359.72	20.73	17.07 - 18.59	341.70 - 340.18	16.76 - 18.59	342.01 - 340.18	Silty sand/sand
UA-3	23-Feb-23	358.95	360.06	20.73	17.07 - 18.59	341.88 - 340.36	16.46 - 18.59	342.49 - 340.36	Silty sand and gravel/sand
UA-4	23-Feb-23	358.35	359.47	20.73	17.98 - 19.50	340.37 - 338.85	17.67 - 19.50	340.68 - 338.85	Sand
UA-5	28-Feb-23	357.02	357.91	23.77	19.97 - 21.49	337.05 - 335.53	19.51 - 21.49	337.51 - 335.53	Sand and gravel
UA-6	9-Mar-23	359.13	360.21	26.82	24.38 - 25.91	334.75 - 333.22	23.93 - 25.91	335.20 - 333.22	Sand and gravel/sand
UA-7	9-Mar-23	360.81	362.06	23.77	19.20 - 20.72	341.61 - 340.09	18.59 - 21.33	342.22 - 339.48	Sand
UA-8	8-Mar-23	363.21	364.24	26.82	21.33 - 22.86	341.88 - 340.35	20.72 - 23.47	342.49 - 339.74	Silty sand
MU-1	2-Mar-23	359.68	360.64	35.20	33.68 - 35.20	326.00 - 324.48	33.22 - 35.20	326.46 - 324.48	Sand and gravel
ML-1	2-Mar-23	359.69	360.79	48.16	42.37 - 43.90	317.32 - 315.79	41.76 - 44.51	317.93 - 315.18	Sandy gravel

Notes:
mAMSL Metres above mean sea level
mBGS Metres below ground surface

Table 3

Summary of Groundwater Level Measurements and Elevations
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Location	Date Installed	Ground Elevation (mAMSL)	Top of Riser Elevation (mAMSL)	16-Jun-23		
				Depth to Groundwater (mBTOR)	Depth to Groundwater (mBGS)	Groundwater Elevation (mAMSL)
UA-1	27-Feb-23	359.74	360.74	18.06	17.06	342.68
UA-1(S)	27-Feb-23	359.74	360.63	2.44	1.55	358.19
UA-2	24-Feb-23	358.77	359.72	18.10	17.16	341.62
UA-3	23-Feb-23	358.95	360.06	18.91	17.80	341.15
UA-4	23-Feb-23	358.35	359.47	18.23	17.12	341.24
UA-5	28-Feb-23	357.02	357.91	16.71	15.82	341.20
UA-6	9-Mar-23	359.13	360.21	19.05	17.97	341.16
UA-7	9-Mar-23	360.81	362.06	20.84	19.60	341.22
UA-8	8-Mar-23	363.21	364.24	22.74	21.71	341.50
MU-1	2-Mar-23	359.68	360.64	19.47	18.51	341.17
ML-1	2-Mar-23	359.69	360.79	19.59	18.49	341.20

Note:
mBGS = Metres Below Ground Surface
mAMSL = Metres Above Mean Sea Level
mBTOR = Metres Below Top of Riser

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	UA-1	UA-1	UA-1(S)	UA-2	UA-3	UA-4	UA-6	UA-7	UA-8	SS-1
	Sample ID:	S-12598913-022423-CH-004	S-12598913-022423-CH-005	S-12598913-022723-CH-006	S-12598913-022423-CH-003	S-12598913-022323-CH-002	S-12598913-022323-CH-001	S-12598913-030923-CH-011	S-12598913-030823-CH-010	S-12598913-030823-CH-009	S-12598913-050423-ZCV-001
	Sample Date:	24-Feb-23	24-Feb-23	27-Feb-23	24-Feb-23	23-Feb-23	23-Feb-23	9-Mar-23	8-Mar-23	8-Mar-23	4-May-23
	Sample Depth (mBGS):	20.7 - 21.0	20.7 - 21.0	1.5 - 1.8	17.4 - 17.7	17.4 - 17.7	17.4 - 17.7	0.6 - 0.9	0.6 - 0.9	0.6 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**								
Inorganics											
Electrical Conductivity (mS/cm)	0.7	0.126	0.135	0.155	0.168	0.181	0.117	0.103	0.126	0.115	0.182
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	7.92	7.88	7.57	8.20	8.50	7.99	7.84	7.62	7.70	7.18
Sodium Adsorption Ratio (SAR)	5	0.21	0.21	0.33	0.70	0.51	0.60	0.27	0.22	0.19	ND(0.10)
Metals											
Antimony	7.5	ND(0.10)	0.15	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.10	0.14
Arsenic	18	4.15	6.02	2.69	2.55	3.06	1.64	2.88	3.09	3.02	4.54
Barium	390	33.2	60.0	22.1	16.4	21.9	11.5	45.4	41.4	37.5	68.9
Beryllium	4	0.46 J	0.80 J	0.25	0.19	0.21	0.13	0.29	0.36	0.33	0.61
Boron	120	13.0	22.3	6.1	11.4	12.9	5.3	8.0	7.2	7.5	8.4 J+
Boron, Hot Water Ext.	1.5	ND(0.10)	0.10	0.16	0.17	0.18	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.51
Cadmium	1.2	0.108	0.163	0.091	0.102	0.109	0.090	0.078	0.140	0.120	0.298
Chromium	160	18.7	40.6	12.2	10.4	10.6	8.11	13.1	13.4	12.3	20.5
Chromium, Hexavalent	8	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.13	ND(0.10)	ND(0.10)
Cobalt	22	7.74	13.4	3.40	3.44	4.18	2.28	5.21	4.93	4.82	6.83
Copper	140	17.9	25.9	8.02	14.3	16.0	7.20	13.0	11.1	10.7	15.5
Lead	120	12.5	18.6	7.24	7.77	11.7	7.20	6.80	8.88	8.09	14.2
Mercury	0.27	0.0141	0.0192	0.0090	0.0120	0.0072	ND(0.0050)	0.0064	0.0121	0.0097	0.0393
Molybdenum	6.9	0.18	0.25	0.47	0.34	0.44	0.21	0.31	0.24	0.25	0.37
Nickel	100	16.1	31.9	7.40	7.76	7.86	4.80	10.5	10.4	10.1	13.7
Selenium	2.4	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	0.33
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Thallium	1	0.101	0.178	0.052	ND(0.050)	0.077	ND(0.050)	0.112	0.080	0.071	0.130
Uranium	23	0.492	0.548	0.445	0.493	0.496	0.343	0.497	0.470	0.470	0.639
Vanadium	86	23.6	35.4	22.3	14.4	17.5	15.3	24.3	24.8	22.6	36.2
Zinc	340	51.2	84.8	33.8	41.7	46.5	26.5	42.0	43.6	40.2	73.0
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene	7.9	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Acenaphthylene	0.15	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Anthracene	0.67	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Benz[a]anthracene	0.5	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Benzo[a]pyrene	0.3	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Benzo[b]fluoranthene	0.78	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Benzo[ghi]perylene	6.6	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Benzo[k]fluoranthene	0.78	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Chrysene	7	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dibenz[a h]anthracene	0.1	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Fluoranthene	0.69	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Fluorene	62	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Indeno[1 2 3-cd]pyrene	0.38	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Methlynaphthalene, 1+2-	0.99	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Methlynaphthalene, 1-	0.99	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Methlynaphthalene, 2-	0.99	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Naphthalene	0.6	0.010	ND(0.010)	ND(0.026)	0.011	ND(0.010)	0.011	-	-	-	-
Phenanthrene	6.2	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Pyrene	78	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)				-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	UA-1	UA-1	UA-1(S)	UA-2	UA-3	UA-4	UA-6	UA-7	UA-8	SS-1
	Sample ID:	S-12598913-022423-CH-004	S-12598913-022423-CH-005	S-12598913-022723-CH-006	S-12598913-022423-CH-003	S-12598913-022323-CH-002	S-12598913-022323-CH-001	S-12598913-030923-CH-011	S-12598913-030823-CH-010	S-12598913-030823-CH-009	S-12598913-050423-ZCV-001
	Sample Date:	24-Feb-23	24-Feb-23	27-Feb-23	24-Feb-23	23-Feb-23	23-Feb-23	9-Mar-23	8-Mar-23	8-Mar-23	4-May-23
	Sample Depth (mBGS):	20.7 - 21.0	20.7 - 21.0	1.5 - 1.8	17.4 - 17.7	17.4 - 17.7	17.4 - 17.7	0.6 - 0.9	0.6 - 0.9	0.6 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**								
Petroleum Hydrocarbons (PHCs)								-	-	-	
PHC F1 (C6-C10)	55	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	-	-	-	-
PHC F2 (C10-C16)	98	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	-	-	-	-
PHC F3 (C16-C34)	300	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	-	-	-	-
PHC F4 (C34-C50)	2,800	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	-	-	-	-
Volatile Organic Compounds (VOCs)								-	-	-	
Acetone	16	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Benzene	0.21	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	-	-	-	-
Bromodichloromethane	1.5	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Bromoform	0.27	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Bromomethane	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Carbon tetrachloride	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Chlorobenzene	2.4	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Chloroform	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dibromochloromethane	2.3	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dibromoethane, 1,2-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,2-	1.2	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,3-	4.8	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,4-	0.083	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichlorodifluoromethane	16	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloroethane, 1,1-	0.47	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloroethane, 1,2-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloroethylene, 1,1-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloromethane	0.1	ND(0.045)	ND(0.045)	ND(0.045)	ND(0.045)	ND(0.045)	ND(0.045)	-	-	-	-
Dichloropropane, 1,2-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Dichloropropylene, cis-1,3-	NV	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Dichloropropylene, trans-1,3-	NV	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Ethylbenzene	1.1	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	-	-	-	-
Hexane, n-	2.8	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Methyl ethyl ketone [MEK]	16	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	-	-	-	-
Styrene	0.7	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Tetrachloroethylene	0.28	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Toluene	2.3	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,1-	0.38	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,2-	0.05	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Trichloroethylene	0.061	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	-	-	-	-
Trichlorofluoromethane	4	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-
Vinyl chloride	0.02	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	-	-	-	-
Xylene, m+p-	NV	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Xylene, o-	NV	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)	-	-	-	-
Xylenes, total	3.1	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	UA-1	UA-1	UA-1(S)	UA-2	UA-3	UA-4	UA-6	UA-7	UA-8	SS-1
	Sample ID:	S-12598913-022423-CH-004	S-12598913-022423-CH-005	S-12598913-022723-CH-006	S-12598913-022423-CH-003	S-12598913-022323-CH-002	S-12598913-022323-CH-001	S-12598913-030923-CH-011	S-12598913-030823-CH-010	S-12598913-030823-CH-009	S-12598913-050423-ZCV-001
	Sample Date:	24-Feb-23	24-Feb-23	27-Feb-23	24-Feb-23	23-Feb-23	23-Feb-23	9-Mar-23	8-Mar-23	8-Mar-23	4-May-23
	Sample Depth (mBGS):	20.7 - 21.0	20.7 - 21.0	1.5 - 1.8	17.4 - 17.7	17.4 - 17.7	17.4 - 17.7	0.6 - 0.9	0.6 - 0.9	0.6 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**								
Organochlorine Pesticides (OCPs)											
Aldrin	0.05	-	-	-	-	-	-	-	-	-	ND(0.00024)
Chlordane, cis- (alpha)	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
Chlordane, total	0.05	-	-	-	-	-	-	-	-	-	ND(0.00042)
Chlordane, trans- (gamma)	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
DDD, 2,4'-	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
DDD, 4,4'-	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
DDD, total	3.3	-	-	-	-	-	-	-	-	-	ND(0.00042)
DDE, 2,4'-	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
DDE, 4,4'-	NV	-	-	-	-	-	-	-	-	-	0.00036
DDE, total	0.26	-	-	-	-	-	-	-	-	-	ND(0.00042)
DDT, 2,4'-	NV	-	-	-	-	-	-	-	-	-	ND(0.00090) J
DDT, 4,4'-	NV	-	-	-	-	-	-	-	-	-	ND(0.00090) R
DDT, total	1.4	-	-	-	-	-	-	-	-	-	ND(0.00127)
Dieldrin	0.05	-	-	-	-	-	-	-	-	-	ND(0.00024)
Endosulfan, alpha-	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
Endosulfan, beta-	NV	-	-	-	-	-	-	-	-	-	ND(0.00030)
Endosulfan, total	0.04	-	-	-	-	-	-	-	-	-	ND(0.00042)
Endrin	0.04	-	-	-	-	-	-	-	-	-	ND(0.00050)
Heptachlor	0.15	-	-	-	-	-	-	-	-	-	ND(0.00024)
Heptachlor epoxide	0.05	-	-	-	-	-	-	-	-	-	ND(0.00024)
Hexachlorobenzene	0.52	-	-	-	-	-	-	-	-	-	ND(0.00050)
Hexachlorobutadiene	0.012	-	-	-	-	-	-	-	-	-	ND(0.00050)
Hexachlorocyclohexane, gamma-	0.056	-	-	-	-	-	-	-	-	-	ND(0.00024)
Hexachloroethane	0.089	-	-	-	-	-	-	-	-	-	ND(0.00050)
Methoxychlor	0.13	-	-	-	-	-	-	-	-	-	ND(0.00150) R

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-8	SS-9	SS-10
	Sample ID:	S-12598913-050423-ZCV-002	S-12598913-050423-ZCV-003	S-12598913-050423-ZCV-004	S-12598913-050423-ZCV-005	S-12598913-050423-ZCV-006	S-12598913-050423-ZCV-007	S-12598913-050423-ZCV-008	S-12598913-050423-ZCV-009	S-12598913-050423-ZCV-010	S-12598913-050423-ZCV-011
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 1.0	0.3 - 0.6	0.3 - 1.0	0.3 - 0.6	0.25 - 0.6	0.3 - 1.0	0.3 - 0.8	0.3 - 0.8	0.3 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**								**Field Duplicate**		
Inorganics											
Electrical Conductivity (mS/cm)	0.7	0.121	0.0887	0.180	0.183	0.207	0.201	0.183	0.186	0.338	0.218
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	7.06	6.95	7.33	7.25	6.98	6.84	7.15	7.19	7.22	7.34
Sodium Adsorption Ratio (SAR)	5	0.10	0.11	0.16	ND(0.10)	0.21	0.19	0.20	0.20	0.27	0.12
Metals											
Antimony	7.5	0.13	0.14	0.11	0.12	0.15	0.12	0.14	0.15	0.15	0.15
Arsenic	18	4.77	4.83	3.78	4.21	4.38	4.47	5.02	5.33	4.82	4.68
Barium	390	61.8	62.8	44.0	63.7	69.9	62.4	72.5	76.0	69.9	86.1
Beryllium	4	0.53	0.57	0.40	0.53	0.59	0.52	0.56	0.58	0.57	0.66
Boron	120	7.1 J+	6.9 J+	5.3 J+	6.0 J+	8.4 J+	6.8 J+	8.6 J+	8.5 J+	8.2 J+	10.8 J+
Boron, Hot Water Ext.	1.5	0.59	0.71	0.35	0.40	0.44	0.49	0.42	0.49	0.46	0.30
Cadmium	1.2	0.296	0.304	0.203	0.249	0.241	0.267	0.292	0.315	0.300	0.254
Chromium	160	19.3	19.5	14.1	18.3	19.7	18.1	20.6	21.7	20.1	23.1
Chromium, Hexavalent	8	0.12	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.11	ND(0.10)	ND(0.10)	0.19
Cobalt	22	6.46	6.34	4.83	6.08	6.67	5.93	6.51	6.80	6.74	7.93
Copper	140	13.5	12.8	9.59	11.4	14.4	13.9	17.0	15.7	16.5	16.0
Lead	120	15.1	14.3	11.5	14.0	13.7	12.7	13.9	15.1	14.3	14.3
Mercury	0.27	0.0357	0.0435	0.0281	0.0459	0.0380	0.0378	0.0438	0.0451	0.0424	0.0344
Molybdenum	6.9	0.38	0.41	0.32	0.36	0.34	0.36	0.34	0.36	0.35	0.33
Nickel	100	12.4	12.2	8.64	11.0	13.7	12.0	13.6	14.2	13.8	16.9
Selenium	2.4	0.32	0.32	0.24	0.29	0.26	0.30	0.30	0.35	0.38	0.23
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Thallium	1	0.125	0.117	0.097	0.124	0.119	0.104	0.122	0.127	0.126	0.144
Uranium	23	0.616	0.638	0.484	0.579	0.604	0.639	0.657	0.695	0.680	0.574
Vanadium	86	35.9	35.6	27.0	34.1	34.4	33.8	37.3	38.1	35.1	38.7
Zinc	340	69.2	67.4	51.6	63.0	64.1	66.2	71.3	74.2	74.8	72.3
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene	7.9	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	0.15	-	-	-	-	-	-	-	-	-	-
Anthracene	0.67	-	-	-	-	-	-	-	-	-	-
Benz[a]anthracene	0.5	-	-	-	-	-	-	-	-	-	-
Benzo[a]pyrene	0.3	-	-	-	-	-	-	-	-	-	-
Benzo[b]fluoranthene	0.78	-	-	-	-	-	-	-	-	-	-
Benzo[ghi]perylene	6.6	-	-	-	-	-	-	-	-	-	-
Benzo[k]fluoranthene	0.78	-	-	-	-	-	-	-	-	-	-
Chrysene	7	-	-	-	-	-	-	-	-	-	-
Dibenz[a h]anthracene	0.1	-	-	-	-	-	-	-	-	-	-
Fluoranthene	0.69	-	-	-	-	-	-	-	-	-	-
Fluorene	62	-	-	-	-	-	-	-	-	-	-
Indeno[1 2 3-cd]pyrene	0.38	-	-	-	-	-	-	-	-	-	-
Methlynaphthalene, 1+2-	0.99	-	-	-	-	-	-	-	-	-	-
Methlynaphthalene, 1-	0.99	-	-	-	-	-	-	-	-	-	-
Methlynaphthalene, 2-	0.99	-	-	-	-	-	-	-	-	-	-
Naphthalene	0.6	-	-	-	-	-	-	-	-	-	-
Phenanthrene	6.2	-	-	-	-	-	-	-	-	-	-
Pyrene	78	-	-	-	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-8	SS-9	SS-10
	Sample ID:	S-12598913-050423-ZCV-002	S-12598913-050423-ZCV-003	S-12598913-050423-ZCV-004	S-12598913-050423-ZCV-005	S-12598913-050423-ZCV-006	S-12598913-050423-ZCV-007	S-12598913-050423-ZCV-008	S-12598913-050423-ZCV-009	S-12598913-050423-ZCV-010	S-12598913-050423-ZCV-011
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 1.0	0.3 - 0.6	0.3 - 1.0	0.3 - 0.6	0.25 - 0.6	0.3 - 1.0	0.3 - 0.8	0.3 - 0.8	0.3 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**								**Field Duplicate**		
Petroleum Hydrocarbons (PHCs)											
PHC F1 (C6-C10)	55	-	-	-	-	-	-	-	-	-	-
PHC F2 (C10-C16)	98	-	-	-	-	-	-	-	-	-	-
PHC F3 (C16-C34)	300	-	-	-	-	-	-	-	-	-	-
PHC F4 (C34-C50)	2,800	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)											
Acetone	16	-	-	-	-	-	-	-	-	-	-
Benzene	0.21	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	1.5	-	-	-	-	-	-	-	-	-	-
Bromoform	0.27	-	-	-	-	-	-	-	-	-	-
Bromomethane	0.05	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	0.05	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	-	-	-	-	-	-
Chloroform	0.05	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	2.3	-	-	-	-	-	-	-	-	-	-
Dibromoethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	1.2	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	4.8	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	0.083	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	0.47	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,1-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	-	-	-	-	-	-	-	-	-	-
Dichloromethane	0.1	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis-1,3-	NV	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, trans-1,3-	NV	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1.1	-	-	-	-	-	-	-	-	-	-
Hexane, n-	2.8	-	-	-	-	-	-	-	-	-	-
Methyl ethyl ketone [MEK]	16	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	-	-	-	-	-	-	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	-	-	-	-	-	-	-	-	-	-
Styrene	0.7	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	-	-	-	-	-	-
Toluene	2.3	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	0.38	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	0.02	-	-	-	-	-	-	-	-	-	-
Xylene, m+p-	NV	-	-	-	-	-	-	-	-	-	-
Xylene, o-	NV	-	-	-	-	-	-	-	-	-	-
Xylenes, total	3.1	-	-	-	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-8	SS-9	SS-10
	Sample ID:	S-12598913-050423-ZCV-002	S-12598913-050423-ZCV-003	S-12598913-050423-ZCV-004	S-12598913-050423-ZCV-005	S-12598913-050423-ZCV-006	S-12598913-050423-ZCV-007	S-12598913-050423-ZCV-008	S-12598913-050423-ZCV-009	S-12598913-050423-ZCV-010	S-12598913-050423-ZCV-011
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 1.0	0.3 - 0.6	0.3 - 1.0	0.3 - 0.6	0.25 - 0.6	0.3 - 1.0	0.3 - 0.8	0.3 - 0.8	0.3 - 0.9	0.3 - 1.0
Parameters	**MECP Table 2 Standards[1]**								**Field Duplicate**		
Organochlorine Pesticides (OCPs)											
Aldrin	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)
Chlordane, cis- (alpha)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Chlordane, total	0.05	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
Chlordane, trans- (gamma)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDD, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDD, 4,4'-	NV	0.00060	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	0.00070	0.00071	0.00039	0.00042	ND(0.00030)
DDD, total	3.3	0.00060	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	0.00070	0.00071	ND(0.00042)	ND(0.00042)	ND(0.00042)
DDE, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDE, 4,4'-	NV	0.00312	0.00054	0.00170	0.00033	0.00194	0.00970	0.00313	0.00171	0.00613	0.00058
DDE, total	0.26	0.00312	0.00054	0.00170	ND(0.00042)	0.00194	0.00970	0.00313 J	0.00171 J	0.00613	0.00058
DDT, 2,4'-	NV	ND(0.00090)	ND(0.00090)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00030)
DDT, 4,4'-	NV	ND(0.00090)	ND(0.00090)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00150)	ND(0.00030)
DDT, total	1.4	ND(0.00127)	ND(0.00127)	ND(0.00212)	ND(0.00212)	ND(0.00212)	ND(0.00212)	ND(0.00212)	ND(0.00212)	ND(0.00212)	ND(0.00042)
Dieldrin	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)
Endosulfan, alpha-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Endosulfan, beta-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Endosulfan, total	0.04	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
Endrin	0.04	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Heptachlor	0.15	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)
Heptachlor epoxide	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)
Hexachlorobenzene	0.52	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Hexachlorobutadiene	0.012	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Hexachlorocyclohexane, gamma-	0.056	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)	ND(0.00024)	ND(0.00024)	ND(0.00024)	ND(0.00025)
Hexachloroethane	0.089	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Methoxychlor	0.13	ND(0.00150)	ND(0.00150)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00250)	ND(0.00050)

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	SS-16
	Sample ID:	S-12598913-050423-ZCV-012	S-12598913-050423-ZCV-013	S-12598913-050423-ZCV-014	S-12598913-050423-ZCV-015	S-12598913-050423-ZCV-016	S-12598913-050423-ZCV-017	S-12598913-050423-ZCV-018
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.5	0.3 - 0.5	0.3 - 0.5	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	MECP Table 2 Standards[1]							Field Duplicate
Inorganics								
Electrical Conductivity (mS/cm)	0.7	0.0943	0.101	0.0901	0.172	0.0785	0.0686	0.0655
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	7.06	7.18	6.97	7.40	6.94	7.06	7.08
Sodium Adsorption Ratio (SAR)	5	ND(0.10)	0.12	0.14	0.16	0.17	0.10	0.10
Metals								
Antimony	7.5	0.14	0.11	0.12	0.14	0.11	0.11	0.11
Arsenic	18	4.80	3.75	4.52	5.04	4.46	4.03	4.09
Barium	390	56.9	46.0	67.9	104	60.4	55.3	58.9
Beryllium	4	0.52	0.46	0.58	0.80	0.59	0.55	0.55
Boron	120	7.0 J+	5.4 J+	6.7 J+	11.6 J+	5.0 J+	5.5 J+	ND(5.0)
Boron, Hot Water Ext.	1.5	0.54	0.37	0.60	0.17	0.37	0.42	0.39
Cadmium	1.2	0.288	0.199	0.440	0.220	0.256	0.206	0.217
Chromium	160	19.2	16.8	21.3	26.4	19.8	18.7	18.9
Chromium, Hexavalent	8	0.14	0.33	ND(0.10)	0.42	0.37	0.34	0.47
Cobalt	22	5.80	5.45	6.60	9.14	6.41	5.94	6.18
Copper	140	14.3	13.5	15.6	20.0	12.1	11.2	11.0
Lead	120	13.6	10.6	14.9	12.5	14.2	13.1	13.3
Mercury	0.27	0.0539	0.0438	0.0745	0.0285	0.0758	0.0418	0.0387
Molybdenum	6.9	0.32	0.31	0.40	0.33	0.37	0.30	0.30
Nickel	100	12.6	11.0	14.7	20.6	12.1	12.2	12.3
Selenium	2.4	0.28	0.24	0.33	ND(0.20)	0.26	0.28	0.25
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Thallium	1	0.123	0.094	0.120	0.170	0.126	0.107	0.112
Uranium	23	0.717	0.570	0.699	0.637	0.608	0.549	0.546
Vanadium	86	33.9	29.6	36.1	41.7	34.8	32.0	32.7
Zinc	340	73.1	52.6	83.4	71.8	78.6	62.6	63.3
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	7.9	-	-	-	-	-	-	-
Acenaphthylene	0.15	-	-	-	-	-	-	-
Anthracene	0.67	-	-	-	-	-	-	-
Benz[a]anthracene	0.5	-	-	-	-	-	-	-
Benzo[a]pyrene	0.3	-	-	-	-	-	-	-
Benzo[b]fluoranthene	0.78	-	-	-	-	-	-	-
Benzo[ghi]perylene	6.6	-	-	-	-	-	-	-
Benzo[k]fluoranthene	0.78	-	-	-	-	-	-	-
Chrysene	7	-	-	-	-	-	-	-
Dibenz[a h]anthracene	0.1	-	-	-	-	-	-	-
Fluoranthene	0.69	-	-	-	-	-	-	-
Fluorene	62	-	-	-	-	-	-	-
Indeno[1 2 3-cd]pyrene	0.38	-	-	-	-	-	-	-
Methlynaphthalene, 1+2-	0.99	-	-	-	-	-	-	-
Methlynaphthalene, 1-	0.99	-	-	-	-	-	-	-
Methlynaphthalene, 2-	0.99	-	-	-	-	-	-	-
Naphthalene	0.6	-	-	-	-	-	-	-
Phenanthrene	6.2	-	-	-	-	-	-	-
Pyrene	78	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	SS-16
	Sample ID:	S-12598913-050423-ZCV-012	S-12598913-050423-ZCV-013	S-12598913-050423-ZCV-014	S-12598913-050423-ZCV-015	S-12598913-050423-ZCV-016	S-12598913-050423-ZCV-017	S-12598913-050423-ZCV-018
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.5	0.3 - 0.5	0.3 - 0.5	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**							**Field Duplicate**
Petroleum Hydrocarbons (PHCs)								
PHC F1 (C6-C10)	55	-	-	-	-	-	-	-
PHC F2 (C10-C16)	98	-	-	-	-	-	-	-
PHC F3 (C16-C34)	300	-	-	-	-	-	-	-
PHC F4 (C34-C50)	2,800	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)								
Acetone	16	-	-	-	-	-	-	-
Benzene	0.21	-	-	-	-	-	-	-
Bromodichloromethane	1.5	-	-	-	-	-	-	-
Bromoform	0.27	-	-	-	-	-	-	-
Bromomethane	0.05	-	-	-	-	-	-	-
Carbon tetrachloride	0.05	-	-	-	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	-	-	-
Chloroform	0.05	-	-	-	-	-	-	-
Dibromochloromethane	2.3	-	-	-	-	-	-	-
Dibromoethane, 1,2-	0.05	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	1.2	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	4.8	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	0.083	-	-	-	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	-	-	-
Dichloroethane, 1,1-	0.47	-	-	-	-	-	-	-
Dichloroethane, 1,2-	0.05	-	-	-	-	-	-	-
Dichloroethylene, 1,1-	0.05	-	-	-	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	-	-	-	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	-	-	-	-	-	-	-
Dichloromethane	0.1	-	-	-	-	-	-	-
Dichloropropane, 1,2-	0.05	-	-	-	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	-	-	-	-	-	-	-
Dichloropropylene, cis-1,3-	NV	-	-	-	-	-	-	-
Dichloropropylene, trans-1,3-	NV	-	-	-	-	-	-	-
Ethylbenzene	1.1	-	-	-	-	-	-	-
Hexane, n-	2.8	-	-	-	-	-	-	-
Methyl ethyl ketone [MEK]	16	-	-	-	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	-	-	-	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	-	-	-	-	-	-	-
Styrene	0.7	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	-	-	-	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	-	-	-
Toluene	2.3	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	0.38	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	0.05	-	-	-	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	-	-	-
Vinyl chloride	0.02	-	-	-	-	-	-	-
Xylene, m+p-	NV	-	-	-	-	-	-	-
Xylene, o-	NV	-	-	-	-	-	-	-
Xylenes, total	3.1	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	SS-16
	Sample ID:	S-12598913-050423-ZCV-012	S-12598913-050423-ZCV-013	S-12598913-050423-ZCV-014	S-12598913-050423-ZCV-015	S-12598913-050423-ZCV-016	S-12598913-050423-ZCV-017	S-12598913-050423-ZCV-018
	Sample Date:	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.5	0.3 - 0.5	0.3 - 0.5	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**							**Field Duplicate**
Organochlorine Pesticides (OCPs)								
Aldrin	0.05	ND(0.00025)	ND(0.00025)	ND(0.00026)	ND(0.00024)	ND(0.00025)	ND(0.00025)	ND(0.00024)
Chlordane, cis- (alpha)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Chlordane, total	0.05	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
Chlordane, trans- (gamma)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDD, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDD, 4,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDD, total	3.3	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
DDE, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDE, 4,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
DDE, total	0.26	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
DDT, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00060)
DDT, 4,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00060)
DDT, total	1.4	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00085)
Dieldrin	0.05	ND(0.00025)	ND(0.00025)	ND(0.00026)	ND(0.00024)	ND(0.00025)	ND(0.00025)	ND(0.00024)
Endosulfan, alpha-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Endosulfan, beta-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)	ND(0.00030)
Endosulfan, total	0.04	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)	ND(0.00042)
Endrin	0.04	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Heptachlor	0.15	ND(0.00025)	ND(0.00025)	ND(0.00026)	ND(0.00024)	ND(0.00025)	ND(0.00025)	ND(0.00024)
Heptachlor epoxide	0.05	ND(0.00025)	ND(0.00025)	ND(0.00026)	ND(0.00024)	ND(0.00025)	ND(0.00025)	ND(0.00024)
Hexachlorobenzene	0.52	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Hexachlorobutadiene	0.012	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Hexachlorocyclohexane, gamma-	0.056	ND(0.00025)	ND(0.00025)	ND(0.00026)	ND(0.00024)	ND(0.00025)	ND(0.00025)	ND(0.00024)
Hexachloroethane	0.089	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)
Methoxychlor	0.13	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00050)	ND(0.00100)

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-17	SS-18	SS-19	SS-19R (SS-19 Resample)	SS-19 (Average)	SS-20	SS-21	SS-21	SS-22
	Sample ID:	S-12598913-050423-ZCV-019	S-12598913-050423-ZCV-020	S-12598913-050423-ZCV-021	S-12598913-051223-ZCV-001	-	S-12598913-050423-ZCV-022	S-12598913-050423-ZCV-023	S-12598913-011724-ZCV-001	S-12598913-051223-ZCV-002
	Sample Date:	4-May-23	4-May-23	4-May-23	12-May-23	-	4-May-23	4-May-23	17-Jan-24	12-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	0.3 - 0.6	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8
Parameters	**MECP Table 2 Standards[1]**									
Inorganics										
Electrical Conductivity (mS/cm)	0.7	0.0805	0.0765	0.0871	0.118	0.103	0.0745	-	-	0.407
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	-	-	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	6.94	7.06	6.42	6.59	6.51	6.73	-	-	7.51
Sodium Adsorption Ratio (SAR)	5	ND(0.10)	ND(0.10)	ND(0.10)	0.12	0.11	ND(0.10)	-	-	
Metals										
Antimony	7.5	0.11	0.11	0.15	0.13	0.14	0.14	-	-	0.14
Arsenic	18	4.11	3.88	5.68	4.66	5.17	5.40	-	-	4.00
Barium	390	47.0	49.6	57.7	49.4	53.6	41.2	-	-	53.3
Beryllium	4	0.48	0.48	0.58	0.51	0.55	0.42	-	-	0.51
Boron	120	5.6 J+	ND(5.0)	9.0 J+	6.0	7.5	7.3 J+	-	-	7.2
Boron, Hot Water Ext.	1.5	1.06	0.36	1.56*	0.80	1.18	1.27	-	-	0.27
Cadmium	1.2	0.198	0.254	0.415	0.352	0.384	0.299	-	-	0.283
Chromium	160	18.8	18.7	19.9	16.4	18.2	15.2	-	-	18.3
Chromium, Hexavalent	8	0.37	0.45	ND(0.10)	0.32	0.21	0.33	-	-	0.42
Cobalt	22	6.59	6.18	6.62	5.91	6.27	4.71	-	-	5.71
Copper	140	10.7	10.4	17.2	14.2	15.7	12.2	-	-	13.4
Lead	120	13.2	12.6	15.5	14.3	14.9	12.5	-	-	16.1
Mercury	0.27	0.0310	0.0488	0.0395	0.0526	0.0461	0.0458	-	-	0.0240
Molybdenum	6.9	0.36	0.34	0.50	0.46	0.48	0.40	-	-	0.38
Nickel	100	12.6	11.1	14.1	12.0	13.1	11.4	-	-	11.8
Selenium	2.4	0.29	0.22	0.31	0.24	0.28	0.22	-	-	0.22
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	-	-	ND(0.10)
Thallium	1	0.108	0.113	0.126	0.109	0.118	0.089	-	-	0.100
Uranium	23	0.537	0.620	0.882	0.709	0.796	0.628	-	-	0.590
Vanadium	86	36.2	34.2	36.8	30.7	33.8	26.6	-	-	32.0
Zinc	340	61.2	64.7	79.6	72.4	76.0	68.5	-	-	66.2
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene	7.9	-	-	-	-	-	-	-	ND(0.050)	-
Acenaphthylene	0.15	-	-	-	-	-	-	-	ND(0.050)	-
Anthracene	0.67	-	-	-	-	-	-	-	ND(0.050)	-
Benz[a]anthracene	0.5	-	-	-	-	-	-	-	ND(0.050)	-
Benzo[a]pyrene	0.3	-	-	-	-	-	-	-	ND(0.050)	-
Benzo[b]fluoranthene	0.78	-	-	-	-	-	-	-	ND(0.050)	-
Benzo[ghi]perylene	6.6	-	-	-	-	-	-	-	ND(0.050)	-
Benzo[k]fluoranthene	0.78	-	-	-	-	-	-	-	ND(0.050)	-
Chrysene	7	-	-	-	-	-	-	-	ND(0.050)	-
Dibenz[a h]anthracene	0.1	-	-	-	-	-	-	-	ND(0.050)	-
Fluoranthene	0.69	-	-	-	-	-	-	-	ND(0.050)	-
Fluorene	62	-	-	-	-	-	-	-	ND(0.050)	-
Indeno[1 2 3-cd]pyrene	0.38	-	-	-	-	-	-	-	ND(0.050)	-
Methlynaphthalene, 1+2-	0.99	-	-	-	-	-	-	-	ND(0.050)	-
Methlynaphthalene, 1-	0.99	-	-	-	-	-	-	-	ND(0.030)	-
Methlynaphthalene, 2-	0.99	-	-	-	-	-	-	-	ND(0.030)	-
Naphthalene	0.6	-	-	-	-	-	-	-	ND(0.010)	-
Phenanthrene	6.2	-	-	-	-	-	-	-	ND(0.050)	-
Pyrene	78	-	-	-	-	-	-	-	ND(0.050)	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-17	SS-18	SS-19	SS-19R (SS-19 Resample)	SS-19 (Average)	SS-20	SS-21	SS-21	SS-22
	Sample ID:	S-12598913-050423-ZCV-019	S-12598913-050423-ZCV-020	S-12598913-050423-ZCV-021	S-12598913-051223-ZCV-001	-	S-12598913-050423-ZCV-022	S-12598913-050423-ZCV-023	S-12598913-011724-ZCV-001	S-12598913-051223-ZCV-002
	Sample Date:	4-May-23	4-May-23	4-May-23	12-May-23	-	4-May-23	4-May-23	17-Jan-24	12-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	0.3 - 0.6	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8
Parameters	MECP Table 2 Standards[1]									
Petroleum Hydrocarbons (PHCs)										
PHC F1 (C6-C10)	55	-	-	-	-	-	-	ND(5.0)	-	ND(5.0)
PHC F2 (C10-C16)	98	-	-	-	-	-	-	ND(10)	-	ND(10)
PHC F3 (C16-C34)	300	-	-	-	-	-	-	ND(50)	-	ND(50)
PHC F4 (C34-C50)	2,800	-	-	-	-	-	-	ND(50)	-	ND(50)
									-	
Volatile Organic Compounds (VOCs)									-	
Acetone	16	-	-	-	-	-	-	ND(0.50)	-	ND(0.50)
Benzene	0.21	-	-	-	-	-	-	ND(0.0050)	-	ND(0.0050)
Bromodichloromethane	1.5	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Bromoform	0.27	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Bromomethane	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Carbon tetrachloride	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Chlorobenzene	2.4	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Chloroform	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dibromochloromethane	2.3	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dibromoethane, 1,2-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichlorobenzene, 1,2-	1.2	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichlorobenzene, 1,3-	4.8	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichlorobenzene, 1,4-	0.083	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichlorodifluoromethane	16	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloroethane, 1,1-	0.47	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloroethane, 1,2-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloroethylene, 1,1-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloroethylene, cis-1,2-	1.9	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloroethylene, trans-1,2-	0.084	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloromethane	0.1	-	-	-	-	-	-	ND(0.045)	-	ND(0.045)
Dichloropropane, 1,2-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloropropylene, cis+trans-1,3-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Dichloropropylene, cis-1,3-	NV	-	-	-	-	-	-	ND(0.030)	-	ND(0.030)
Dichloropropylene, trans-1,3-	NV	-	-	-	-	-	-	ND(0.030)	-	ND(0.030)
Ethylbenzene	1.1	-	-	-	-	-	-	ND(0.015)	-	ND(0.015)
Hexane, n-	2.8	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Methyl ethyl ketone [MEK]	16	-	-	-	-	-	-	ND(0.50)	-	ND(0.50)
Methyl isobutyl ketone [MIBK]	1.7	-	-	-	-	-	-	ND(0.50)	-	ND(0.50)
Methyl-tert-butyl ether [MTBE]	0.75	-	-	-	-	-	-	ND(0.040)	-	ND(0.040)
Styrene	0.7	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Tetrachloroethane, 1,1,1,2-	0.058	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Tetrachloroethane, 1,1,2,2-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Tetrachloroethylene	0.28	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Toluene	2.3	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Trichloroethane, 1,1,1-	0.38	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Trichloroethane, 1,1,2-	0.05	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Trichloroethylene	0.061	-	-	-	-	-	-	ND(0.010)	-	ND(0.010)
Trichlorofluoromethane	4	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)
Vinyl chloride	0.02	-	-	-	-	-	-	ND(0.020)	-	ND(0.020)
Xylene, m+p-	NV	-	-	-	-	-	-	ND(0.030)	-	ND(0.030)
Xylene, o-	NV	-	-	-	-	-	-	ND(0.030)	-	ND(0.030)
Xylenes, total	3.1	-	-	-	-	-	-	ND(0.050)	-	ND(0.050)

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-17	SS-18	SS-19	SS-19R (SS-19 Resample)	SS-19 (Average)	SS-20	SS-21	SS-21	SS-22
	Sample ID:	S-12598913-050423-ZCV-019	S-12598913-050423-ZCV-020	S-12598913-050423-ZCV-021	S-12598913-051223-ZCV-001	-	S-12598913-050423-ZCV-022	S-12598913-050423-ZCV-023	S-12598913-011724-ZCV-001	S-12598913-051223-ZCV-002
	Sample Date:	4-May-23	4-May-23	4-May-23	12-May-23	-	4-May-23	4-May-23	17-Jan-24	12-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	0.3 - 0.6	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8
Parameters	**MECP Table 2 Standards[(1)]**									
Organochlorine Pesticides (OCPs)										
Aldrin	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	-	-	ND(0.00022)	-	-	-
Chlordane, cis- (alpha)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
Chlordane, total	0.05	ND(0.00042)	ND(0.00042)	ND(0.00042)	-	-	ND(0.00042)	-	-	-
Chlordane, trans- (gamma)	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
DDD, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
DDD, 4,4'-	NV	0.00125	ND(0.00030)	0.00123 J	-	-	ND(0.00030)	-	-	-
DDD, total	3.3	0.00125	ND(0.00042)	0.00123	-	-	ND(0.00042)	-	-	-
DDE, 2,4'-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
DDE, 4,4'-	NV	0.00516	ND(0.00030)	0.0259	-	-	ND(0.00030)	-	-	-
DDE, total	0.26	0.00516	ND(0.00042)	0.0259	-	-	ND(0.00042)	-	-	-
DDT, 2,4'-	NV	ND(0.00060)	ND(0.00060)	0.00110	-	-	ND(0.00030)	-	-	-
DDT, 4,4'-	NV	0.00230	ND(0.00060)	0.0195	-	-	0.00037	-	-	-
DDT, total	1.4	0.00230	ND(0.00085)	0.0206	-	-	ND(0.00042)	-	-	-
Dieldrin	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	-	-	ND(0.00022)	-	-	-
Endosulfan, alpha-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
Endosulfan, beta-	NV	ND(0.00030)	ND(0.00030)	ND(0.00030)	-	-	ND(0.00030)	-	-	-
Endosulfan, total	0.04	ND(0.00042)	ND(0.00042)	ND(0.00042)	-	-	ND(0.00042)	-	-	-
Endrin	0.04	ND(0.00050)	ND(0.00050)	ND(0.00050)	-	-	ND(0.00050)	-	-	-
Heptachlor	0.15	ND(0.00024)	ND(0.00024)	ND(0.00024)	-	-	ND(0.00022)	-	-	-
Heptachlor epoxide	0.05	ND(0.00024)	ND(0.00024)	ND(0.00024)	-	-	ND(0.00022)	-	-	-
Hexachlorobenzene	0.52	ND(0.00050)	ND(0.00050)	ND(0.00050)	-	-	ND(0.00050)	-	-	-
Hexachlorobutadiene	0.012	ND(0.00050)	ND(0.00050)	ND(0.00050)	-	-	ND(0.00050)	-	-	-
Hexachlorocyclohexane, gamma-	0.056	ND(0.00024)	ND(0.00024)	ND(0.00024)	-	-	ND(0.00022)	-	-	-
Hexachloroethane	0.089	ND(0.00050)	ND(0.00050)	ND(0.00050)	-	-	ND(0.00050)	-	-	-
Methoxychlor	0.13	ND(0.00100)	ND(0.00100)	ND(0.00050)	-	-	ND(0.00050)	-	-	-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-22	SS-23	SS-23	SS-24	SS-24	SS-25	SS-25	SS-25R1 (SS-25 Resample)	SS-25R2 (SS-25 Resample)	SS-25R3 (SS-25 Resample)
	Sample ID:	S-12598913-011724-ZCV-002	S-1259813-050323-ZCV-001	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-002	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-003	S-12598913-011724-ZCV-005	S-12598913-013024-ZCV-001	S-12598913-013024-ZCV-004	S-12598913-013024-ZCV-005
	Sample Date:	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	30-Jan-24	30-Jan-24	30-Jan-24
	Sample Depth (mBGS):	0.3 - 0.8	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8
Parameters	**MECP Table 2 Standards[1]**										
Inorganics											
Electrical Conductivity (mS/cm)	0.7	-	-	0.158	-	0.161	-	0.185	-	-	-
Cyanide, Weak Acid Dissociable	0.050	-	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	-	-	7.21	-	7.29	-	7.23	-	-	-
Sodium Adsorption Ratio (SAR)	5	-	-	0.16	-	0.12	-	0.10	-	-	-
Metals											
Antimony	7.5	-	-	0.11	-	0.16	-	0.20	-	-	-
Arsenic	18	-	-	4.72	-	3.75	-	4.74	-	-	-
Barium	390	-	-	56.0	-	51.1	-	61.3	-	-	-
Beryllium	4	-	-	0.58	-	0.49	-	0.58	-	-	-
Boron	120	-	-	7.0	-	8.1	-	7.5	-	-	-
Boron, Hot Water Ext.	1.5	-	-	0.31	-	0.49	-	0.50	-	-	-
Cadmium	1.2	-	-	0.238	-	0.202	-	0.316	-	-	-
Chromium	160	-	-	18.6	-	16.4	-	17.4	-	-	-
Chromium, Hexavalent	8	-	-	0.17	-	ND(0.10)	-	0.12	-	-	-
Cobalt	22	-	-	6.15	-	5.64	-	6.12	-	-	-
Copper	140	-	-	14.4	-	13.5	-	15.7	-	-	-
Lead	120	-	-	14.6	-	13.7	-	25.9	-	-	-
Mercury	0.27	-	-	0.0375	-	0.0261	-	0.0400	-	-	-
Molybdenum	6.9	-	-	0.28	-	0.30	-	0.49	-	-	-
Nickel	100	-	-	12.8	-	12.0	-	13.4	-	-	-
Selenium	2.4	-	-	ND(0.20)	-	ND(0.20)	-	0.20	-	-	-
Silver	20	-	-	ND(0.10)	-	ND(0.10)	-	ND(0.10)	-	-	-
Thallium	1	-	-	0.112	-	0.095	-	0.115	-	-	-
Uranium	23	-	-	0.515	-	0.513	-	0.618	-	-	-
Vanadium	86	-	-	33.0	-	28.9	-	29.5	-	-	-
Zinc	340	-	-	62.7	-	61.6	-	95.0	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene	7.9	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	ND(0.05)	ND(0.050)	ND(0.050)
Acenaphthylene	0.15	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.280*	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	0.67	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.615	ND(0.050)	ND(0.050)	ND(0.050)
Benz[a]anthracene	0.5	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	1.26*	ND(0.050)	ND(0.050)	ND(0.050)
Benzo[a]pyrene	0.3	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	1.03*	ND(0.050)	ND(0.050)	ND(0.050)
Benzo[b]fluoranthene	0.78	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	1.39*	ND(0.050)	ND(0.050)	ND(0.050)
Benzo[ghi]perylene	6.6	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.525	ND(0.050)	ND(0.050)	ND(0.050)
Benzo[k]fluoranthene	0.78	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.558	ND(0.050)	ND(0.050)	ND(0.050)
Chrysene	7	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	1.06	ND(0.050)	ND(0.050)	ND(0.050)
Dibenz[a h]anthracene	0.1	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.161*	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	0.69	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	2.51*	ND(0.050)	ND(0.050)	ND(0.050)
Fluorene	62	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.056	ND(0.050)	ND(0.050)	ND(0.050)
Indeno[1 2 3-cd]pyrene	0.38	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.607*	ND(0.050)	ND(0.050)	ND(0.050)
Methlynaphthalene, 1+2-	0.99	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Methlynaphthalene, 1-	0.99	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)
Methlynaphthalene, 2-	0.99	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	ND(0.030)	ND(0.030)	ND(0.030)
Naphthalene	0.6	ND(0.010)	-	ND(0.010)	-	ND(0.010)	-	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Phenanthrene	6.2	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	0.618	ND(0.050)	ND(0.050)	ND(0.050)
Pyrene	78	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	2.09	ND(0.050)	ND(0.050)	ND(0.050)

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-22	SS-23	SS-23	SS-24	SS-24	SS-25	SS-25	SS-25R1 (SS-25 Resample)	SS-25R2 (SS-25 Resample)	SS-25R3 (SS-25 Resample)
	Sample ID:	S-12598913-011724-ZCV-002	S-1259813-050323-ZCV-001	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-002	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-003	S-12598913-011724-ZCV-005	S-12598913-013024-ZCV-001	S-12598913-013024-ZCV-004	S-12598913-013024-ZCV-005
	Sample Date:	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	30-Jan-24	30-Jan-24	30-Jan-24
	Sample Depth (mBGS):	0.3 - 0.8	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8
Parameters	**MECP Table 2 Standards[1]**										
Petroleum Hydrocarbons (PHCs)											
PHC F1 (C6-C10)	55	-	ND(5.0)	-	ND(5.0)	-	ND(5.0)	-	-	-	-
PHC F2 (C10-C16)	98	-	ND(10)	-	ND(10)	-	ND(10)	-	-	-	-
PHC F3 (C16-C34)	300	-	ND(50)	-	ND(50)	-	59	-	-	-	-
PHC F4 (C34-C50)	2,800	-	ND(50)	-	ND(50)	-	64	-	-	-	-
Volatile Organic Compounds (VOCs)											
Acetone	16	-	ND(0.50)	-	ND(0.50)	-	ND(0.50)	-	-	-	-
Benzene	0.21	-	ND(0.0050)	-	ND(0.0050)	-	ND(0.0050)	-	-	-	-
Bromodichloromethane	1.5	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Bromoform	0.27	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Bromomethane	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Carbon tetrachloride	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Chlorobenzene	2.4	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Chloroform	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dibromochloromethane	2.3	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dibromoethane, 1,2-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,2-	1.2	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,3-	4.8	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,4-	0.083	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichlorodifluoromethane	16	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloroethane, 1,1-	0.47	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloroethane, 1,2-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloroethylene, 1,1-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloromethane	0.1	-	ND(0.045)	-	ND(0.045)	-	ND(0.045)	-	-	-	-
Dichloropropane, 1,2-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Dichloropropylene, cis-1,3-	NV	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	-	-	-
Dichloropropylene, trans-1,3-	NV	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	-	-	-
Ethylbenzene	1.1	-	ND(0.015)	-	ND(0.015)	-	ND(0.015)	-	-	-	-
Hexane, n-	2.8	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Methyl ethyl ketone [MEK]	16	-	ND(0.50)	-	ND(0.50)	-	ND(0.50)	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	-	ND(0.50)	-	ND(0.50)	-	ND(0.50)	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	-	ND(0.040)	-	ND(0.040)	-	ND(0.040)	-	-	-	-
Styrene	0.7	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Tetrachloroethylene	0.28	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Toluene	2.3	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,1-	0.38	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,2-	0.05	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Trichloroethylene	0.061	-	ND(0.010)	-	ND(0.010)	-	ND(0.010)	-	-	-	-
Trichlorofluoromethane	4	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-
Vinyl chloride	0.02	-	ND(0.020)	-	ND(0.020)	-	ND(0.020)	-	-	-	-
Xylene, m+p-	NV	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	-	-	-
Xylene, o-	NV	-	ND(0.030)	-	ND(0.030)	-	ND(0.030)	-	-	-	-
Xylenes, total	3.1	-	ND(0.050)	-	ND(0.050)	-	ND(0.050)	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-22	SS-23	SS-23	SS-24	SS-24	SS-25	SS-25	SS-25R1 (SS-25 Resample)	SS-25R2 (SS-25 Resample)	SS-25R3 (SS-25 Resample)
	Sample ID:	S-12598913-011724-ZCV-002	S-1259813-050323-ZCV-001	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-002	S-12598913-011724-ZCV-003	S-1259813-050323-ZCV-003	S-12598913-011724-ZCV-005	S-12598913-013024-ZCV-001	S-12598913-013024-ZCV-004	S-12598913-013024-ZCV-005
	Sample Date:	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	3-May-23	17-Jan-24	30-Jan-24	30-Jan-24	30-Jan-24
	Sample Depth (mBGS):	0.3 - 0.8	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8	0.4 - 0.8
Parameters	**MECP Table 2 Standards[1]**										
Organochlorine Pesticides (OCPs)		-									
		-									
Aldrin	0.05	-	-	-	-	-	-	-	-	-	-
Chlordane, cis- (alpha)	NV	-	-	-	-	-	-	-	-	-	-
Chlordane, total	0.05	-	-	-	-	-	-	-	-	-	-
Chlordane, trans- (gamma)	NV	-	-	-	-	-	-	-	-	-	-
DDD, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDD, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDD, total	3.3	-	-	-	-	-	-	-	-	-	-
DDE, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDE, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDE, total	0.26	-	-	-	-	-	-	-	-	-	-
DDT, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDT, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDT, total	1.4	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	-	-	-	-	-	-	-	-	-	-
Endosulfan, alpha-	NV	-	-	-	-	-	-	-	-	-	-
Endosulfan, beta-	NV	-	-	-	-	-	-	-	-	-	-
Endosulfan, total	0.04	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	0.05	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	-	-	-	-	-	-	-	-	-	-
Hexachlorocyclohexane, gamma-	0.056	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	-	-	-	-	-	-	-	-	-	-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS Metres below ground surface

ND(0.50) Parameter not detected at value stated in parenthesis

NV No Value, there is no Standard prescribed for this parameter

317 Concentration exceeds MECP Table 2 Standard

* Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.

J Estimated quantity.

J+ Estimated quantity; result may be biased high.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-25 (Average)	SS-26	SS-26	SS-26	SS-27	SS-27	SS-28	SS-28	SS-28	TP-1
	Sample ID:	-	S-1259813-050323-ZCV-004	S-12598913-011724-ZCV-006	S-12598913-011724-ZCV-007	S-1259813-050323-ZCV-005	S-12598913-011724-ZCV-008	S-1259813-050323-ZCV-006	S-1259813-050323-ZCV-007	S-12598913-011724-ZCV-009	S-12598913-121622-JPF-001
	Sample Date:	-	3-May-23	17-Jan-24	17-Jan-23	3-May-23	17-Jan-24	3-May-23	3-May-23	17-Jan-24	16-Dec-22
	Sample Depth (mBGS):	-	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**				**Field Duplicate**				**Field Duplicate**		
Inorganics											
Electrical Conductivity (mS/cm)	0.7	-	-	0.181	0.179	-	0.138	-	-	0.165	1.71
Cyanide, Weak Acid Dissociable	0.050	-	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	-	-	7.44	7.34	-	7.41	-	-	7.59	6.45
Sodium Adsorption Ratio (SAR)	5	-	-	0.78	0.82	-	ND(0.10)	-	-	0.12	0.86
Metals											
Antimony	7.5	-	-	0.12	0.11	-	0.11	-	-	0.11	0.11
Arsenic	18	-	-	5.18	5.18	-	4.18	-	-	3.81	3.92
Barium	390	-	-	67.6	61.7	-	41.7	-	-	40.7	77.7
Beryllium	4	-	-	0.62	0.57	-	0.41	-	-	0.42	0.62
Boron	120	-	-	6.7	6.0	-	5.3	-	-	6.8	5.4
Boron, Hot Water Ext.	1.5	-	-	0.29	0.29	-	0.26	-	-	0.23	1.15
Cadmium	1.2	-	-	0.329	0.286	-	0.258	-	-	0.228	0.352
Chromium	160	-	-	19.2	18.6	-	15.6	-	-	14.3	17.7
Chromium, Hexavalent	8	-	-	0.32	0.20	-	0.13	-	-	0.11	ND(0.10)
Cobalt	22	-	-	6.52	6.23	-	5.02	-	-	5.20	6.04
Copper	140	-	-	13.8	13.7	-	9.73	-	-	11.7	14.1
Lead	120	-	-	15.7	15.7	-	13.7	-	-	60.4	11.5
Mercury	0.27	-	-	0.0471	0.0435	-	0.0300	-	-	0.0234	0.0543
Molybdenum	6.9	-	-	0.37	0.32	-	0.34	-	-	0.32	0.43
Nickel	100	-	-	14.2	13.7	-	10.4	-	-	11.7	12.5
Selenium	2.4	-	-	0.20	ND(0.20)	-	ND(0.20)	-	-	ND(0.20)	0.46
Silver	20	-	-	ND(0.10)	ND(0.10)	-	ND(0.10)	-	-	ND(0.10)	ND(0.10)
Thallium	1	-	-	0.116	0.109	-	0.085	-	-	0.085	0.101
Uranium	23	-	-	0.556	0.507	-	0.492	-	-	0.438	0.493
Vanadium	86	-	-	35.8	33.5	-	31.4	-	-	25.1	30.5
Zinc	340	-	-	77.3	75.3	-	74.3	-	-	72.5	72.8
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene	7.9	ND(0.050)	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Acenaphthylene	0.15	0.108	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Anthracene	0.67	0.191	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Benz[a]anthracene	0.5	0.353	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Benzo[a]pyrene	0.3	0.295	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Benzo[b]fluoranthene	0.78	0.385	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Benzo[ghi]perylene	6.6	0.169	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Benzo[k]fluoranthene	0.78	0.177	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Chrysene	7	0.303	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Dibenz[a h]anthracene	0.1	0.078	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Fluoranthene	0.69	0.665	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Fluorene	62	0.052	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Indeno[1 2 3-cd]pyrene	0.38	0.189	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Methlynaphthalene, 1+2-	0.99	ND(0.050)	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Methlynaphthalene, 1-	0.99	ND(0.030)	-	ND(0.030)	ND(0.030)	-	ND(0.030)	-	-	ND(0.030)	ND(0.030)
Methlynaphthalene, 2-	0.99	ND(0.030)	-	ND(0.030)	ND(0.030)	-	ND(0.030)	-	-	ND(0.030)	ND(0.030)
Naphthalene	0.6	ND(0.010)	-	ND(0.010)	ND(0.010)	-	ND(0.010)	-	-	ND(0.010)	ND(0.010)
Phenanthrene	6.2	0.192	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)
Pyrene	78	0.560	-	ND(0.050)	ND(0.050)	-	ND(0.050)	-	-	ND(0.050)	ND(0.050)

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-25 (Average)	SS-26	SS-26	SS-26	SS-27	SS-27	SS-28	SS-28	SS-28	TP-1
	Sample ID:	-	S-1259813-050323-ZCV-004	S-12598913-011724-ZCV-006	S-12598913-011724-ZCV-007	S-1259813-050323-ZCV-005	S-12598913-011724-ZCV-008	S-1259813-050323-ZCV-006	S-1259813-050323-ZCV-007	S-12598913-011724-ZCV-009	S-12598913-121622-JPF-001
	Sample Date:	-	3-May-23	17-Jan-24	17-Jan-23	3-May-23	17-Jan-24	3-May-23	3-May-23	17-Jan-24	16-Dec-22
	Sample Depth (mBGS):	-	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**				**Field Duplicate**				**Field Duplicate**		
Petroleum Hydrocarbons (PHCs)											
PHC F1 (C6-C10)	55	-	ND(5.0)			ND(5.0)		ND(5.0)	ND(5.0)		-
PHC F2 (C10-C16)	98	-	ND(10)			ND(10)		ND(10)	ND(10)		-
PHC F3 (C16-C34)	300	-	ND(50)			ND(50)		ND(50)	ND(50)		-
PHC F4 (C34-C50)	2,800	-	ND(50)			ND(50)		ND(50)	ND(50)		-
Volatile Organic Compounds (VOCs)											
Acetone	16	-	ND(0.50)			ND(0.50)		ND(0.50)	ND(0.50)		-
Benzene	0.21	-	ND(0.0050)			ND(0.0050)		ND(0.0050)	ND(0.0050)		-
Bromodichloromethane	1.5	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Bromoform	0.27	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Bromomethane	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Carbon tetrachloride	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Chlorobenzene	2.4	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Chloroform	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dibromochloromethane	2.3	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dibromoethane, 1,2-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichlorobenzene, 1,2-	1.2	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichlorobenzene, 1,3-	4.8	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichlorobenzene, 1,4-	0.083	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichlorodifluoromethane	16	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloroethane, 1,1-	0.47	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloroethane, 1,2-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloroethylene, 1,1-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloroethylene, cis-1,2-	1.9	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloroethylene, trans-1,2-	0.084	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloromethane	0.1	-	ND(0.045)			ND(0.045)		ND(0.045)	ND(0.045)		-
Dichloropropane, 1,2-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloropropylene, cis+trans-1,3-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Dichloropropylene, cis-1,3-	NV	-	ND(0.030)			ND(0.030)		ND(0.030)	ND(0.030)		-
Dichloropropylene, trans-1,3-	NV	-	ND(0.030)			ND(0.030)		ND(0.030)	ND(0.030)		-
Ethylbenzene	1.1	-	ND(0.015)			ND(0.015)		ND(0.015)	ND(0.015)		-
Hexane, n-	2.8	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Methyl ethyl ketone [MEK]	16	-	ND(0.50)			ND(0.50)		ND(0.50)	ND(0.50)		-
Methyl isobutyl ketone [MIBK]	1.7	-	ND(0.50)			ND(0.50)		ND(0.50)	ND(0.50)		-
Methyl-tert-butyl ether [MTBE]	0.75	-	ND(0.040)			ND(0.040)		ND(0.040)	ND(0.040)		-
Styrene	0.7	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Tetrachloroethane, 1,1,1,2-	0.058	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Tetrachloroethane, 1,1,2,2-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Tetrachloroethylene	0.28	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Toluene	2.3	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Trichloroethane, 1,1,1-	0.38	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Trichloroethane, 1,1,2-	0.05	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Trichloroethylene	0.061	-	ND(0.010)			ND(0.010)		ND(0.010)	ND(0.010)		-
Trichlorofluoromethane	4	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-
Vinyl chloride	0.02	-	ND(0.020)			ND(0.020)		ND(0.020)	ND(0.020)		-
Xylene, m+p-	NV	-	ND(0.030)			ND(0.030)		ND(0.030)	ND(0.030)		-
Xylene, o-	NV	-	ND(0.030)			ND(0.030)		ND(0.030)	ND(0.030)		-
Xylenes, total	3.1	-	ND(0.050)			ND(0.050)		ND(0.050)	ND(0.050)		-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	SS-25 (Average)	SS-26	SS-26	SS-26	SS-27	SS-27	SS-28	SS-28	SS-28	TP-1
	Sample ID:	-	S-1259813-050323-ZCV-004	S-12598913-011724-ZCV-006	S-12598913-011724-ZCV-007	S-1259813-050323-ZCV-005	S-12598913-011724-ZCV-008	S-1259813-050323-ZCV-006	S-1259813-050323-ZCV-007	S-12598913-011724-ZCV-009	S-12598913-121622-JPF-001
	Sample Date:	-	3-May-23	17-Jan-24	17-Jan-23	3-May-23	17-Jan-24	3-May-23	3-May-23	17-Jan-24	16-Dec-22
	Sample Depth (mBGS):	-	0.3 - 0.7	0.3 - 0.7	0.3 - 0.7	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.8	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**				**Field Duplicate**				**Field Duplicate**		
Organochlorine Pesticides (OCPs)											
Aldrin	0.05	-	-			-		-	-		-
Chlordane, cis- (alpha)	NV	-	-			-		-	-		-
Chlordane, total	0.05	-	-			-		-	-		-
Chlordane, trans- (gamma)	NV	-	-			-		-	-		-
DDD, 2,4'-	NV	-	-			-		-	-		-
DDD, 4,4'-	NV	-	-			-		-	-		-
DDD, total	3.3	-	-			-		-	-		-
DDE, 2,4'-	NV	-	-			-		-	-		-
DDE, 4,4'-	NV	-	-			-		-	-		-
DDE, total	0.26	-	-			-		-	-		-
DDT, 2,4'-	NV	-	-			-		-	-		-
DDT, 4,4'-	NV	-	-			-		-	-		-
DDT, total	1.4	-	-			-		-	-		-
Dieldrin	0.05	-	-			-		-	-		-
Endosulfan, alpha-	NV	-	-			-		-	-		-
Endosulfan, beta-	NV	-	-			-		-	-		-
Endosulfan, total	0.04	-	-			-		-	-		-
Endrin	0.04	-	-			-		-	-		-
Heptachlor	0.15	-	-			-		-	-		-
Heptachlor epoxide	0.05	-	-			-		-	-		-
Hexachlorobenzene	0.52	-	-			-		-	-		-
Hexachlorobutadiene	0.012	-	-			-		-	-		-
Hexachlorocyclohexane, gamma-	0.056	-	-			-		-	-		-
Hexachloroethane	0.089	-	-			-		-	-		-
Methoxychlor	0.13	-	-			-		-	-		-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS Metres below ground surface

ND(0.50) Parameter not detected at value stated in parenthesis

NV No Value, there is no Standard prescribed for this parameter

317 Concentration exceeds MECP Table 2 Standard

* Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.

J Estimated quantity.

J+ Estimated quantity; result may be biased high.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	TP-2	TP-2	SS-29 (TP-2 Resample)	TP-2 (Average)	TP-2 (Average)	SS-29D	TP-3	TP-4A	SS-30 (TP-4A Resample)	SS-30 (TP-4A Resample)
	Sample ID:	S-12598913-121622-JPF-002	S-12598913-121622-JPF-003	S-1259813-050323-ZCV-008	-	-	S-1259813-050323-ZCV-009	S-12598913-121622-JPF-004	S-12598913-121622-JPF-005	S-1259813-050323-ZCV-010	S-1259813-050323-ZCV-011
	Sample Date:	16-Dec-22	16-Dec-22	3-May-23	-	-	3-May-23	16-Dec-22	16-Dec-22	3-May-23	3-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	-	0.6 - 1.0	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**			**Field Duplicate**					**Field Duplicate**
Inorganics											
Electrical Conductivity (mS/cm)	0.7	1.59	1.58	0.431	1.01	1.01	0.557	0.914	1.23	0.274	0.246
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	6.20	6.18	6.15	6.18	6.17	6.50	6.38	6.32	6.45	6.45
Sodium Adsorption Ratio (SAR)	5	0.75	0.78	0.21	0.48	0.50	0.14	0.18	0.65	0.67	0.65
Metals											
Antimony	7.5	0.18	0.18	0.13	0.16	0.16	0.20	0.16	0.16	0.14	0.11
Arsenic	18	4.97	4.68	5.25	5.11	4.97	6.16	5.36	4.96	6.57	4.83
Barium	390	45.1	46.4	68.0	56.6	57.2	179	49.7	46.3	60.2	46.9
Beryllium	4	0.45	0.42	0.54	0.50	0.48	1.15	0.46	0.42	0.58	0.54
Boron	120	9.6	10.5	ND(5.0)	7.3	7.8	13.0	10.6	8.2	5.8	5.9
Boron, Hot Water Ext.	1.5	2.19*	2.24*	0.56	1.38	1.40	0.21	1.33	1.80*	0.43	0.44
Cadmium	1.2	0.387	0.428	0.241	0.31	0.33	0.140	0.320	0.327	0.233	0.170
Chromium	160	14.1	13.7	21.1	17.6	17.4	37.0	15.3	14.4	23.6	19.0
Chromium, Hexavalent	8	ND(0.10)	ND(0.10)	0.33	0.22	0.22	0.40	ND(0.10)	ND(0.10)	0.54	0.43
Cobalt	22	5.23	5.00	7.15	6.19	6.08	14.8	5.71	5.16	7.81	6.19
Copper	140	18.3	19.0	13.1	15.7	16.05	28.0	15.4	18.0	15.6	12.0
Lead	120	13.5	13.4	12.6	13.1	13.0	16.3	13.0	13.4	14.0	11.8
Mercury	0.27	0.0366	0.0357	0.0380	0.0373	0.0369	0.0335	0.0368	0.0403	0.0329	0.0394
Molybdenum	6.9	0.83	0.86	0.45	0.64	0.66	0.41	0.63	0.69	0.48	0.40
Nickel	100	10.3	10.0	14.6	12.5	12.3	31.6	11.1	10.4	16.6	12.7
Selenium	2.4	0.41	0.35	0.25	0.33	0.30	ND(0.20)	0.35	0.33	0.24	0.20
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Thallium	1	0.086	0.083	0.101	0.094	0.092	0.223	0.090	0.085	0.115	0.097
Uranium	23	0.659	0.652	0.614	0.637	0.633	0.639	0.670	0.685	0.639	0.542
Vanadium	86	25.7	25.0	36.3	31.0	30.7	54.8	28.4	26.5	47.8	37.3
Zinc	340	141	163	76.1	108.6	119.6	89.6	96.7	112	79.4	62.4
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene	7.9	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Acenaphthylene	0.15	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Anthracene	0.67	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Benz[a]anthracene	0.5	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Benzo[a]pyrene	0.3	0.086	0.054	-	-	-	-	0.150	ND(0.050)	-	-
Benzo[b]fluoranthene	0.78	0.118	0.074	-	-	-	-	0.211	0.084	-	-
Benzo[ghi]perylene	6.6	0.095	0.064	-	-	-	-	0.144	ND(0.050)	-	-
Benzo[k]fluoranthene	0.78	ND(0.050)	ND(0.050)	-	-	-	-	0.084	ND(0.050)	-	-
Chrysene	7	0.076	0.055 J+	-	-	-	-	0.084 J+	0.058 J+	-	-
Dibenz[a h]anthracene	0.1	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Fluoranthene	0.69	0.057	ND(0.050)	-	-	-	-	0.051	ND(0.050)	-	-
Fluorene	62	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Indeno[1 2 3-cd]pyrene	0.38	0.070	ND(0.050)	-	-	-	-	0.130	ND(0.050)	-	-
Methlynaphthalene, 1+2-	0.99	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Methlynaphthalene, 1-	0.99	ND(0.030)	ND(0.030)	-	-	-	-	ND(0.030)	ND(0.030)	-	-
Methlynaphthalene, 2-	0.99	ND(0.030)	ND(0.030)	-	-	-	-	ND(0.030)	ND(0.030)	-	-
Naphthalene	0.6	ND(0.010)	ND(0.014)	-	-	-	-	ND(0.014)	ND(0.014)	-	-
Phenanthrene	6.2	ND(0.050)	ND(0.050)	-	-	-	-	ND(0.050)	ND(0.050)	-	-
Pyrene	78	0.060	ND(0.050)	-	-	-	-	0.064	ND(0.050)	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	TP-2	TP-2	SS-29 (TP-2 Resample)	TP-2 (Average)	TP-2 (Average)	SS-29D	TP-3	TP-4A	SS-30 (TP-4A Resample)	SS-30 (TP-4A Resample)
	Sample ID:	S-12598913-121622-JPF-002	S-12598913-121622-JPF-003	S-1259813-050323-ZCV-008	-	-	S-1259813-050323-ZCV-009	S-12598913-121622-JPF-004	S-12598913-121622-JPF-005	S-1259813-050323-ZCV-010	S-1259813-050323-ZCV-011
	Sample Date:	16-Dec-22	16-Dec-22	3-May-23	-	-	3-May-23	16-Dec-22	16-Dec-22	3-May-23	3-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	-	0.6 - 1.0	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**			**Field Duplicate**					**Field Duplicate**
Petroleum Hydrocarbons (PHCs)											
PHC F1 (C6-C10)	55	-	-	-	-	-	-	-	-	-	-
PHC F2 (C10-C16)	98	-	-	-	-	-	-	-	-	-	-
PHC F3 (C16-C34)	300	-	-	-	-	-	-	-	-	-	-
PHC F4 (C34-C50)	2,800	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)											
Acetone	16	-	-	-	-	-	-	-	-	-	-
Benzene	0.21	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	1.5	-	-	-	-	-	-	-	-	-	-
Bromoform	0.27	-	-	-	-	-	-	-	-	-	-
Bromomethane	0.05	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	0.05	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	-	-	-	-	-	-
Chloroform	0.05	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	2.3	-	-	-	-	-	-	-	-	-	-
Dibromoethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	1.2	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	4.8	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	0.083	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	0.47	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,1-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	-	-	-	-	-	-	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	-	-	-	-	-	-	-	-	-	-
Dichloromethane	0.1	-	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis-1,3-	NV	-	-	-	-	-	-	-	-	-	-
Dichloropropylene, trans-1,3-	NV	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1.1	-	-	-	-	-	-	-	-	-	-
Hexane, n-	2.8	-	-	-	-	-	-	-	-	-	-
Methyl ethyl ketone [MEK]	16	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	-	-	-	-	-	-	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	-	-	-	-	-	-	-	-	-	-
Styrene	0.7	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	-	-	-	-	-	-
Toluene	2.3	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	0.38	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	0.05	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	0.02	-	-	-	-	-	-	-	-	-	-
Xylene, m+p-	NV	-	-	-	-	-	-	-	-	-	-
Xylene, o-	NV	-	-	-	-	-	-	-	-	-	-
Xylenes, total	3.1	-	-	-	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	TP-2	TP-2	SS-29 (TP-2 Resample)	TP-2 (Average)	TP-2 (Average)	SS-29D	TP-3	TP-4A	SS-30 (TP-4A Resample)	SS-30 (TP-4A Resample)
	Sample ID:	S-12598913-121622-JPF-002	S-12598913-121622-JPF-003	S-1259813-050323-ZCV-008	-	-	S-1259813-050323-ZCV-009	S-12598913-121622-JPF-004	S-12598913-121622-JPF-005	S-1259813-050323-ZCV-010	S-1259813-050323-ZCV-011
	Sample Date:	16-Dec-22	16-Dec-22	3-May-23	-	-	3-May-23	16-Dec-22	16-Dec-22	3-May-23	3-May-23
	Sample Depth (mBGS):	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	-	-	0.6 - 1.0	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6	0.3 - 0.6
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**			**Field Duplicate**					**Field Duplicate**
Organochlorine Pesticides (OCPs)											
Aldrin	0.05	-	-	-	-	-	-	-	-	-	-
Chlordane, cis- (alpha)	NV	-	-	-	-	-	-	-	-	-	-
Chlordane, total	0.05	-	-	-	-	-	-	-	-	-	-
Chlordane, trans- (gamma)	NV	-	-	-	-	-	-	-	-	-	-
DDD, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDD, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDD, total	3.3	-	-	-	-	-	-	-	-	-	-
DDE, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDE, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDE, total	0.26	-	-	-	-	-	-	-	-	-	-
DDT, 2,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDT, 4,4'-	NV	-	-	-	-	-	-	-	-	-	-
DDT, total	1.4	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	-	-	-	-	-	-	-	-	-	-
Endosulfan, alpha-	NV	-	-	-	-	-	-	-	-	-	-
Endosulfan, beta-	NV	-	-	-	-	-	-	-	-	-	-
Endosulfan, total	0.04	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	0.05	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	-	-	-	-	-	-	-	-	-	-
Hexachlorocyclohexane, gamma-	0.056	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	-	-	-	-	-	-	-	-	-	-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	TP-4A (Average-1)	TP-4A (Average-2)	SS-30D	TP-5	SS-31	SS-32	SS-33	SS-34	SS-35
	Sample ID:	-	-	S-1259813-050323-ZCV-012	S-12598913-121622-JPF-006	S-1259813-050323-ZCV-013	S-1259813-050323-ZCV-014	S-1259813-050323-ZCV-015	S-1259813-050323-ZCV-016	S-1259813-050323-ZCV-017
	Sample Date:	-	-	3-May-23	16-Dec-22	3-May-23	3-May-23	3-May-23	3-May-23	3-May-23
	Sample Depth (mBGS):	-	-	0.6 - 1.0	0.3 - 0.6	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.4 - 0.6	0.4 - 0.6
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**							
Inorganics										
Electrical Conductivity (mS/cm)	0.7	0.752	0.738	0.341	2.76	0.0820	0.0865	0.168	0.0644	0.0517
Cyanide, Weak Acid Dissociable	0.050	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
pH, lab (s.u.)	5 to 9 (≤1.5 mBGS) 5 to 11 (>1.5 mBGS)	6.39	6.39	7.31	5.96	6.07	6.45	7.45	6.80	6.70
Sodium Adsorption Ratio (SAR)	5	0.66	0.65	0.36	0.27	ND(0.10)	ND(0.10)	0.15	ND(0.10)	ND(0.10)
Metals										
Antimony	7.5	0.15	0.14	0.16	0.12	0.17	0.19	0.15	ND(0.10)	0.15
Arsenic	18	5.77	4.90	7.10	3.95	6.08	6.98	5.32	3.76	6.78
Barium	390	53.3	46.6	65.6	73.1	58.3	66.6	64.8	36.2	61.4
Beryllium	4	0.50	0.48	0.61	0.54	0.50	0.56	0.48	0.39	0.63
Boron	120	7.0	7.1	8.4	6.4	5.9	7.5	6.8	5.7	6.2
Boron, Hot Water Ext.	1.5	1.12	1.12	0.21	1.42	1.30	1.23	0.43	0.46	0.41
Cadmium	1.2	0.280	0.25	0.242	0.758	0.398	0.474	0.308	0.213	0.219
Chromium	160	19.0	16.7	23.9	16.0	17.7	20.5	19.4	14.5	22.2
Chromium, Hexavalent	8	0.54	0.43	0.18	ND(0.10)	0.20	0.12	ND(0.10)	0.26	0.40
Cobalt	22	6.49	5.68	8.39	4.99	6.54	7.32	6.69	4.47	7.11
Copper	140	16.8	15.0	22.2	18.0	17.8	20.7	16.5	10.6	17.3
Lead	120	13.7	12.6	13.2	10.3	14.2	17.4	13.4	9.94	14.2
Mercury	0.27	0.0366	0.0399	0.0254	0.0978	0.0442	0.0397	0.0443	0.0279	0.0386
Molybdenum	6.9	0.59	0.55	0.50	0.44	0.61	0.72	0.44	0.30	0.48
Nickel	100	13.5	11.6	19.3	12.8	12.7	15.3	13.5	10.4	16.7
Selenium	2.4	0.29	0.27	ND(0.20)	1.06	0.36	0.40	0.31	ND(0.20)	ND(0.20)
Silver	20	ND(0.10)	ND(0.10)	ND(0.10)	0.11	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Thallium	1	0.100	0.091	0.135	0.100	0.099	0.123	0.100	0.075	0.123
Uranium	23	0.662	0.614	0.614	0.572	0.719	0.941	0.601	0.508	0.668
Vanadium	86	37.2	31.9	49.4	27.6	31.9	38.0	33.9	28.8	41.6
Zinc	340	95.7	87.2	77.7	67.4	88.1	103	78.2	62.0	75.7
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene	7.9	-	-	-	ND(0.050)	-	-	-	-	-
Acenaphthylene	0.15	-	-	-	ND(0.050)	-	-	-	-	-
Anthracene	0.67	-	-	-	ND(0.050)	-	-	-	-	-
Benz[a]anthracene	0.5	-	-	-	ND(0.050)	-	-	-	-	-
Benzo[a]pyrene	0.3	-	-	-	ND(0.050)	-	-	-	-	-
Benzo[b]fluoranthene	0.78	-	-	-	ND(0.050)	-	-	-	-	-
Benzo[ghi]perylene	6.6	-	-	-	ND(0.050)	-	-	-	-	-
Benzo[k]fluoranthene	0.78	-	-	-	ND(0.050)	-	-	-	-	-
Chrysene	7	-	-	-	ND(0.050)	-	-	-	-	-
Dibenz[a h]anthracene	0.1	-	-	-	ND(0.050)	-	-	-	-	-
Fluoranthene	0.69	-	-	-	ND(0.050)	-	-	-	-	-
Fluorene	62	-	-	-	ND(0.050)	-	-	-	-	-
Indeno[1 2 3-cd]pyrene	0.38	-	-	-	ND(0.050)	-	-	-	-	-
Methlynaphthalene, 1+2-	0.99	-	-	-	ND(0.050)	-	-	-	-	-
Methlynaphthalene, 1-	0.99	-	-	-	ND(0.030)	-	-	-	-	-
Methlynaphthalene, 2-	0.99	-	-	-	ND(0.030)	-	-	-	-	-
Naphthalene	0.6	-	-	-	ND(0.010)	-	-	-	-	-
Phenanthrene	6.2	-	-	-	ND(0.050)	-	-	-	-	-
Pyrene	78	-	-	-	ND(0.050)	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	TP-4A (Average-1)	TP-4A (Average-2)	SS-30D	TP-5	SS-31	SS-32	SS-33	SS-34	SS-35
	Sample ID:	-	-	S-1259813-050323-ZCV-012	S-12598913-121622-JPF-006	S-1259813-050323-ZCV-013	S-1259813-050323-ZCV-014	S-1259813-050323-ZCV-015	S-1259813-050323-ZCV-016	S-1259813-050323-ZCV-017
	Sample Date:	-	-	3-May-23	16-Dec-22	3-May-23	3-May-23	3-May-23	3-May-23	3-May-23
	Sample Depth (mBGS):	-	-	0.6 - 1.0	0.3 - 0.6	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.4 - 0.6	0.4 - 0.6
Parameters	**MECP Table 2 Standards[1]**		**Field Duplicate**							
Petroleum Hydrocarbons (PHCs)										
PHC F1 (C6-C10)	55	-	-	-	-	-	-	-	-	-
PHC F2 (C10-C16)	98	-	-	-	-	-	-	-	-	-
PHC F3 (C16-C34)	300	-	-	-	-	-	-	-	-	-
PHC F4 (C34-C50)	2,800	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)										
Acetone	16	-	-	-	-	-	-	-	-	-
Benzene	0.21	-	-	-	-	-	-	-	-	-
Bromodichloromethane	1.5	-	-	-	-	-	-	-	-	-
Bromoform	0.27	-	-	-	-	-	-	-	-	-
Bromomethane	0.05	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	0.05	-	-	-	-	-	-	-	-	-
Chlorobenzene	2.4	-	-	-	-	-	-	-	-	-
Chloroform	0.05	-	-	-	-	-	-	-	-	-
Dibromochloromethane	2.3	-	-	-	-	-	-	-	-	-
Dibromoethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	1.2	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	4.8	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	0.083	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	16	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	0.47	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	0.05	-	-	-	-	-	-	-	-	-
Dichloroethylene, 1,1-	0.05	-	-	-	-	-	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	-	-	-	-	-	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	-	-	-	-	-	-	-	-	-
Dichloromethane	0.1	-	-	-	-	-	-	-	-	-
Dichloropropane, 1,2-	0.05	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	-	-	-	-	-	-	-	-	-
Dichloropropylene, cis-1,3-	NV	-	-	-	-	-	-	-	-	-
Dichloropropylene, trans-1,3-	NV	-	-	-	-	-	-	-	-	-
Ethylbenzene	1.1	-	-	-	-	-	-	-	-	-
Hexane, n-	2.8	-	-	-	-	-	-	-	-	-
Methyl ethyl ketone [MEK]	16	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	-	-	-	-	-	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	-	-	-	-	-	-	-	-	-
Styrene	0.7	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	0.28	-	-	-	-	-	-	-	-	-
Toluene	2.3	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	0.38	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	0.05	-	-	-	-	-	-	-	-	-
Trichloroethylene	0.061	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	4	-	-	-	-	-	-	-	-	-
Vinyl chloride	0.02	-	-	-	-	-	-	-	-	-
Xylene, m+p-	NV	-	-	-	-	-	-	-	-	-
Xylene, o-	NV	-	-	-	-	-	-	-	-	-
Xylenes, total	3.1	-	-	-	-	-	-	-	-	-

Table 4

Summary of Soil Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Parameters	Sample Location:	TP-4A (Average-1)	TP-4A (Average-2)	SS-30D	TP-5	SS-31	SS-32	SS-33	SS-34	SS-35
	Sample ID:	-	-	S-1259813-050323-ZCV-012	S-12598913-121622-JPF-006	S-1259813-050323-ZCV-013	S-1259813-050323-ZCV-014	S-1259813-050323-ZCV-015	S-1259813-050323-ZCV-016	S-1259813-050323-ZCV-017
	Sample Date:	-	-	3-May-23	16-Dec-22	3-May-23	3-May-23	3-May-23	3-May-23	3-May-23
	Sample Depth (mBGS):	-	-	0.6 - 1.0	0.3 - 0.6	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.4 - 0.6	0.4 - 0.6
	MECP Table 2 Standards[1]		Field Duplicate							
Organochlorine Pesticides (OCPs)										
Aldrin	0.05	-	-	-	-	-	-	-	-	-
Chlordane, cis- (alpha)	NV	-	-	-	-	-	-	-	-	-
Chlordane, total	0.05	-	-	-	-	-	-	-	-	-
Chlordane, trans- (gamma)	NV	-	-	-	-	-	-	-	-	-
DDD, 2,4'-	NV	-	-	-	-	-	-	-	-	-
DDD, 4,4'-	NV	-	-	-	-	-	-	-	-	-
DDD, total	3.3	-	-	-	-	-	-	-	-	-
DDE, 2,4'-	NV	-	-	-	-	-	-	-	-	-
DDE, 4,4'-	NV	-	-	-	-	-	-	-	-	-
DDE, total	0.26	-	-	-	-	-	-	-	-	-
DDT, 2,4'-	NV	-	-	-	-	-	-	-	-	-
DDT, 4,4'-	NV	-	-	-	-	-	-	-	-	-
DDT, total	1.4	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	-	-	-	-	-	-	-	-	-
Endosulfan, alpha-	NV	-	-	-	-	-	-	-	-	-
Endosulfan, beta-	NV	-	-	-	-	-	-	-	-	-
Endosulfan, total	0.04	-	-	-	-	-	-	-	-	-
Endrin	0.04	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	0.05	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	-	-	-	-	-	-	-	-	-
Hexachlorocyclohexane, gamma-	0.056	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	-	-	-	-	-	-	-	-	-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
317	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J	Estimated quantity.
J+	Estimated quantity; result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 5

Summary of Maximum Soil Concentration Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Parameters	MECP Table 2 Standards	Maximum Concentraion	Sample Location	Sample ID	Sample Date	Sample Interval (mBGS)
Inorganics						
Electrical Conductivity (mS/cm)	0.7	2.76	TP-5	S-12598913-121622-JPF-006	16-Dec-22	0.3 - 0.6
Cyanide	0.050	ND(0.050)	-	-	-	-
pH (s.u.)	-	8.50	UA-3	S-12598913-022323-CH-002	23-Feb-23	17.4 - 17.7
Sodium Adsorption Ratio (SAR)	5	0.86	TP-1	S-12598913-121622-JPF-001	16-Dec-22	0.3 - 0.6
Metals						
Antimony	7.5	0.20	SS-29D/SS-25	S-1259813-050323-ZCV-009/ S-12598913-011724-ZCV-005	3-May-23/ 17-Jan-24	0.6 - 1.0/ 0.4 - 0.8
Arsenic	18	7.10	SS-30D	S-1259813-050323-ZCV-012	3-May-23	0.6 - 1.0
Barium	390	179	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Beryllium	4	1.15	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Boron	120	22.3	UA-1	S-12598913-022423-CH-005	24-Feb-23	20.7 - 21.0
Boron, Hot Water Ext.	1.5	2.24*	TP-2	S-12598913-121622-JPF-003	16-Dec-22	0.3 - 0.6
Cadmium	1.2	0.758	TP-5	S-12598913-121622-JPF-006	16-Dec-22	0.3 - 0.6
Chromium	160	40.6	UA-1	S-12598913-022423-CH-005	24-Feb-23	20.7 - 21.0
Chromium, Hexavalent	8	0.54	SS-30 (TP-4A Resample)	S-1259813-050323-ZCV-010	3-May-23	0.3 - 0.6
Cobalt	22	14.8	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Copper	140	28.0	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Lead	120	60.4	SS-28	S-12598913-011724-ZCV-009	17-Jan-24	0.3-0.8
Mercury	0.27	0.0978	TP-5	S-12598913-121622-JPF-006	16-Dec-22	0.3 - 0.6
Molybdenum	6.9	0.86	TP-2	S-12598913-121622-JPF-003	16-Dec-22	0.3 - 0.6
Nickel	100	31.9	UA-1	S-12598913-022423-CH-005	24-Feb-23	20.7 - 21.0
Selenium	2.4	1.06	TP-5	S-12598913-121622-JPF-006	16-Dec-22	0.3 - 0.6
Silver	20	0.11	TP-5	S-12598913-121622-JPF-006	16-Dec-22	0.3 - 0.6
Thallium	1	0.223	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Uranium	23	0.941	SS-32	S-1259813-050323-ZCV-014	3-May-23	0.0 - 0.3
Vanadium	86	54.8	SS-29D	S-1259813-050323-ZCV-009	3-May-23	0.6 - 1.0
Zinc	340	163	TP-2	S-12598913-121622-JPF-003	16-Dec-22	0.3 - 0.6
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	7.9	ND(0.050)	-	-	-	-
Acenaphthylene	0.15	0.280*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Anthracene	0.67	0.615	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Benz[a]anthracene	0.5	1.26*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Benzo[a]pyrene	0.3	1.03*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Benzo[b]fluoranthene	0.78	1.39*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Benzo[ghi]perylene	6.6	0.525	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Benzo[k]fluoranthene	0.78	0.558	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Chrysene	7	1.06	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Dibenz[a h]anthracene	0.1	0.161*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Fluoranthene	0.69	2.51*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Fluorene	62	0.056	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Indeno[1 2 3-cd]pyrene	0.38	0.607*	SS-25	S-12598913-011724-ZCV-005	17-Jan-24	0.4 - 0.8
Methlynaphthalene, 1+2-	0.99	ND(0.050)	-	-	-	-
Methlynaphthalene, 1-	0.99	ND(0.030)	-	-	-	-
Methlynaphthalene, 2-	0.99	ND(0.030)	-	-	-	-
Naphthalene	0.6	0.011	UA-2/ UA-4	S-12598913-022423-CH-003/ S-12598913-022323-CH-001	24-Feb-23/ 23-Feb-23	17.4 - 17.7/ 17.4 - 17.7
Phenanthrene	6.2	ND(0.050)	-	-	-	-
Pyrene	78	0.064	TP-3	S-12598913-121622-JPF-004	16-Dec-22	0.3 - 0.6
Petroleum Hydrocarbons (PHCs)						
PHC F1 (C6-C10)	55	ND(5.0)	-	-	-	-
PHC F2 (C10-C16)	98	ND(10)	-	-	-	-
PHC F3 (C16-C34)	300	59	SS-25	S-1259813-050323-ZCV-003	3-May-23	0.4 - 0.8
PHC F4 (C34-C50)	2,800	64	SS-25	S-1259813-050323-ZCV-003	3-May-23	0.4 - 0.8
Volatile Organic Compounds (VOCs)						
Acetone	16	ND(0.50)	-	-	-	-
Benzene	0.21	ND(0.0050)	-	-	-	-
Bromodichloromethane	1.5	ND(0.050)	-	-	-	-
Bromoform	0.27	ND(0.050)	-	-	-	-
Bromomethane	0.05	ND(0.050)	-	-	-	-
Carbon tetrachloride	0.05	ND(0.050)	-	-	-	-
Chlorobenzene	2.4	ND(0.050)	-	-	-	-
Chloroform	0.05	ND(0.050)	-	-	-	-
Dibromochloromethane	2.3	ND(0.050)	-	-	-	-
Dibromoethane, 1,2-	0.05	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,2-	1.2	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,3-	4.8	ND(0.050)	-	-	-	-
Dichlorobenzene, 1,4-	0.083	ND(0.050)	-	-	-	-
Dichlorodifluoromethane	16	ND(0.050)	-	-	-	-
Dichloroethane, 1,1-	0.47	ND(0.050)	-	-	-	-
Dichloroethane, 1,2-	0.05	ND(0.050)	-	-	-	-
Dichloroethylene, 1,1-	0.05	ND(0.050)	-	-	-	-
Dichloroethylene, cis-1,2-	1.9	ND(0.050)	-	-	-	-
Dichloroethylene, trans-1,2-	0.084	ND(0.050)	-	-	-	-
Dichloromethane	0.1	ND(0.045)	-	-	-	-
Dichloropropane, 1,2-	0.05	ND(0.050)	-	-	-	-
Dichloropropylene, cis+trans-1,3-	0.05	ND(0.050)	-	-	-	-
Dichloropropylene, cis-1,3-	-	ND(0.030)	-	-	-	-
Dichloropropylene, trans-1,3-	-	ND(0.030)	-	-	-	-
Ethylbenzene	1.1	ND(0.015)	-	-	-	-
Hexane, n-	2.8	ND(0.050)	-	-	-	-
Methyl ethyl ketone [MEK]	16	ND(0.50)	-	-	-	-
Methyl isobutyl ketone [MIBK]	1.7	ND(0.50)	-	-	-	-
Methyl-tert-butyl ether [MTBE]	0.75	ND(0.040)	-	-	-	-
Styrene	0.7	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,1,2-	0.058	ND(0.050)	-	-	-	-
Tetrachloroethane, 1,1,2,2-	0.05	ND(0.050)	-	-	-	-
Toluene	2.3	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,1-	0.38	ND(0.050)	-	-	-	-
Trichloroethane, 1,1,2-	0.05	ND(0.050)	-	-	-	-
Trichloroethylene	0.061	ND(0.010)	-	-	-	-
Trichlorofluoromethane	4	ND(0.050)	-	-	-	-
Vinyl chloride	0.02	ND(0.020)	-	-	-	-
Xylene, m+p-	-	ND(0.030)	-	-	-	-
Xylene, o-	-	ND(0.030)	-	-	-	-
Xylenes, total	3.1	ND(0.050)	-	-	-	-

Table 5

Summary of Maximum Soil Concentration Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Parameters	MECP Table 2 Standards	Maximum Concentraion	Sample Location	Sample ID	Sample Date	Sample Interval (mBGS)
Organochlorine Pesticides (OCPs)						
Aldrin	0.05	ND(0.00026)	-	-	-	-
Chlordane, cis- (alpha)	-	ND(0.00030)	-	-	-	-
Chlordane, total	0.05	ND(0.00042)	-	-	-	-
Chlordane, trans- (gamma)	-	ND(0.00030)	-	-	-	-
DDD, 2,4'-	-	ND(0.00030)	-	-	-	-
DDD, 4,4'-	-	0.00125	SS-17	S-12598913-050423-ZCV-019	4-May-23	0.3 - 0.6
DDD, total	3.3	0.00125	SS-17	S-12598913-050423-ZCV-019	4-May-23	0.3 - 0.6
DDE, 2,4'-	-	ND(0.00030)	-	-	-	-
DDE, total	0.26	0.0259	SS-19	S-12598913-050423-ZCV-021	4-May-23	0.3 - 0.6
DDT, 2,4'-	-	0.00110	SS-19	S-12598913-050423-ZCV-021	4-May-23	0.3 - 0.6
DDT, 4,4'-	-	0.0195	SS-19	S-12598913-050423-ZCV-021	4-May-23	0.3 - 0.6
DDT, total	1.4	0.0206	SS-19	S-12598913-050423-ZCV-021	4-May-23	0.3 - 0.6
Dieldrin	0.05	ND(0.00026)	-	-	-	-
Endosulfan, alpha-	-	ND(0.00030)	-	-	-	-
Endosulfan, beta-	-	ND(0.00030)	-	-	-	-
Endosulfan, total	0.04	ND(0.00042)	-	-	-	-
Endrin	0.04	ND(0.00050)	-	-	-	-
Heptachlor	0.15	ND(0.00026)	-	-	-	-
Heptachlor epoxide	0.05	ND(0.00026)	-	-	-	-
Hexachlorobenzene	0.52	ND(0.00050)	-	-	-	-
Hexachlorobutadiene	0.012	ND(0.00050)	-	-	-	-
Hexachlorocyclohexane, gamma-	0.056	ND(0.00026)	-	-	-	-
Hexachloroethane	0.089	ND(0.00050)	-	-	-	-
Methoxychlor	0.13	ND(0.00250)	-	-	-	-

Notes:

All values are expressed in units of micrograms per gram (µg/g) unless noted otherwise

(1)	"Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Residential/Parkland/Institutional Property Use, for coarse-textured soils (MECP Table 2 Standards)
mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
2.76	Concentration exceeds MECP Table 2 Standard
*	Boron, Hot Water Ext. and PAH values greater than MECP Table 2 Standards are not considered an exceedance as per Section 48(2) and 48(4) of O.Reg 153/04.
J+	Estimated quantity; result may be biased high.

Table 6

Summary of Groundwater Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Parameters	Sample Location:	UA-1	UA-1(S)	UA-2	UA-3	UA-3	UA-4	UA-5	UA-5	Municipal water supply grab sample	MU-1	MU-1	ML-1	ML-1
	Sample ID:	GW-12598913-230306-JB-UA1	GW-12598913-230306-JB-UA1(S)	GW-12598913-230306-JB-UA2	GW-12598913-230306-JB-UA3	GW-12598913-230306-JB-DUP01	GW-12598913-230306-JB-UA4	GW-12598913-050423-ZCV-001	GW-12598913-050423-ZCV-002	W-12598913-022823-CH-001	GW-12598913-230317-JB-MU1	GW-12598913-230320-JB-MU1	GW-12598913-230317-JB-ML1	GW-12598913-230320-JB-ML-1
	Sample Date:	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	4-May-23	4-May-23	28-Feb-23	17-Mar-23	20-Mar-23	17-Mar-23	20-Mar-23
	Screened Interval (mBGS):	21.0 - 22.6	1.8 - 2.7	17.1 - 18.6	17.1 - 18.6	17.1 - 18.6	18.0 - 19.5	20.0 - 21.5	20.0 - 21.5	-	33.7 - 35.2	33.7 - 35.2	42.4 - 43.9	42.4 - 43.9
	MECP Table 2 Standards[1]					Field Duplicate			Field Duplicate					
Inorganics														
Chloride	790,000	6,250	47,000	13,400	56,000	56,400	94,100	-	-	-	-	-	-	-
Cyanide, Weak Acid Dissociable	66	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	-	-	-	-	-	-	-
Metals														
Antimony	6	ND(0.10)	0.23	0.12	0.14	0.14	0.18							
Arsenic	25	0.18 J+	0.62 J+	0.28 J+	0.27 J+	0.25 J+	0.32 J+	-	-	-	-	-	-	-
Barium	1,000	6.04	88.4	32.9	78.3	77.9	49.8	-	-	-	-	-	-	-
Beryllium	4	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	-	-	-	-	-	-	-
Boron	5,000	ND(10)	40	29	50	51	11	-	-	-	-	-	-	-
Cadmium	2.7	ND(0.0050)	0.0200	0.0056	0.0153	0.0142	0.0086	-	-	-	-	-	-	-
Chromium	50	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
Chromium, Hexavalent	25	0.58	0.53	0.64	0.52	0.53	0.58	-	-	-	-	-	-	-
Cobalt	3.8	ND(0.10)	0.38	0.27	0.95	0.93	0.14	-	-	-	-	-	-	-
Copper	87	0.24	1.11	0.41	1.02	1.08	0.46	-	-	-	-	-	-	-
Lead	10	ND(0.050)	ND(0.050)	ND(0.050)	0.051	0.061	ND(0.050)	-	-	-	-	-	-	-
Mercury	0.29	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	-	-	-	-	-	-	-
Molybdenum	70	0.783	41.9	12.8	18.9	18.4	2.86	-	-	-	-	-	-	-
Nickel	100	ND(0.50)	0.83	0.86	2.07	2.03	0.62	-	-	-	-	-	-	-
Selenium	10	ND(0.500)	0.502	ND(0.500)	ND(0.500)	ND(0.500)	ND(0.500)	-	-	-	-	-	-	-
Silver	1.5	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	-	-	-	-	-	-	-
Sodium	490,000	4780	30900	9980	37600	37400	38900	-	-	-	-	-	-	-
Thallium	2	ND(0.010)	0.014	0.011	0.011	0.012	ND(0.010)	-	-	-	-	-	-	-
Uranium	20	0.955	2.45	0.624	0.811	0.806	1.64	-	-	-	-	-	-	-
Vanadium	6.2	0.57	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
Zinc	1,100	2.3	4.0	ND(1.0)	1.8	2.0	3.8	-	-	-	-	-	-	-
Petroleum Hydrocarbons (PHCs)														
PHC F1 (C6-C10)	750	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	-	-	-	-	-
PHC F2 (C10-C16)	150	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	-	-	-	-	-
PHC F3 (C16-C34)	500	ND(250)	ND(250)	320	ND(250)	270	280	ND(250)	ND(250)	-	-	-	-	-
PHC F4 (C34-C50)	500	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)	-	-	-	-	-
Volatile Organic Compounds (VOCs)														
Acetone	2,700	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	-	-	-	-
Benzene	5	ND(0.50)	ND(0.50)	ND(0.50)	0.53	0.56	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Bromodichloromethane	16	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	3.59	ND(0.50)	-	ND(0.50)	-
Bromoform	25	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	0.50	ND(0.50)	-	ND(0.50)	-
Bromomethane	0.89	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Carbon tetrachloride	0.79	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	-	-	-	-
Chlorobenzene	30	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Chloroform	2.4	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	3.77*	ND(0.50)	-	0.50	-
Dibromochloromethane	25	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	2.23	ND(0.50)	-	ND(0.50)	-
1,2-Dibromoethane	0.2	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	-	-	-	-
1,2-Dichlorobenzene	3	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,3-Dichlorobenzene	59	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,4-Dichlorobenzene	1	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Dichlorodifluoromethane	590	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1-Dichloroethane	5	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,2-Dichloroethane	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1-Dichloroethylene	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
cis-1,2-Dichloroethylene	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
trans-1,2-Dichloroethylene	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Methylene Chloride	50	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	-	-	-	-

Table 6

Summary of Groundwater Analytical Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

	Sample Location:	UA-1	UA-1(S)	UA-2	UA-3	UA-3	UA-4	UA-5	UA-5	Municipal water supply grab sample	MU-1	MU-1	ML-1	ML-1
	Sample ID:	GW-12598913-230306-JB-UA1	GW-12598913-230306-JB-UA1(S)	GW-12598913-230306-JB-UA2	GW-12598913-230306-JB-UA3	GW-12598913-230306-JB-DUP01	GW-12598913-230306-JB-UA4	GW-12598913-050423-ZCV-001	GW-12598913-050423-ZCV-002	W-12598913-022823-CH-001	GW-12598913-230317-JB-MU1	GW-12598913-230320-JB-MU1	GW-12598913-230317-JB-ML1	GW-12598913-230320-JB-ML1
	Sample Date:	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	6-Mar-23	4-May-23	4-May-23	28-Feb-23	17-Mar-23	20-Mar-23	17-Mar-23	20-Mar-23
	Screened Interval (mBGS):	21.0 - 22.6	1.8 - 2.7	17.1 - 18.6	17.1 - 18.6	17.1 - 18.6	18.0 - 19.5	20.0 - 21.5	20.0 - 21.5	-	33.7 - 35.2	33.7 - 35.2	42.4 - 43.9	42.4 - 43.9
Parameters	**MECP Table 2 Standards[1]**					**Field Duplicate**			**Field Duplicate**					
VOCs continued														
1,2-Dichloropropane	5	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,3-Dichloropropene (cis & trans)	0.5	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
cis-1,3-Dichloropropene	NV	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	-	-	-	-
trans-1,3-Dichloropropene	NV	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	-	-	-	-
Ethylbenzene	2.4	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
n-Hexane	51	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Methyl Ethyl Ketone	1,800	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	-	-	-	-
Methyl Isobutyl Ketone	640	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	-	-	-	-
MTBE	15	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Styrene	5.4	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1,1,2-Tetrachloroethane	1.1	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1,2,2-Tetrachloroethane	1	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Tetrachloroethylene	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Toluene	24	ND(0.50)	ND(0.50)	ND(0.50)	0.79	0.84	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1,1-Trichloroethane	200	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
1,1,2-Trichloroethane	4.7	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Trichloroethylene	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Trichlorofluoromethane	150	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Vinyl chloride	0.5	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
o-Xylene	NV	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	-	-	-	-
m+p-Xylenes	NV	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	-	-	-	-
Xylenes (Total)	300	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-
Semi-Volatile Organics (SVOCs)														
Nitrosodimethylamine, N- [NDMA]	0.009[2]	-	-	-	-	-	-	-	-	-	-	0.0113	-	0.00791

Notes:
All values are expressed in units of micrograms per litre (µg/L).

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, All Types of Property Use for coarse-textured soils

(2) Ministry of the Environment (MOE), Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, revised June 2003 (ODWS).

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
0.0113	Concentration exceeds ODWS Standard
J+	The result is an estimated quantity; the result may be biased high.
*	Chloroform value greater than MECP table 2 Standards for municipal water supply for drilling water not considered an exceedance, as brought to Site from an off-Site source and removed from wells by development.

Table 7

Summary of Maximum Groundwater Concentration Data
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Parameters	MECP Table 2 Standards[1]	Maximum Concentration	Sample Location[3]	Sample ID	Sample Date	Sample Depth (mBGS)
Inorganics						
Chloride	790,000	94,100	UA-4	GW-12598913-230306-JB-UA4	6-Mar-23	18.0 - 19.5
Cyanide, Weak Acid Dissociable	66	ND(2.0)	-	-	-	-
Metals						
Antimony	6	0.23	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Arsenic	25	0.62 J+	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Barium	1,000	88.4	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Beryllium	4	ND(0.020)	-	-	-	-
Boron	5,000	51	UA-3	GW-12598913-230306-JB-DUP01	6-Mar-23	17.1 - 18.6
Cadmium	2.7	0.0200	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Chromium	50	ND(0.50)	-	-	-	-
Chromium, Hexavalent	25	0.64	UA-2	GW-12598913-230306-JB-UA2	6-Mar-23	17.1 - 18.6
Cobalt	3.8	0.95	UA-3	GW-12598913-230306-JB-UA3	6-Mar-23	17.1 - 18.6
Copper	87	1.11	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Lead	10	0.061	UA-3	GW-12598913-230306-JB-DUP01	6-Mar-23	17.1 - 18.6
Mercury	0.29	ND(0.0050)	-	-	-	-
Molybdenum	70	41.9	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Nickel	100	2.07	UA-3	GW-12598913-230306-JB-UA3	6-Mar-23	17.1 - 18.6
Selenium	10	0.502	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Silver	1.5	ND(0.010)	-	-	-	-
Sodium	490,000	38,900	UA-4	GW-12598913-230306-JB-UA4	6-Mar-23	18.0 - 19.5
Thallium	2	0.014	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Uranium	20	2.45	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Vanadium	6.2	0.57	UA-1	GW-12598913-230306-JB-UA1	6-Mar-23	21.0 - 22.6
Zinc	1,100	4.0	UA-1(S)	GW-12598913-230306-JB-UA1(S)	6-Mar-23	1.8 - 2.7
Petroleum Hydrocarbons (PHCs)						
PHC F1 (C6-C10)	750	ND(25)	-	-	-	-
PHC F2 (C10-C16)	150	ND(100)	-	-	-	-
PHC F3 (C16-C34)	500	320	UA-2	GW-12598913-230306-JB-UA2	6-Mar-23	17.1 - 18.6
PHC F4 (C34-C50)	500	ND(250)	-	-	-	-
Volatile Organic Compounds (VOCs)						
Acetone	2,700	ND(20)	-	-	-	-
Benzene	5	0.56	UA-3	GW-12598913-230306-JB-DUP01	6-Mar-23	17.1 - 18.6
Bromodichloromethane	16	ND(0.50)	-	-	-	-
Bromoform	25	ND(0.50)	-	-	-	-
Bromomethane	0.89	ND(0.50)	-	-	-	-
Carbon tetrachloride	0.79	ND(0.20)	-	-	-	-
Chlorobenzene	30	ND(0.50)	-	-	-	-
Chloroform	2.4	0.50	ML-1	GW-12598913-230317-JB-ML1	17-Mar-23	42.4 - 43.9
Dibromochloromethane	25	ND(0.50)	-	-	-	-
1,2-Dibromoethane	0.2	ND(0.20)	-	-	-	-
1,2-Dichlorobenzene	3	ND(0.50)	-	-	-	-
1,3-Dichlorobenzene	59	ND(0.50)	-	-	-	-
1,4-Dichlorobenzene	1	ND(0.50)	-	-	-	-
Dichlorodifluoromethane	590	ND(0.50)	-	-	-	-
1,1-Dichloroethane	5	ND(0.50)	-	-	-	-
1,2-Dichloroethane	1.6	ND(0.50)	-	-	-	-
1,1-Dichloroethylene	1.6	ND(0.50)	-	-	-	-
cis-1,2-Dichloroethylene	1.6	ND(0.50)	-	-	-	-
trans-1,2-Dichloroethylene	1.6	ND(0.50)	-	-	-	-
Methylene Chloride	50	ND(1.0)	-	-	-	-
VOCs continued						
1,2-Dichloropropane	5	ND(0.50)	-	-	-	-
1,3-Dichloropropene (cis & trans)	0.5	ND(0.50)	-	-	-	-
cis-1,3-Dichloropropene	NV	ND(0.30)	-	-	-	-
trans-1,3-Dichloropropene	NV	ND(0.30)	-	-	-	-
Ethylbenzene	2.4	ND(0.50)	-	-	-	-
n-Hexane	51	ND(0.50)	-	-	-	-
Methyl Ethyl Ketone	1,800	ND(20)	-	-	-	-
Methyl Isobutyl Ketone	640	ND(20)	-	-	-	-
MTBE	15	ND(0.50)	-	-	-	-
Styrene	5.4	ND(0.50)	-	-	-	-
1,1,1,2-Tetrachloroethane	1.1	ND(0.50)	-	-	-	-
1,1,2,2-Tetrachloroethane	1	ND(0.50)	-	-	-	-
Tetrachloroethylene	1.6	ND(0.50)	-	-	-	-
Toluene	24	0.84	UA-3	GW-12598913-230306-JB-DUP01	6-Mar-23	17.1 - 18.6
1,1,1-Trichloroethane	200	ND(0.50)	-	-	-	-
1,1,2-Trichloroethane	4.7	ND(0.50)	-	-	-	-
Trichloroethylene	1.6	ND(0.50)	-	-	-	-
Trichlorofluoromethane	150	ND(0.50)	-	-	-	-
Vinyl chloride	0.5	ND(0.50)	-	-	-	-
o-Xylene	NV	ND(0.40)	-	-	-	-
m+p-Xylenes	NV	ND(0.30)	-	-	-	-
Xylenes (Total)	300	ND(0.50)	-	-	-	-
Semi-Volatile Organics (SVOCs)						
Nitrosodimethylamine, N- [NDMA]	0.009[2]	0.0113	MU-1	GW-12598913-230320-JB-MU-1	20-Mar-23	33.7 - 35.2

Notes:
All values are expressed in units of micrograms per litre (µg/L).

(1) "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, All Types of Property Use for coarse-textured soils

(2) Ministry of the Environment (MOE), Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, revised June 2003 (ODWS).

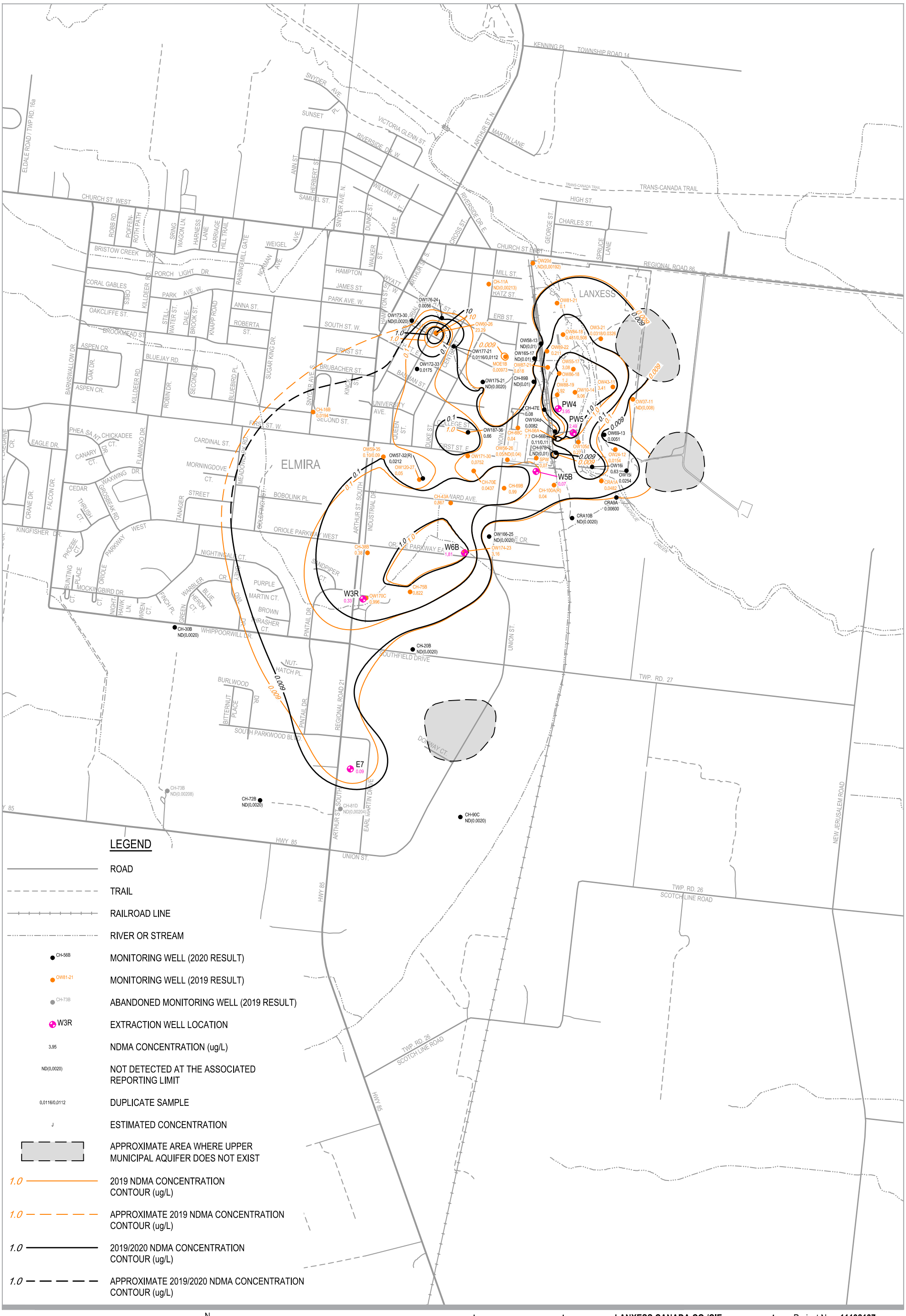
(3) Municipal water supply grab sample not included in maxiumum concentration data.

mBGS	Metres below ground surface
ND(0.50)	Parameter not detected at value stated in parenthesis
NV	No Value, there is no Standard prescribed for this parameter
0.0113	Concentration exceeds ODWS Standard
J+	The result is an estimated quantity; the result may be biased high.

Appendices

Appendix A

2019-2022 Upper and Lower Municipal Aquifer NDMA Concentration Contour Figures and Hydrogeology Figures Excerpted from the 2020 AMR and 2022 AMR



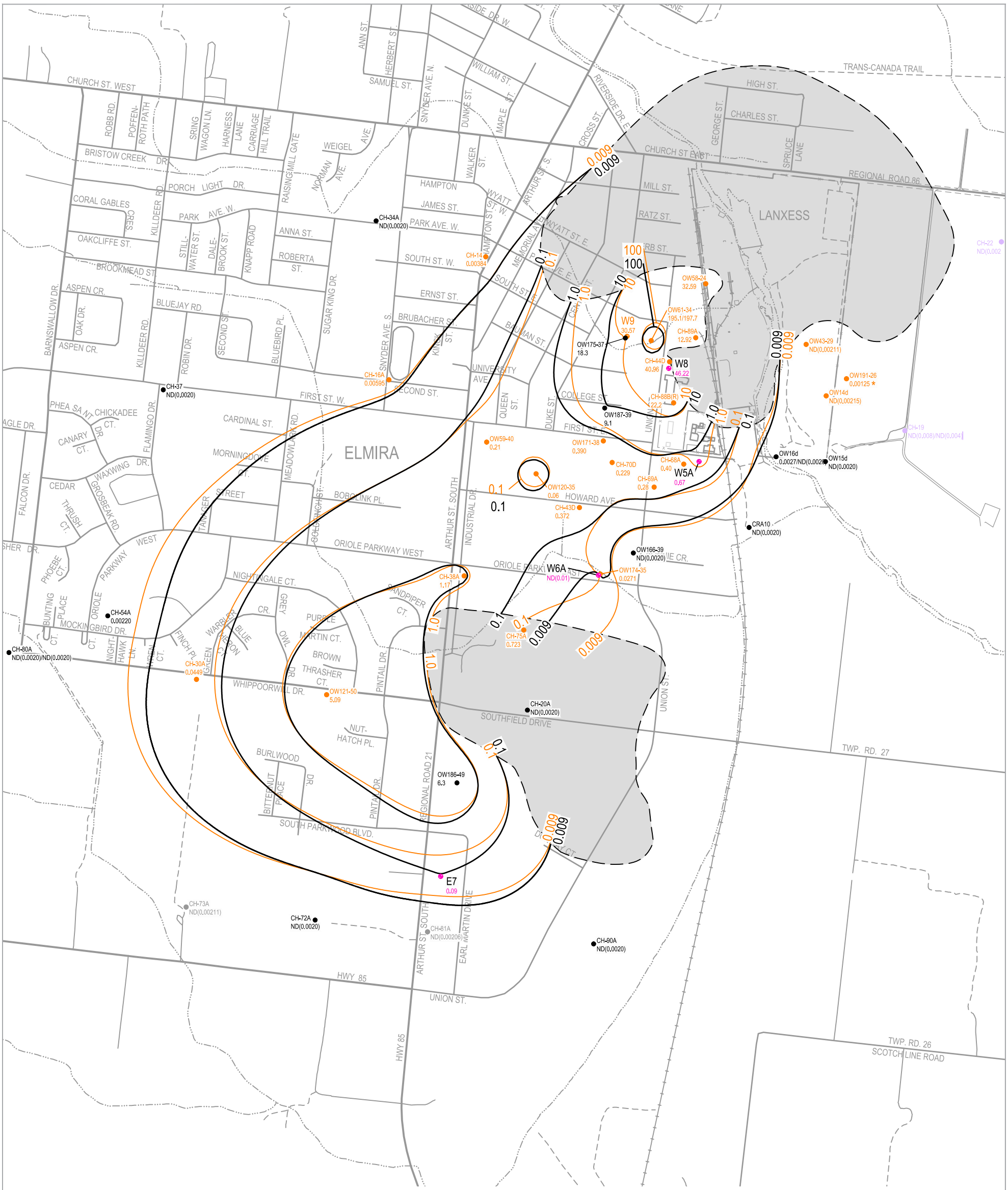
LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

2019/2020 NDMA CONCENTRATION CONTOURS UPPER MUNICIPAL AQUIFER

Project No. **11192137**
Date **November 2021**

FIGURE 4.7

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Plot Date: 01 November 2021 3:50 PM



LEGEND

- ROAD
- TRAIL
- RAILROAD LINE
- RIVER OR STREAM
- APPROXIMATE AREA WHERE LOWER MUNICIPAL AQUIFER DOES NOT EXIST
- CH-90A — MONITORING WELL (2020 RESULT)
- CH-90A — MONITORING WELL (2019 RESULT)
- CH-90A — ABANDONED MONITORING WELL (2019 RESULT)
- CH-19 — MONITORING WELL (2018 RESULT)
- W5A — EXTRACTION WELL LOCATION (2020 RESULTS)
- W9 — EXTRACTION WELL LOCATION (2019 RESULTS)
- 5.85 — NDMA CONCENTRATION (ug/L)
- ND(0.002) — NOT DETECTED AT THE ASSOCIATED REPORTING LIMIT
- 0.015/0.008 — DUPLICATE SAMPLE
- * — SAMPLED MULTIPLE TIME IN 2019 MAXIMUM CONCENTRATION SHOWN
- 10 — 2019/2020 NDMA CONCENTRATION CONTOUR (ug/L)
- 10 — 2019 NDMA CONCENTRATION CONTOUR (ug/L)

0 120 240 360m

Coordinate System: UTM NAD 27

N

GHD

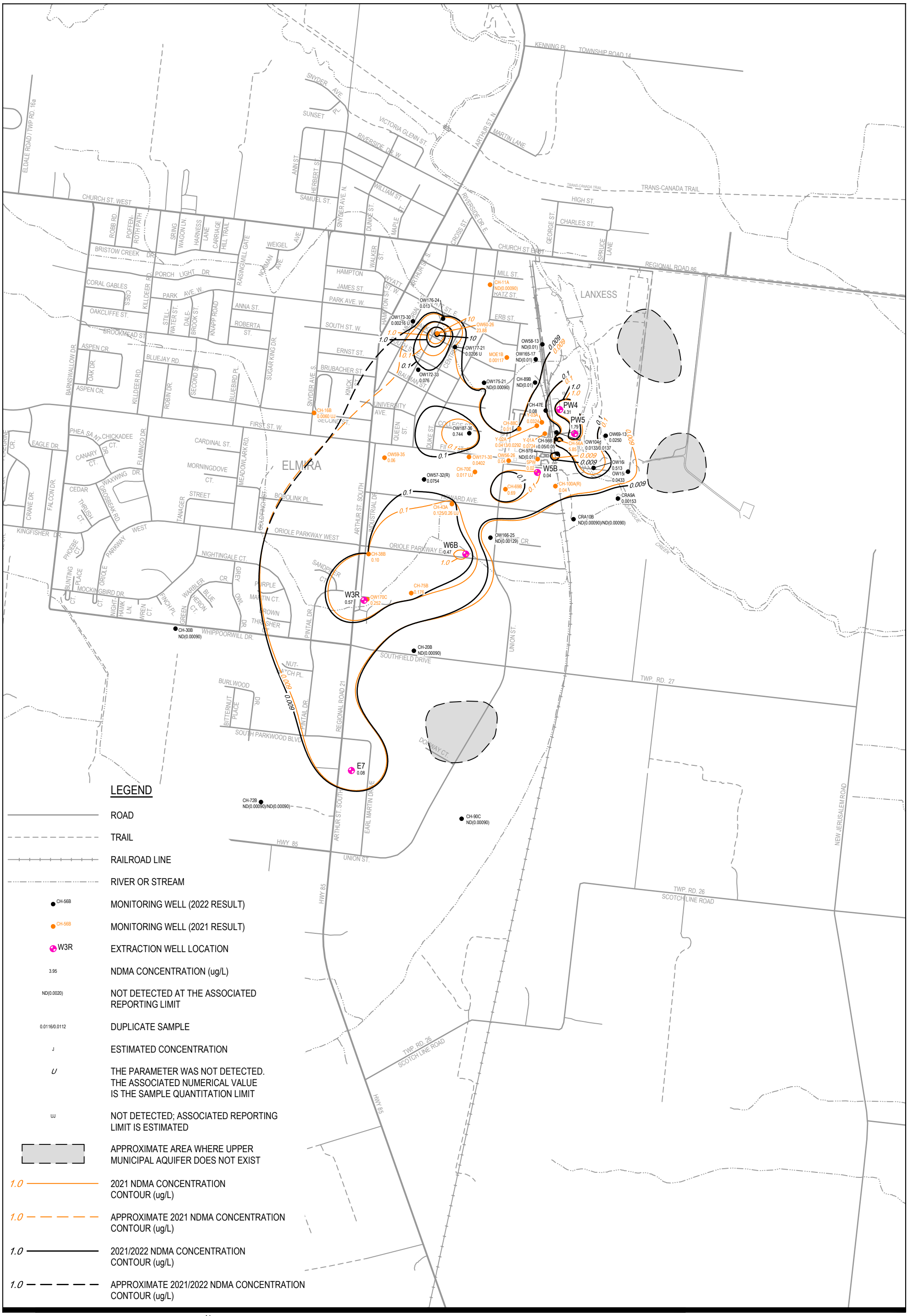
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ELMIRA, ONTARIO

2019/2020 NDMA CONCENTRATION CONTOURS LOWER MUNICIPAL AQUIFER

Project No. **11192137-05**
Date **November 2021**

FIGURE 4.9

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LEGEND

- ROAD
- TRAIL
- RAILROAD LINE
- RIVER OR STREAM
- CH-56B — MONITORING WELL (2022 RESULT)
- CH-56B — MONITORING WELL (2021 RESULT)
- W3R — EXTRACTION WELL LOCATION
- 3.95 — NDMA CONCENTRATION (ug/L)
- ND(0.0020) — NOT DETECTED AT THE ASSOCIATED REPORTING LIMIT
- 0.0116/0.0112 — DUPLICATE SAMPLE
- J — ESTIMATED CONCENTRATION
- U — THE PARAMETER WAS NOT DETECTED. THE ASSOCIATED NUMERICAL VALUE IS THE SAMPLE QUANTITATION LIMIT
- UJ — NOT DETECTED; ASSOCIATED REPORTING LIMIT IS ESTIMATED
- APPROXIMATE AREA WHERE UPPER MUNICIPAL AQUIFER DOES NOT EXIST
- 1.0 — 2021 NDMA CONCENTRATION CONTOUR (ug/L)
- 1.0 — APPROXIMATE 2021 NDMA CONCENTRATION CONTOUR (ug/L)
- 1.0 — 2021/2022 NDMA CONCENTRATION CONTOUR (ug/L)
- 1.0 — APPROXIMATE 2021/2022 NDMA CONCENTRATION CONTOUR (ug/L)

0 150 300 450m

Coordinate System: UTM NAD 27

N

GHD

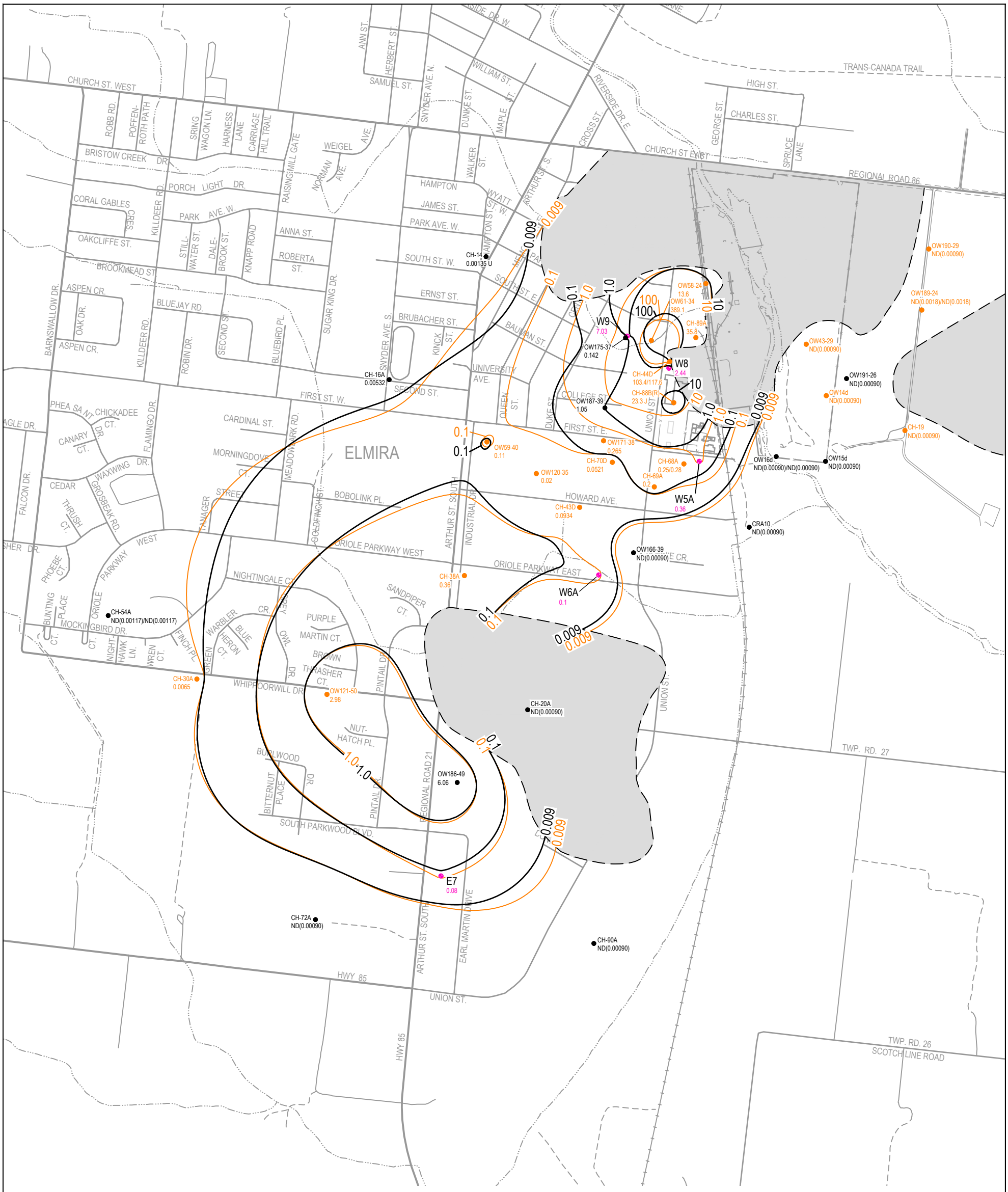
LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

2021/2022 NDMA CONCENTRATION CONTOURS UPPER MUNICIPAL AQUIFER

Project No. **11192137**
Date **February 2023**

FIGURE 4.7

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LEGEND

- ROAD
- TRAIL
- RAILROAD LINE
- RIVER OR STREAM
- APPROXIMATE AREA WHERE LOWER MUNICIPAL AQUIFER DOES NOT EXIST
- OW186-49 — MONITORING WELL (2022 RESULT)
- W5A — EXTRACTION WELL LOCATION (2022 RESULTS)
- 6.06 — NDMA CONCENTRATION (ug/L)
- ND(0.00090) — NOT DETECTED AT THE ASSOCIATED REPORTING LIMIT
- ND(0.00117)/ND(0.00117) — DUPLICATE SAMPLE
- 10 — 2021/2022 NDMA CONCENTRATION CONTOUR (ug/L)
- 10 — 2021 NDMA CONCENTRATION CONTOUR (ug/L)

0 120 240 360m

Coordinate System: UTM NAD 27

N

GHD

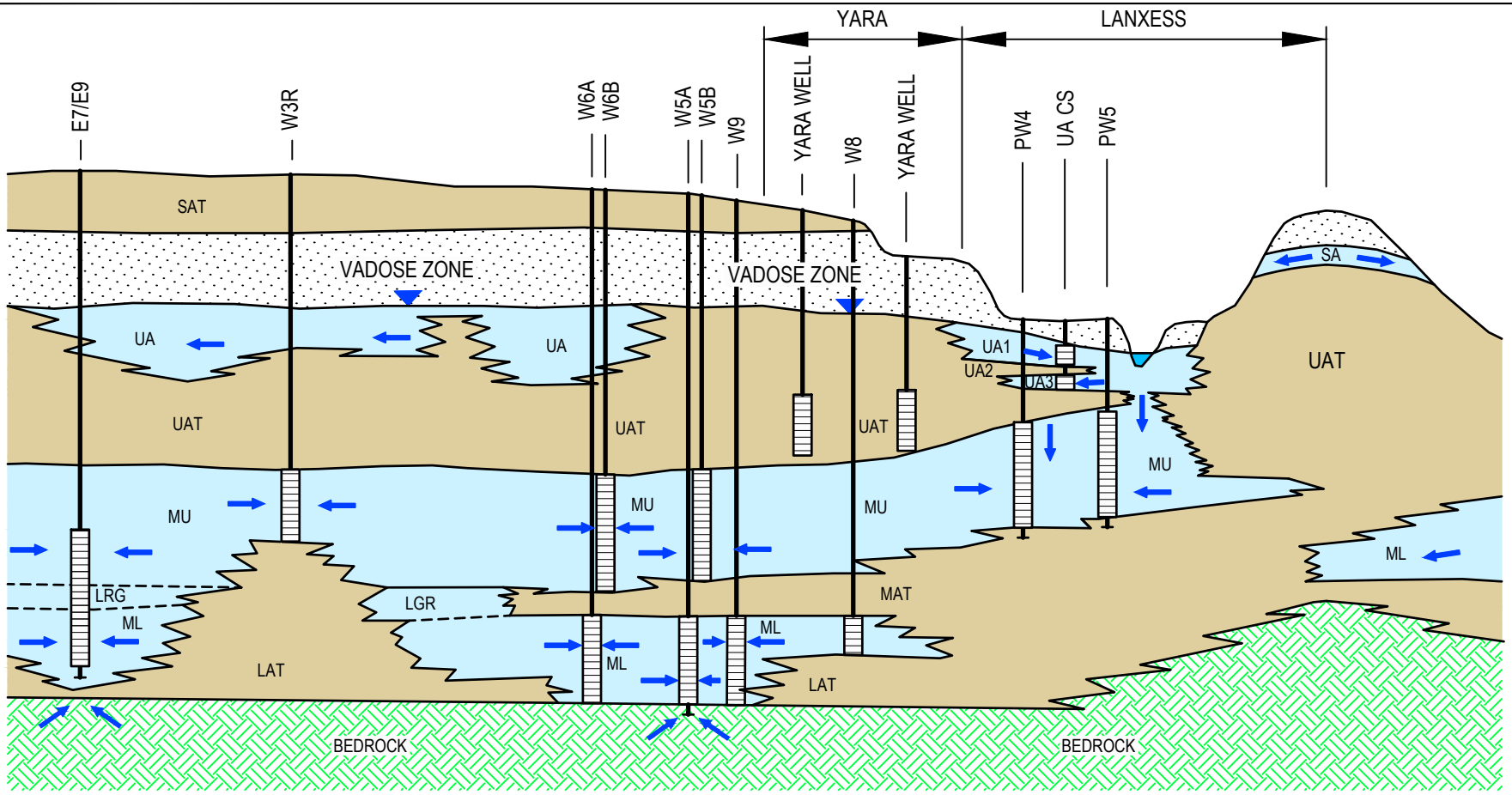
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ELMIRA, ONTARIO

2021/2022 NDMA CONCENTRATION CONTOURS LOWER MUNICIPAL AQUIFER

Project No. **11192137**
Date **February 2023**

FIGURE 4.9

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HYDROGEOLOGICAL UNIT

SA	SURFICIAL AQUIFER
SAT	SURFICIAL AQUITARD
UA	UPPER AQUIFER
UA1	TOP BEDS (UPPER AQUIFER)
UA2	MIDDLE BEDS (UPPER AQUIFER)
UA3	BOTTOM BEDS (UPPER AQUITARD)
UAT	UPPER AQUITARD
MU	UPPER MUNICIPAL AQUIFER
MAT	MUNICIPAL AQUITARD
LGR	LOW GAMMA-RESISTIVITY ZONE
ML	LOWER MUNICIPAL AQUIFER
LAT	LOWER AQUITARD
BEDROCK	BEDROCK

LEGEND

- WELL SCREEN
- GROUNDWATER FLOW DIRECTION

LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

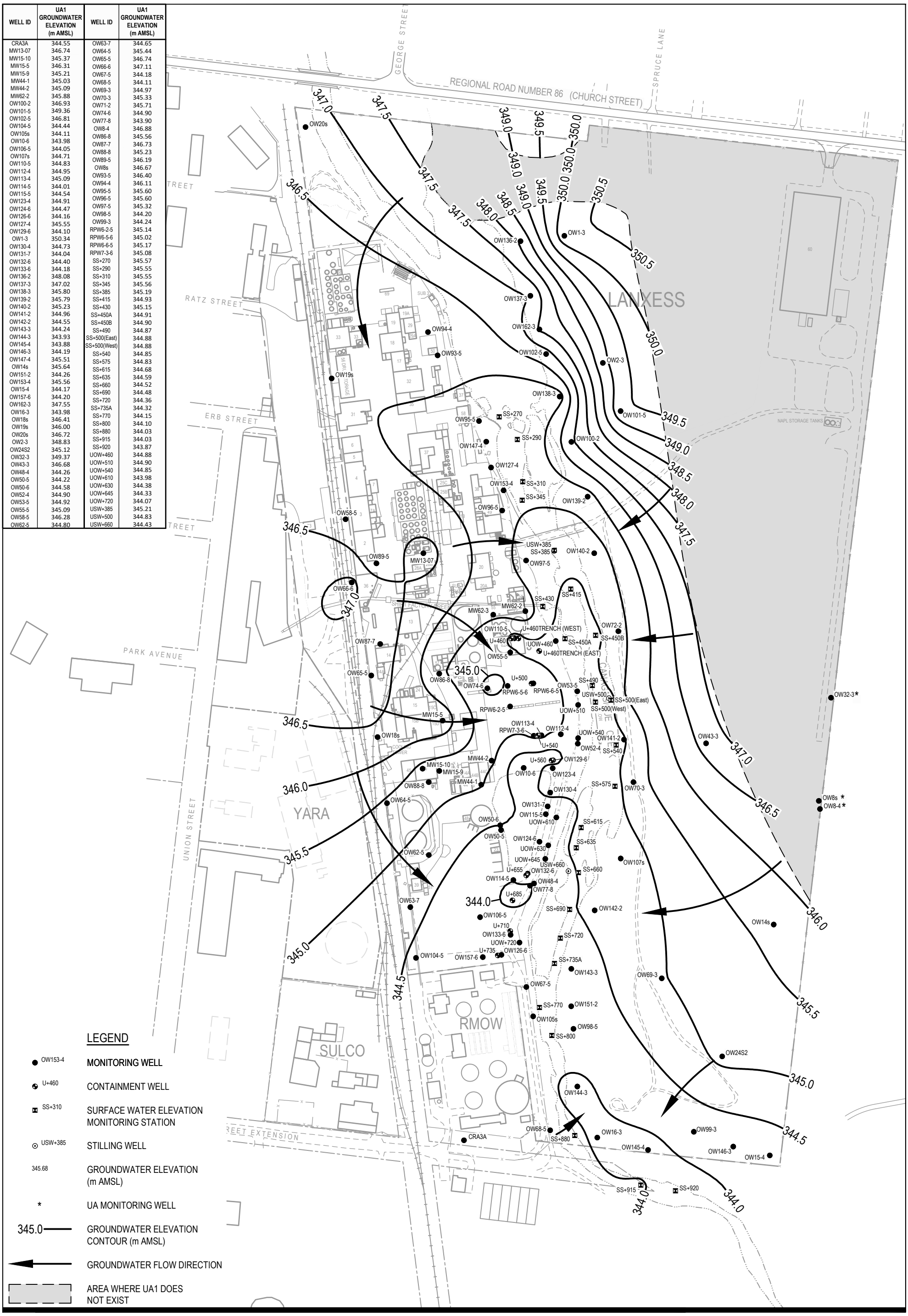
Project No. **11192137**
Date **March 2023**

SCHEMATIC OF HYDROGEOLOGIC UNITS

FIGURE 1.2

Filename: N:\CA\Waterloo\Projects\662\11192137\Digital_Design\ACAD 2020\Figures\RPT-AMR2022\11192137-GHD-00-00-RPT-EN-D102_WA-AMR2022.dwg
Plot Date: 06 March 2023 2:05 PM

WELL ID	UA1 GROUNDWATER ELEVATION (m AMSL)	WELL ID	UA1 GROUNDWATER ELEVATION (m AMSL)
CRA3A	344.55	OW63-7	344.65
MW13-07	346.74	OW64-5	345.44
MW15-10	345.37	OW65-5	346.74
MW15-5	346.31	OW66-6	347.11
MW15-9	345.21	OW67-5	344.18
MW44-1	345.03	OW68-5	344.11
MW44-2	345.09	OW69-3	344.97
MW62-2	345.88	OW70-3	345.33
OW100-2	346.93	OW71-2	345.71
OW101-5	349.36	OW74-6	344.90
OW102-5	346.81	OW77-8	343.90
OW104-5	344.44	OW8-4	346.88
OW105s	344.11	OW86-8	345.56
OW10-6	343.98	OW87-7	346.73
OW106-5	344.05	OW88-8	345.23
OW107s	344.71	OW89-5	346.19
OW110-5	344.83	OW8s	346.67
OW112-4	344.95	OW93-5	346.40
OW113-4	345.09	OW94-4	346.11
OW114-5	344.01	OW95-5	345.60
OW115-5	344.54	OW96-5	345.60
OW123-4	344.91	OW97-5	345.32
OW124-6	344.47	OW98-5	344.20
OW126-6	344.16	OW99-3	344.24
OW127-4	345.55	RPW6-2-5	345.14
OW129-6	344.10	RPW6-5-6	345.02
OW1-3	350.34	RPW6-6-5	345.17
OW130-4	344.73	RPW7-3-6	345.08
OW131-7	344.04	SS+270	345.57
OW132-6	344.40	SS+290	345.55
OW133-6	344.18	SS+310	345.55
OW136-2	348.08	SS+345	345.56
OW137-3	347.02	SS+385	345.19
OW138-3	345.80	SS+415	344.93
OW139-2	345.79	SS+430	345.15
OW140-2	345.23	SS+450A	344.91
OW141-2	344.96	SS+450B	344.90
OW142-2	344.55	SS+490	344.87
OW143-3	344.24	SS+500(East)	344.88
OW144-3	343.93	SS+500(West)	344.88
OW145-4	343.88	SS+540	344.85
OW146-3	344.19	SS+575	344.83
OW147-4	345.51	SS+615	344.68
OW14s	345.64	SS+635	344.59
OW151-2	344.26	SS+660	344.52
OW153-4	345.56	SS+690	344.48
OW15-4	344.17	SS+720	344.36
OW157-6	344.20	SS+735A	344.32
OW162-3	347.55	SS+770	344.15
OW16-3	343.98	SS+800	344.10
OW18s	346.41	SS+880	344.03
OW19s	346.00	SS+915	344.03
OW20s	346.72	SS+920	343.87
OW2-3	348.83	UOW+460	344.88
OW24S2	345.12	UOW+510	344.90
OW32-3	349.37	UOW+540	344.85
OW43-3	346.68	UOW+610	343.98
OW48-4	344.26	UOW+630	344.38
OW50-5	344.22	UOW+645	344.33
OW50-6	344.58	UOW+720	344.07
OW52-4	344.90	USW+385	345.21
OW53-5	344.92	USW+500	344.83
OW55-5	345.09	USW+660	344.43
OW58-5	346.28		
OW62-5	344.80		



0 30 60 90m

1:3000

Coordinate System: UTM NAD 27

N

LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

Project No. **11192137**
Date **March 2023**

GROUNDWATER ELEVATION CONTOURS UA1 - APRIL 14, 2022

FIGURE 3.2

Filename: N:\CA\Waterloo\Projects\662\11192137\Digital_Design\ACAD 2020\Figures\RPT-AMR2022\11192137-GHD-00-00-RPT-EN-D107_WA-AMR2022.dwg
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Appendix B

Sampling and Analysis Plan

Appendix B

Sampling and Analysis Plan
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

APEC No.	Investigative Locations	Rationale[1]	Other Field Information to be Obtained	Target Sample Depth (mBGS)	Target Screen Location	Chemical Analysis										
						Soil Sampling						Groundwater Sampling				
						Parameters						Parameters				
						O.Reg 153 Metals/Inorganics	OCPs	PHC F1	PHCs F2-F4	PAHs	VOCs	O.Reg 153 Metals/Inorganics	PHC F1	PHCs F2-F4	VOCs	NDMA
1	UA-5	Investigate groundwater quality on Site, upgradient of the gas station located at 390 Arthur Street South (located approxiamtely 35 southeast of the Site)	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying	-	Straddle water table with 1.5 m screen within UA (approximate depth of 15.0 mBGS)	-	-	-	-	-	-	-	1	1	1	-
2	UA-2, UA-3, UA-4	Investigate soil and groundwater quality on the Site, surrounding 374 Arthur Street South.	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying, Soil Field Screening	Sample immediately above water table	Straddle water table with 1.5 m screen within UA (approximate depth of 15.0 mBGS)	3	-	3	3	3	3	3	3	3	3	-
3	UA-1	Investigate soil and groundwater quality on the Site, surrounding 346 Arthur Street South.	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying, Soil Field Screening	Sample immediately above water table	Straddle water table with 1.5 m screen within UA (approximate depth of 15.0 mBGS)	1	-	1	1	1	1	1	1	1	1	-
	UA-1(S)[2]	Investigate soil and groundwater quality on the Site in perched water table, surrounding 374 Arthur Street South.	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying, Soil Field Screening	1.5 - 1.8	1.8 - 2.8	1	-	1	1	1	1	1	1	1	1	-
-	Potable water supply grab sample	In the event drilling water is used for MU and ML wells, sample water supply for VOCs.	-	-	-	-	-	-	-	-	-	-	-	-	1	-
4	MU-1	Investigate groundwater quality on the northeastern potion of the Site, for potential NDMA plume in MU.	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying	-	1.5 m screen within saturated portion of MU (approximate depth of 30.0 mBGS)	-	-	-	-	-	-	-	-	-	1[3]	1
	ML-1	Investigate groundwater quality on the northeastern potion of the Site, for potential NDMA plume in ML.	Water Level/NAPL Measurement, Purge Water Field Measurements, Elevation Surveying	-	1.5 m screen within saturated portion of ML (approximate depth of 45.0 mBGS)	-	-	-	-	-	-	-	-	-	1[3]	1
5A	SS-1 through SS-5	Investigate soil quality in the area of the northern topsoil pile	Elevation Surveying, Soil Field Screening	0.3 - 1.0	-	5	5	-	-	-	-	-	-	-	-	-
5B	SS-6 through SS-10	Investigate soil quality in the area of the southern topsoil pile	Elevation Surveying, Soil Field Screening	0.3 - 1.0	-	5	5	-	-	-	-	-	-	-	-	-
6	TP-1 through TP-5, and TP-4A	Investigate soil quality in the area of the burn pile.	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	6	-	-	-	6	-	-	-	-	-	-
	SS-29[2]	Resample TP-2 to confirm boron (hot water ext.) impacts identifed in shallow soil	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	1	-	-	-	-	-	-	-	-	-	-
	SS-29D[2]	Vertical delineation of boron (hot water ext.) impacts identifed in shallow soil at TP-2.	Elevation Surveying, Soil Field Screening	0.6 - 1.0	-	1	-	-	-	-	-	-	-	-	-	-
	SS-30[2]	Resample TP-4A to confirm boron (hot water ext.) impacts identifed in shallow soil	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	1	-	-	-	-	-	-	-	-	-	-
	SS-30D[2]	Vertical delineation of boron (hot water ext.) impacts identifed in shallow soil at TP-4A.	Elevation Surveying, Soil Field Screening	0.6 - 1.0	-	1	-	-	-	-	-	-	-	-	-	-
	SS-31 through SS-33[2]	Horizontal delineation of boron (hot water ext.) impacts identifed in shallow soil at TP-4A	Elevation Surveying, Soil Field Screening	0.0 - 0.3	-	3	-	-	-	-	-	-	-	-	-	-
	SS-34 and SS-35[2]	Horizontal delineation of boron (hot water ext.) impacts identifed in shallow soil at TP-2	Elevation Surveying, Soil Field Screening	0.4 - 0.6	-	2	-	-	-	-	-	-	-	-	-	-
7	SS-11 through SS-20	Investigate soil quality in areas of historical pesticides application for agricultural purposes	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	10	10	-	-	-	-	-	-	-	-	-
	SS-19R[2]	Resample SS-19 to confirm boron (hot water ext.) impacts identifed in shallow soil.	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	1	-	-	-	-	-	-	-	-	-	-

Appendix B

Sampling and Analysis Plan
Phase Two Environmental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

APEC No.	Investigative Locations	Rationale[1]	Other Field Information to be Obtained	Target Sample Depth (mBGS)	Target Screen Location	Chemical Analysis										
						Soil Sampling						Groundwater Sampling				
						Parameters						Parameters				
						O.Reg 153 Metals/Inorganics	OCPs	PHC F1	PHCs F2-F4	PAHs	VOCs	O.Reg 153 Metals/Inorganics	PHC F1	PHCs F2-F4	VOCs	NDMA
8	SS-21	Investigate soil quality in the area of the heating oil AST	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	-	-	1	1	1	1	-	-	-	-	-
	SS-22[2]	Collect additional soil sample in vicinity of heating oil AST fill and vent pipes.	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	-	-	1	1	1	1	-	-	-	-	-
9	SS-23 through SS-25	Investigate soil quality in the area of the northern portion of the sourthern chicken barn (area of historical chemical storage).	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	3	-	3	3	3	3	-	-	-	-	-
	SS-25R1, SS-25R2, SS-25R3[2]	Resample SS-25 to confirm some PAH[4] impacts identifed in shallow soil.	Soil Field Screening	0.4 - 0.8	-	-	-	-	-	3	-	-	-	-	-	-
	SS-26 through SS-28	Investigate soil quality in the area of current chemical storage	Elevation Surveying, Soil Field Screening	0.3 - 0.6	-	3	-	3	3	3	3	-	-	-	-	-
-	UA-6, UA-7, UA-8[2]	Investigate soil quality for potential boron (hot water ext.) impacts.	Elevation Surveying, Soil Field Screening	0.3 1.0	Straddle water table with 1.5 ft screen within UA (approximate depth of 15.0 mBGS)	3	-	-	-	-	-	-	-	-	-	-
					No. of Samples:	50	20	13	13	22	13	5	6	6	9	2
					Field Duplicates[5]:	5	2	2	2	2	2	1	2	2	2	-
					Trip Blanks[6]:	-	-	6	-	-	6	-	1	-	2	-
					Total Number of Samples:	55	22	21	15	24	21	6	9	8	13	2

Notes:

APEC	Area of potential environmental concern
m	Metres
mBGS	Metres below ground surface
OCPs	Organochlorine pesticides
PAHs	Polycyclic aromatic hydrocarbons
PHCs	Petroleum hydrocarbon fractions F1 to F4
VOCs	Volatile organic compounds
NDMA	N-nitrosodimethylamine
UA	Upper Aquifer
MU	Upper Municipal Aquifer
ML	Lower Municipal Aquifer
(1)	The sampling system for all investigative locations chosen was judgemental, as described in the rationale provided. Each location was sampled and analyzed once for each parameter unless resampling was required as indicated.
(2)	Deviation from original SAP - additional investigation added to Phase Two ESA
(3)	Sample for select VOCs which are detected in potable water supply, in the event that drilling water is used for MU and ML wells.
(4)	The PAH impacts included acenaphthylene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a h]anthracene, fluoranthene and indeno[1 2 3-cd]pyrene
(5)	Collect and analyze one field duplicate sample for every 10 samples per media type.
(6)	Submit one laboratory-prepared trip blank per laboratory submission where VOC/PHC F1 analyses are to be completed.

Appendix C

Stratigraphic and Instrumentation Logs

Appendix C

Summary of Test Pit and Surface Sample Stratigraphy
Phase Two Environemental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Sample Location	Date of Sample	Sample Method	Depth From (mBGS)	Depth to (mBGS)	Ground Elevation (mAMSL)	Soil Description	Soil Sample Depth for Chemical Analysis (mBGS)	Sample ID	PID Reading (ppm)
SS-1	4-May-23	Spade/hand auger	0.0	1.0	365.34	TOPSOIL - dark brown,some clay, moist	0.3 - 1.0	S-12598913-050423-ZCV-001	-
SS-2	4-May-23	Spade/hand auger	0.0	1.0	365.51	TOPSOIL - dark brown, moist	0.3 - 1.0	S-12598913-050423-ZCV-002	-
SS-3	4-May-23	Spade/hand auger	0.0	0.7	365.57	TOPSOIL - dark brown with some light mottling, some clay, hard, moist	0.3 - 0.6	S-12598913-050423-ZCV-003	-
SS-4	4-May-23	Spade/hand auger	0.0	1.0	365.30	TOPSOIL - dark brown with some light mottling, some clay, moist	0.3 - 1.0	S-12598913-050423-ZCV-004	-
SS-5	4-May-23	Spade/hand auger	0.0	0.6	365.55	TOPSOIL - dark brown with some light mottling, with clay, very hard, moist	0.3 - 0.6	S-12598913-050423-ZCV-005	-
SS-6	4-May-23	Spade/hand auger	0.0	0.6	363.03	TOPSOIL - dark brown, with clay and rocks/gravel, hard, moist	0.3 - 0.6	S-12598913-050423-ZCV-006	-
SS-7	4-May-23	Spade/hand auger	0.0	1.0	362.70	TOPSOIL - dark brown, with clay, moist	0.3 - 1.0	S-12598913-050423-ZCV-007	-
SS-8	4-May-23	Spade/hand auger	0.0	0.8	363.50	TOPSOIL - dark brown, with clay and gravel, moist	0.3 - 0.8	S-12598913-050423-ZCV-008/ S-12598913-050423-ZCV-009	-
SS-9	4-May-23	Spade/hand auger	0.0	0.9	363.70	TOPSOIL - dark brown, with clay to 0.6 mBGS, moist	0.3 - 0.5	S-12598913-050423-ZCV-010	-
SS-10	4-May-23	Spade/hand auger	0.0	1.0	363.08	TOPSOIL - dark brown, with clay, moist	0.3 - 1.0	S-12598913-050423-ZCV-011	-
SS-11	4-May-23	Spade/hand auger	0.0	0.6	363.56	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-050423-ZCV-012	-
SS-12	4-May-23	Spade/hand auger	0.0	0.5	363.58	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.5	S-12598913-050423-ZCV-013	-
SS-13	4-May-23	Spade/hand auger	0.0	0.5	360.97	TOPSOIL - dark brown with some orange flecks, with clay, moist	0.3 - 0.5	S-12598913-050423-ZCV-014	-
SS-14	4-May-23	Spade/hand auger	0.0	0.5	360.87	TOPSOIL - dark brown with some light brown mottling, with clay and some gravel/rocks, moist	0.3 - 0.5	S-12598913-050423-ZCV-015	-
SS-15	4-May-23	Spade/hand auger	0.0	0.6	358.45	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-050423-ZCV-016	-
SS-16	4-May-23	Spade/hand auger	0.0	0.6	360.28	TOPSOIL - dark brown with some light brown mottling, with clay and sand, moist	0.3 - 0.6	S-12598913-050423-ZCV-017/ S-12598913-050423-ZCV-018	-
SS-17	4-May-23	Spade/hand auger	0.0	0.6	359.15	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-050423-ZCV-0019	-
SS-18	4-May-23	Spade/hand auger	0.0	0.6	361.89	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-050423-ZCV-020	-
SS-19	4-May-23	Spade/hand auger	0.0	0.6	359.13	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-050423-ZCV-021	-
SS-19R	12-May-23	Spade/hand auger	0.0	0.6	359.05	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.6	S-12598913-051223-ZCV-001	-
SS-20	4-May-23	Spade/hand auger	0.0	0.3	359.64	TOPSOIL - dark brown, moist,	0.3 - 0.6	S-12598913-050423-ZCV-022	-
			0.3	0.4		CL - SILTY CLAY, low plasticity, brown, firm, moist	0.3 - 0.8	S-1259813-050323-ZCV-005	-
			0.4	0.6		SM - SILTY SAND, light brown, compact, moist	-	-	-
SS-21	4-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.7	363.03	TOPSOIL - dark brown with some light brown mottling, with clay, moist	0.3 - 0.7	S-12598913-050423-ZCV-023/ S-12598913-011724-ZCV-001	-
SS-22	12-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.8	363.01	TOPSOIL - dark brown, with some roots/rocks, moist	0.3 - 0.8	S-12598913-051223-ZCV-002/ S-12598913-011724-ZCV-002	-
SS-23	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.7	359.30	TOPSOIL - dark brown, with some roots, moist	0.3 - 0.7	S-1259813-050323-ZCV-001/ S-12598913-011724-ZCV-003	0.0
SS-24	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.7	359.27	TOPSOIL - dark brown, with some gravel roots and wood debris, moist	0.3 - 0.7	S-1259813-050323-ZCV-002/ S-12598913-011724-ZCV-004	0.0
SS-25	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.8	359.41	TOPSOIL - dark brown with some light brown mottling, with clay and gravel, moist	0.4 - 0.8	S-1259813-050323-ZCV-003/ S-12598913-011724-ZCV-005	0.0
SS-25R1	30-Jan-24	Spade/hand auger	0.0	0.8	-	TOPSOIL - dark brown with some light brown mottling, with clay and gravel, moist	0.4 - 0.8	S-12598913-013024-ZCV-001	-
SS-25R2	30-Jan-24	Spade/hand auger	0.0	0.8	-	TOPSOIL - dark brown with some light brown mottling, with clay and gravel, moist	0.4 - 0.8	S-12598913-013024-ZCV-004	-
SS-25R3	30-Jan-24	Spade/hand auger	0.0	0.8	-	TOPSOIL - dark brown with some light brown mottling, with clay and gravel, moist	0.4 - 0.8	S-12598913-013024-ZCV-005	-
SS-26	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.8	359.36	TOPSOIL - dark brown with some light brown mottling, with clay and rocks, moist	0.3 - 0.7	S-1259813-050323-ZCV-004/ S-12598913-011724-ZCV-006/ S-12598913-011724-ZCV-007	0.0

Appendix C

Summary of Test Pit and Surface Sample Stratigraphy
Phase Two Environemental Site Assessment
Listowel Road and Arthur Street South Development Lands
Elmira, Ontario

Sample Location	Date of Sample	Sample Method	Depth From (mBGS)	Depth to (mBGS)	Ground Elevation (mAMSL)	Soil Description	Soil Sample Depth for Chemical Analysis (mBGS)	Sample ID	PID Reading (ppm)
SS-27	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.3	359.25	TOPSOIL - dark brown, moist	-	-	-
			0.3	0.5		SM - SILTY SAND, brown, compact, moist	0.3 - 0.8	S-1259813-050323-ZCV-005/ S-12598913-011724-ZCV-008	0.0
			0.5	0.8		CL - SILTY CLAY, low plasticity, brown, firm, moist	-	-	-
SS-28	3-May-23/ 17-Jan-24	Spade/hand auger	0.0	0.3	359.23	TOPSOIL - dark brown, moist, some wooden debris, wheat stubble	-	-	-
			0.3	0.6		SM - SILTY SAND, brown, compact, moist	0.3 - 0.8	S-1259813-050323-ZCV-006/ S-1259813-050323-ZCV-007/ S-12598913-011724-ZCV-009	0.0
			0.6	0.8		CL - SILTY CLAY, low plasticity, brown, firm, moist	-	-	-
TP-1	16-Dec-22	Excavator	0.0	0.6	360.31	TOPSOIL - dark brown, moist, with black ash clumps and streaks on north and south walls of pit to 0.55 mBGS, odourless.	0.3 - 0.6	S-12598913-121622-JPF-001	0.0
			0.6	1.5		CL - SILTY CLAY, with cobbles, low plasticity, brown, firm, dry, no evidence of debris	-	-	-
TP-2/	16-Dec-22	Excavator	0.0	0.6	360.49	TOPSOIL - dark brown, moist, odourless	-	-	-
SS-29/	3-May-23	Spade			359.87				
SS-29D	3-May-23	Hand auger	0.4	0.6		With some ash and styrofoam pieces, trace plastic and wood debris on all walls of pit	0.3 - 0.6 (TP-2/SS-29)	S-12598913-121622-JPF-002/ S-12598913-121622-JPF-003/ S-1259813-050323-ZCV-008	0.0
			0.6	1.2		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	0.6 - 1.0 (TSS-29D)	S-1259813-050323-ZCV-009	-
TP-3	16-Dec-22	Excavator	0.0	0.6	360.37	TOPSOIL - dark brown, moist, odourless, with trace plastic and wood debris on east wall of pit to 0.40 mBGS, no ash	0.3 - 0.6	S-12598913-121622-JPF-004	0.0
			0.6	1.1		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	-	-	-
TP-4	16-Dec-22	Excavator	0.0	0.4	360.26	TOPSOIL - dark brown, moist, no debris noted	-	-	-
TP-4A/	16-Dec-22	Excavator	0.0	0.6		TOPSOIL - dark brown, moist, faint ash odour, ash streaks, styrofoam pieces, metal and plastic debris on west wall of pit to 0.30 mBGS	0.3 - 0.6 (TP-4A/SS-30)	S-12598913-121622-JPF-005/ S-1259813-050323-ZCV-010/ S-1259813-050323-ZCV-011	0.0
SS-30/	3-May-23	Spade			359.86				
SS-30D	3-May-23	Hand auger	0.6	1.1		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	0.6 - 1.0 (SS-30D)	S-1259813-050323-ZCV-012	-
TP-5	16-Dec-22	Excavator	0.0	0.6	360.26	TOPSOIL - dark brown, moist, trace plastic, rootlets, ash streaks, black, faint ash odour at northwest corner of pit to 0.45 mBGS	0.3 - 0.6	S-12598913-121622-JPF-006	0.0
			0.6	1.0		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	-	-	-
TP-6	16-Dec-22	Excavator	0.0	0.4	360.30	TOPSOIL - dark brown, moist, some ash and styrofoam pieces, trace plastic and wood debris on east and west sides of pit to 0.30 mBGS	-	-	-
TP-7	16-Dec-22	Excavator	0.0	0.4	360.35	TOPSOIL - dark brown, moist, no debris noted or impacts noted.	-	-	-
TP-8	16-Dec-22	Excavator	0.0	0.4	360.21	TOPSOIL - dark brown, moist, no debris noted, noted trace ash at 0.10 mBGS on southwestern corner of pit.	-	-	-
SS-31	3-May-23	Spade	0.0	0.3	359.82	TOPSOIL - dark brown, moist, no debris noted, wheat stubble	0.0 - 0.3	S-1259813-050323-ZCV-013	-
SS-32	3-May-23	Spade	0.0	0.3	359.75	TOPSOIL - dark brown, moist, no debris noted, wheat stubble	0.0 - 0.3	S-1259813-050323-ZCV-014	-
SS-33	3-May-23	Spade	0.0	0.3	359.84	TOPSOIL - dark brown, moist, some wooden debris, wheat stubble	0.0 - 0.3	S-1259813-050323-ZCV-015	-
SS-34	3-May-23	Spade/hand auger	0.0	0.4	359.86	TOPSOIL - dark brown, moist, no debris noted, wheat stubble	-	-	-
			0.4	0.6		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	0.4 - 0.6	S-1259813-050323-ZCV-016	-
SS-35	3-May-23	Spade/hand auger	0.0	0.4	359.87	TOPSOIL - dark brown, moist, no debris noted, wheat stubble	-	-	-
			0.4	0.6		CL - SILTY CLAY, low plasticity, brown, firm, dry, no evidence of debris	0.4 - 0.6	S-1259813-050323-ZCV-017	-

Notes:

SS	Surface Sample
TP	Test Pit
mBGS	Meters below ground surface
PID	photoionization detector
ppm	parts per million
-	No PID Reading recorded

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: ML-1
DATE COMPLETED: 2 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825339.073712
EASTING: 535215.0480336

	ELEV. BGS
TOP OF CASING	360.86
TOP OF RISER	360.79
GROUND SURFACE	359.69

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0	SILTY SAND AND GRAVEL, poorly graded, soft, some pebbles, brown, moist	359.08
1	- dark brown, moist organic topsoil seam from 0.30 to 0.61m BGS	
2	SILTY CLAY, hard, high plasticity, some cobbles and pebbles, brown, moist, trace subangular to rounded gravel	
3	- silt, trace clay, low plasticity, no cobbles, some pebbles from 1.22 to 1.52m BGS - wet from 2.44 to 2.90m BGS - dry to moist from 2.90 to 3.96m BGS	
4	SILTY CLAY, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	355.72
5	- sandy silt seam, fine grained, well graded, trace clay, compact, moist, trace subangular to rounded gravel from 4.27 to 4.57m BGS	355.11
6	CLAYEY SILT, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	354.20
7	CLAY, trace silt, low plasticity, very hard, dark brown, dry, trace subangular to rounded gravel, some cobbles and pebbles	
8		
9	CLAY, trace silt, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	351.15
10	SILTY SAND, fine grained, well graded, orange-brown, moist, trace subangular to rounded gravel, some pebbles	350.24 349.63
11	CLAYEY SILT, compact, low plasticity, brown, moist, trace subrounded to rounded gravel and pebbles	348.41
12	- wet at 10.67m BGS CLAY, trace silt, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	
13	CLAY, trace silt, hard, high plasticity, brown, dry to moist, trace subangular to rounded gravel and pebbles	346.58
14	- moist to wet from 14.33 to 14.63m BGS	
15	CLAY, trace silt, high plasticity, compact, brown, wet	345.05
16	- clayey silt seam, low plasticity, hard, brown, moist from 15.85 to 16.15m BGS	
17		
18		
19	- moist starting at 19.20m BGS	

MONITOR INSTALLATION: Cement

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1		100		0
2		100		0
3		100		0
4		100		0
5		100		0
6		100		0
7		100		0
8		100		0
9		100		0
10		100		0
11		100		0
12		100		0
13		100		0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 9/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: ML-1
DATE COMPLETED: 2 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
21	SAND AND GRAVEL, fine to medium, well graded, loose, brown, saturated, pebbles	338.65	Bentonite Chips	14		100		0
22				15		100		0
23	SAND AND GRAVEL, fine to coarse, soft, well graded, orange-brown, saturated, pebbles	336.83		16		100		0
24	CLAYEY SILT, hight plasticity, hard, dark brown, dry, trace pebbles (25 mm), some subangular to rounded gravel	335.91		17		100		0
25								
26				18		100		0
27	SAND AND GRAVEL, medium to coarse, well graded, compact, brown, saturated, with pebbles (25 mm), subangular sand	332.86		19		100		0
28								
29				20		100		0
30	- trace brown plastic clay, some pebbles (25 mm) and cobbles (25-127 mm) from 29.87 to 31.39m BGS			21		100		0
31								
32	- fine to medium sand, well graded, saturated from 32.00 to 32.31m BGS			22		100		0
33	- medium to coarse, loose, pebbles (25 mm) from 32.92 to 34.44m BGS							
34				23		100		0
35	GRAVEL, well graded, some coarse sand, brown, saturated, pebbles (25 mm), cobbles (25-127 mm)	325.24		24		100		0
36	CLAY, plastic, hard, some subangular to rounded gravel, brown, saturated	323.72						
37	SAND AND GRAVEL, coarse grained, poorly graded, loose, brown, moist, trace clay, subangular to rounded, pebbles (25 mm), cobbles (25-127 mm)	323.11		25		100		0
38				26		100		0
39	SILTY SAND, fine grained, even graded, hard, brown, dry	320.98 320.67						
	SANDY GRAVEL, coarse grained, poorly			27		100		0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

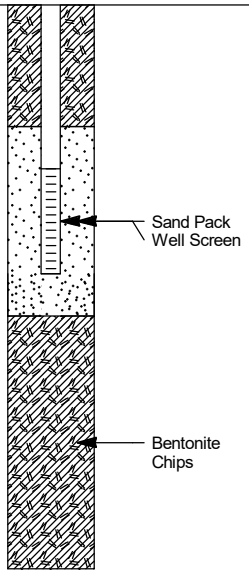
File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211\2598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: ML-1
DATE COMPLETED: 2 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
41	graded, brown to grey, saturated, some clay and silt, pebbles (25 mm), cobbles (25-127 mm)			28		100		0
42								
43				29		100		0
44	- grey to brown from 43.59 to 45.11m BGS			30		100		0
45		314.57						
46	SAND, GRAVEL AND CLAY, low plasticity, well graded, hard, grey to brown, saturated,			31		100		0
47								
48		311.53		32		100		0
49	END OF BOREHOLE @ 48.16m BGS							
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								



COMPLETION DETAILS
Screened interval:
317.32 to 315.79BGS
42.37 to 43.89m BGS
Length: 1.52m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
317.93 to 315.18BGS
41.76 to 44.50m BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: MU-1
DATE COMPLETED: 2 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
	NORTHING: 4825338.00 EASTING: 535212.66 TOP OF CASING TOP OF RISER GROUND SURFACE	360.80 360.64 359.68					
0	Refer to ML-1 stratigraphy log		Cement				
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17			Bentonite Chips				
18							
19							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: MU-1
DATE COMPLETED: 2 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34			Sand Pack Well Screen				
35	END OF BOREHOLE @ 35.20m BGS	324.48	COMPLETION DETAILS Screened interval: 326.00 to 324.48BGS 33.68 to 35.20m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: Sch. 40 PVC Sand Pack: 326.46 to 324.48BGS 33.22 to 35.20m BGS Material: Sand				
36							
37							
38							
39							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-1
DATE COMPLETED: 27 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825340.05212
EASTING: 535211.581848

TOP OF CASING 360.80
TOP OF RISER 360.74
GROUND SURFACE 359.74

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0.0	SILTY SAND AND GRAVEL, poorly graded, soft, some pebbles, brown, moist	
0.5	- dark brown, moist organic topsoil seam from 0.30 to 0.61m BGS	359.13
1.0	SILTY CLAY, hard, high plasticity, some cobbles and pebbles, brown, moist, trace subangular to rounded gravel	
1.5	- silt, trace clay, low plasticity, no cobbles, some pebbles from 1.22 to 1.52m BGS	
2.0		
2.5	- wet from 2.44 to 2.90m BGS	
3.0	- dry to moist from 2.90 to 3.96m BGS	
3.5		
4.0	SILTY CLAY, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	355.77
4.5	- sandy silt seam, fine grained, well graded, trace clay, compact, moist, trace subangular to rounded gravel from 4.27 to 4.57m BGS	355.16
5.0	CLAYEY SILT, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	
5.5	CLAY, trace silt, low plasticity, very hard, dark brown, dry, trace subangular to rounded gravel, some cobbles and pebbles	354.25
6.0		
6.5		
7.0		
7.5		
8.0		
8.5	CLAY, trace silt, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	351.20
9.0		
9.5	SILTY SAND, fine grained, well graded, orange-brown, moist, trace subangular to rounded gravel, some pebbles	350.29

MONITOR INSTALLATION: Cement

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1				0.0
2				0.0
3				0.0
4				0.0
5				0.0
6				0.0
7				0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 9/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-1
DATE COMPLETED: 27 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5	CLAYEY SILT, compact, low plasticity, brown, moist, trace subrounded to rounded gravel and pebbles - wet at 10.67m BGS	349.68	Bentonite Chips	8				0.0
11.5	CLAY, trace silt, low plasticity, hard, dark brown, dry, trace subangular to rounded gravel	348.46		9				0.0
13.5	CLAY, trace silt, hard, high plasticity, brown, dry to moist, trace subangular to rounded gravel and pebbles - moist to wet from 14.33 to 14.63m BGS	346.63		10				0.0
15.5	CLAY, trace silt, high plasticity, compact, brown, wet - clayey silt seam, low plasticity, hard, brown, moist from 15.85 to 16.15m BGS	345.11		11				0.0
17.0				12				0.0
18.5				13				0.0
19.0	- moist starting at 19.20m BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-1
DATE COMPLETED: 27 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5				14				0.0
21.0	SAND AND GRAVEL, fine to medium, well graded, loose, brown, saturated, pebbles	338.70		CH-004/005				
21.5			Sand Pack Well Screen	15				0.0
22.0								
22.5								
23.0	SAND AND GRAVEL, fine to coarse, soft, well graded, orange-brown, saturated, pebbles	336.88	Natural Cave-in	16				0.0
23.5								
	END OF BOREHOLE @ 23.77m BGS	335.96						
24.0								
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

COMPLETION DETAILS
Screened interval:
338.70 to 337.18BGS
21.03 to 22.56m BGS
Length: 1.52m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
339.16 to 337.18BGS
20.57 to 22.56m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-1 (S)
DATE COMPLETED: 27 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
	NORTHING: 4825341.35 EASTING: 535214.00 TOP OF CASING TOP OF RISER GROUND SURFACE	360.73 360.63 359.74					
0	Please see stratigraphy for UA-1		Cement Bentonite Chips Sand Pack Well Screen	CH-006			
2.74	END OF BOREHOLE @ 2.74m BGS	356.99					

COMPLETION DETAILS
Screened interval:
357.91 to 356.99BGS
1.83 to 2.74m BGS
Length: 0.91m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
358.21 to 356.99BGS
1.52 to 2.74m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (CH)

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211\2598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-2
DATE COMPLETED: 24 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825162.32
EASTING: 535187.54

TOP OF CASING 359.90
TOP OF RISER 359.72
GROUND SURFACE 358.77

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
0.5	No recovery		Cement					
1.0	ORGANIC TOPSOIL, dark brown, moist	357.86						
1.5	SILTY CLAY, high plasticity, compact, brown, moist, trace subangular to rounded gravel and pebbles	357.25		1				0.0
2.0								
2.5	CLAYEY SILT, hard, low plasticity, brown, moist to dry, some subangular to rounded gravel, pebbles and cobbles	356.33						
3.0	- sandy silt seam from 3.05 to 4.27m BGS			2				0.0
3.5								
4.0								
4.5	- trace clay, dry from 4.57 to 7.01m BGS			3				0.0
5.0								
5.5								
6.0								
6.5				4				0.0
7.0	SANDY SILT, compact, fine, low plasticity, brown, dry, trace subangular to rounded gravel	351.76						
7.5				5				0.0
8.0								
8.5			Bentonite Chips					
9.0	- silt, trace clay starting at 9.14m BGS			6				0.0
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-2
DATE COMPLETED: 24 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5	CLAY, trace silt, very hard, dark brown, dry, pebbles and subangular to rounded gravel	348.71		7				0.0
11.0								
11.5								
12.0				8				0.0
12.5								
13.0								
13.5								
14.0	- silt seam, trace fine sand and clay, hard, brown, dry, some subangular to rounded gravel from 14.02 to 14.63m BGS			9				0.0
14.5		344.14						
15.0	SILTY SAND, loose, well graded, brown to light brown, dry, pebbles, subangular to rounded gravel							
15.5				10				0.0
16.0								
16.5								
17.0	- sand seam, medium grained, loose, brown, dry from 16.76 to 17.07m BGS			11				0.0
17.5				CH-003				
18.0	SAND, coarse grained, well graded, compact, brown, saturated, trace subangular to rounded gravel	341.09 340.79	Sand Pack Well Screen					
18.5	SAND, medium grained, well graded, compact, brown, saturated, trace subangular to rounded gravel	340.48		12				0.0
19.0	SAND AND GRAVEL, subangular to rounded, well graded, brown, saturated, cobbles, pebbles							
19.5			Natural Cave-in					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (CH-003)

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-2
DATE COMPLETED: 24 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5				13				0.0
	END OF BOREHOLE @ 20.73m BGS	338.05	COMPLETION DETAILS Screened interval: 341.70 to 340.18BGS 17.07 to 18.59m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: Sch. 40 PVC Sand Pack: 342.01 to 340.18BGS 16.76 to 18.59m BGS Material: Silica					
21.0								
21.5								
22.0								
22.5								
23.0								
23.5								
24.0								
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-3
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825128.33
EASTING: 535147.24

	ELEV. BGS
TOP OF CASING	360.19
TOP OF RISER	360.06
GROUND SURFACE	358.95

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0.5	TOPSOIL, organic, dark brown	
1.0	SILTY CLAY, high plasticity, hard, some pebbles and subangular to rounded gravel, brown, moist	358.04
1.5		
2.0	- dry from 1.98 to 2.44m BGS	
2.5	CLAYEY SILT, hard, low plasticity, some subangular to rounded gravel, pebbles, cobbles, brown, dry	356.51
3.0		
3.5		
4.0	SILT, trace clay, hard, low plasticity, some subangular to rounded gravel, pebbles throughout, brown, dry	354.99
4.5		
5.0		
5.5		
6.0	- fragmented rock from 6.10 to 6.40m BGS	
6.5		
7.0	SANDY SILT, fine, compact, subangular to rounded gravel, some pebbles and cobbles, brown, dry	351.94
7.5		
8.0	SILT, trace clay, hard, low plasticity, some subangular to rounded gravel, pebbles throughout, brown, dry	351.03
8.5	SILTY CLAY, high plasticity, compact, brown, moist to wet, trace organics (roots)	350.42
9.0	CLAYEY SILT, hard, brown, moist to dry, subrounded gravel	349.81
9.5		

MONITOR INSTALLATION: Cement; Bentonite Chips

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1				0.0
2				0.0
3				0.0
4				0.0
5				0.0
6				0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211\2598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-3
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5	SILTY SAND, soft, light brown, dry, some subangular to rounded gravel, well graded, pebbles	348.59		7				0.0
11.5	CLAY, trace silt and subangular to rounded gravel, very hard, dark brown, dry	347.37		8				0.0
13.5	SILT, trace fine sand and clay, some subangular to rounded gravel, hard, brown, dry, pebbles and cobbles	345.54		9				0.0
15.5	SILTY SAND AND GRAVEL, subrounded to rounded gravel, hard, well graded, brown to light brown, dry, some cobbles and pebbles	343.41		10				0.0
17.5	SAND, coarse grained, well graded, soft, brown, saturated	341.27	Sand Pack Well Screen	CH-002				
18.5	SAND, medium grained, well graded, soft, brown, saturated	340.66		11				0.0
19.5	SAND, fine grained, well graded, soft, brown,	339.14	Natural Cave-in	12				0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-3
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5	saturated			13				0.0
	END OF BOREHOLE @ 20.73m BGS	338.22	COMPLETION DETAILS Screened interval: 341.88 to 340.36BGS 17.07 to 18.59m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: Sch. 40 PVC Sand Pack: 342.49 to 340.36BGS 16.46 to 18.59m BGS Material: Silica					
21.0								
21.5								
22.0								
22.5								
23.0								
23.5								
24.0								
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-4
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825081.15
EASTING: 535168.36

	ELEV. BGS
TOP OF CASING	359.63
TOP OF RISER	359.47
GROUND SURFACE	358.35

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0.5	TOPSOIL, organic, dark brown	
1.0		
1.5	SILTY CLAY, high plasticity, trace gravel, hard, dark brown, moist	357.13
2.0	- some subrounded to subangular pebbles, dry from 2.13 to 2.44m BGS	
2.5	CLAYEY SILT, hard, low plasticity, brown, dry, some pebbles subangular to subrounded and cobbles	355.92
3.0		
3.5		
4.0	SILT, compact, trace gravel subangular to rounded, trace clay, low plasticity, brown, dry	354.39
4.5		
5.0		
5.5	CLAYEY SILT, plastic, brown, moist	352.87
6.0	STONE	352.41
6.5	SILT, trace clay, gravel, hard, brown, dry	352.11
7.0	SANDY SILT, fine, well graded, some gravel, hard, brown, dry	351.65
7.5	SANDY SILT, fine, with gravel subangular to rounded, well graded, hard, pebbles, dry	351.34
8.0	- rock fragments from 8.23 to 8.53m BGS	
8.5	SILT, trace sand and clay, low plasticity, subrounded gravel, hard, brown, dry to moist, pebbles, cobbles	349.82
9.0		
9.5		

MONITOR INSTALLATION: Cement; Bentonite Chips

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1				0.0
2				0.0
3				0.0
4				0.0
5				0.0
6				0.0
7				0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211\2598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-4
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5								
11.0	SILTY SAND, fine, loose, subrounded to rounded gravel, brown, dry, rock fragments, subangular to rounded gravel	347.69		8				0.0
11.5								
12.0	SAND AND GRAVEL, well graded, compact, brown, dry	346.77						
12.5	- brown to light brown from 12.50 to 13.11m BGS			9				0.0
13.0								
13.5								
14.0	SILT, trace clay and fine sand, hard, low plasticity, well graded, brown, moist	344.64		10				0.0
14.5								
15.0	SAND, fine, well graded, compact, brown, moist	343.72						
15.5	- light brown, hard, dry from 15.24 to 16.15m BGS			11				0.0
16.0								
16.5								
17.0				12				0.0
17.5	- brown, moist from 17.37 to 17.68m BGS			CH-001				
18.0	SAND, fine, soft, well graded, brown, saturated	340.68						
18.5			Sand Pack / Well Screen	13				0.0
19.0								
19.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (CH-001)

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-4
DATE COMPLETED: 23 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5	CLAYEY SILT, low plasticity, hard, brown, wet	337.93	Natural Cave-in	14				0.0
	END OF BOREHOLE @ 20.73m BGS	337.63	COMPLETION DETAILS Screened interval: 340.37 to 338.85BGS 17.98 to 19.51m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: Sch. 40 PVC Sand Pack: 340.68 to 338.85BGS 17.68 to 19.51m BGS Material: Silica					
21.0								
21.5								
22.0								
22.5								
23.0								
23.5								
24.0								
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-5
DATE COMPLETED: 28 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4824980.18
EASTING: 535158.35

TOP OF CASING 358.05
TOP OF RISER 357.91
GROUND SURFACE 357.02

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0.0	TOPSOIL, dark brown, moist	357.02
0.5	SILTY CLAY, high plasticity, hard, brown, moist, some subangular to rounded gravel, pebbles (25 mm), cobbles(25 mm -76 mm)	356.41
1.5	CLAYEY SILT, compact to hard, brown, moist, some subangular to rounded gravel, pebbles(25 mm), cobbles (25 mm - 76 mm)	355.49
2.5	- dry at 2.44m BGS	
3.0	SAND AND GRAVEL, fine grained, well graded, loose, brown, dry, trace silt, subangular to rounded gravel, some pebbles (25 mm)	353.97
3.5	- fine grained, trace silt at 3.96m BGS	
5.5	SILTY CLAY, low plasticity, hard, brown, moist to dry, trace subangular to rounded gravel	351.53
7.5	SAND, fine grained, well graded, loose, light brown, loose, trace silt, subangular to rounded gravel	349.70
8.5	SILTY CLAY, plasticity, hard, brown, dry	348.48
9.0	- moist, subangular to rounded gravel from 8.84 to 10.52m BGS	
9.5		

MONITOR INSTALLATION: Cement; Bentonite

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1		100		0.0
2		100		0.0
3		100		0.0
4		100		0.0
5		100		0.0
6		100		0.0
7		100		0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-5
DATE COMPLETED: 28 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5			Chips					
	SAND, fine grained, well graded, loose, light brown, loose, trace silt, subangular to rounded gravel	346.50		8		100		0.0
11.0								
11.5	SILT, no plasticity, loose, brown, dry	345.44						
12.0				9		100		0.0
12.5								
13.0								
13.5	- compact, moist from 13.72 to 14.63m BGS			10		100		0.0
14.0								
14.5	- wet, trace pebbles (25 mm) from 14.63 to 17.68m BGS							
15.0								
15.5								
16.0				11		100		0.0
16.5								
17.0								
17.5								
18.0								
18.5				12		100		0.0
19.0	SILT AND GRAVEL, compact, brown, wet, trace sand, some pebbles (25 mm)	337.82						
19.5	SAND AND GRAVEL, well graded, compact,	337.21						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-5
DATE COMPLETED: 28 February 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5	saturated, dark grey to brown, some pebbles (25 mm), cobbles (25 mm -76 mm)		Sand Pack	13		100		0.0
21.0	- brown from 20.73 to 21.34m BGS		Well Screen					
21.5	CLAY, high plasticity, hard, brown, moist, trace subangular to rounded gravel	335.68						
22.0	- dark brown from 21.95 to 23.77m BGS			14		100		0.0
22.5			Natural Cave-In					
23.0								
23.5								
24.0	END OF BOREHOLE @ 23.77m BGS	333.24						
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

COMPLETION DETAILS
Screened interval:
337.05 to 335.53BGS
19.96 to 21.49m BGS
Length: 1.52m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
337.51 to 335.53BGS
19.51 to 21.49m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-6
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825036.73
EASTING: 534989.79

TOP OF CASING 360.43
TOP OF RISER 360.21
GROUND SURFACE 359.13

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0.0	TOPSOIL, dark brown, wet		Cement					
		358.83						
0.5	CLAY AND TOPSOIL, high plasticity, compact, brown, wet,	358.52		1		100		0.0
	CLAY, hight plasticity, compact, brown, wet, trace subangular to rounded gravel			CH-011				
1.0								
1.5	- rock from 1.52 to 1.83m BGS			2		100		0.0
	- very hard, dark brown, dry, medium plasticity from 1.83 to 2.44m BGS							
2.0								
2.5	SILTY CLAY, low plasticity, hard, brown, moist, some subangular to rounded gravel and pebbles (25 mm), cobbles (25mm - 76 mm)	356.69						
3.0				3		100		0.0
3.5								
4.0	CLAY, high plasticity, hard, brown, moist, trace subangular to rounded gravel	355.17						
4.5				4		100		0.0
5.0								
5.5	CLAYEY SILT, low plasticity, hard, brown, moist to dry, trace subangular to rounded gravel	353.64						
6.0				5		100		0.0
6.5								
7.0								
7.5				6		100		0.0
8.0	SAND, fine to medium grained, well graded, soft, brown, dry, trace silt	351.21						
8.5	- enven graded, compact from 8.53 to 16.15m BGS							
9.0				7		100		0.0
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (CH-011)

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211\2598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-6
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5								
11.0				8		100		0.0
11.5								
12.0			Bentonite Chips					
12.5				9		100		0.0
13.0								
13.5								
14.0				10		100		0.0
14.5								
15.0								
15.5				11		100		0.0
16.0	SILT, compact, brown, wet	342.98						
16.5								
17.0				12		100		0.0
17.5								
18.0								
18.5				13		100		0.0
19.0								
19.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

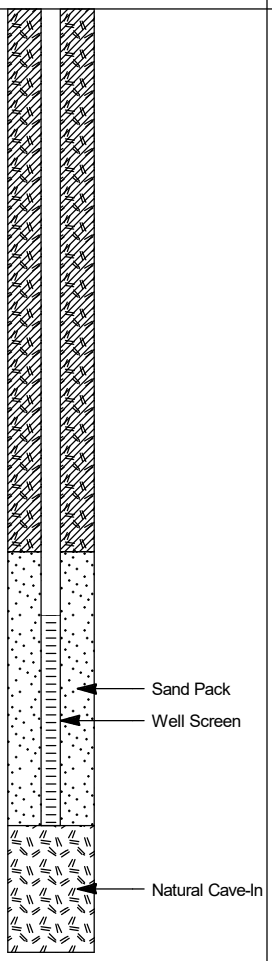
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-6
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
21.5	SAND and subangular to rounded GRAVEL and SILT, coarse grained, poorly graded, loose, saturated, brown, some pebbles (25 mm)	337.49
22.0	SAND, medium grained, even graded, soft, brown, saturated, trace subangular to rounded gravel, trace pebbles (25 mm)	336.88
24.0	- lens, poorly graded, saturated, coarse sand and subangular to rounded gravel, rock from 23.77 to 24.08m BGS	335.05
24.5	SAND AND GRAVEL, coarse grained, poorly graded, brown, saturated	
25.0	SAND, medium grained, even graded, brown, saturated	334.14
27.0	END OF BOREHOLE @ 26.82m BGS	332.31

MONITOR INSTALLATION



COMPLETION DETAILS
Screened interval:
334.75 to 333.22BGS
24.38 to 25.91m BGS
Length: 1.52m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
335.20 to 333.22BGS
23.93 to 25.91m BGS
Material: Silica

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
14		100		0.0
15		100		0.0
16		100		0.0
17		100		0.0
18		100		0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-7
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825011.62
EASTING: 534824.42

TOP OF CASING 362.19
TOP OF RISER 362.05
GROUND SURFACE 360.81

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0.0	TOPSOIL, wet	360.51
0.5	SILT AND CLAY, hight plasticity, hard, brown, moist	
1.0		
1.5	CLAY, hight plasticity, very hard, dark brown, dry, trace subangular to rounded gravel	359.44
2.0		
2.5	- moist from 2.44 to 2.74m BGS	358.07
3.0	SILT, low plasticity, very hard, brown, dry, trace clay, subangular to rounded gravel	
3.5		
4.0	SILTY CLAY, high plasticity, hard, brown, wet	356.85
4.5	CLAYEY SILT, low plasticity, hard, brown, moist to dry, some subangular to rounded gravel	356.24
5.0		
5.5	SILTY CLAY, high plasticity, compact, brown, saturated	355.33
6.0	SILT, low plasticity, hard, brown, wet, trace clay and subangular to rounded gravel	354.72
6.5	- moist from 6.40 to 7.32m BGS	
7.0	- rock from 7.01 to 7.47m BGS	
7.5	SAND, fine to medium grained, well graded, soft, brown, moist, trace pebbles (25 mm),	353.34
8.0	SANDY SILT, hard, brown, mosit to dry, trace clay, trace subangular to rounded gravel	353.04
8.5	CLAYEY SILT, no plasticity, hard, brown, dry, trace subangular to rounded gravel	352.28
9.0		
9.5	SILT and subangular to rounded GRAVEL,	351.06

MONITOR INSTALLATION: Cement; Bentonite Chips

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value	PID (ppm)
1		100		0.0
CH-010				
2		100		0.0
3		100		0.0
4		100		0.0
5		100		0.0
6		100		0.0
7		100		0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (CH-010)

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STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-7
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5	poorly graded, hard, brown, dry, trace fine sand	350.75						
	SANDY SILT, low plasticity, hard, brown to dark brown, moist, trace subangular to rounded gravel, possible organic staining	350.14						
11.0	SILT and subangular to rounede GRAVEL, no plasticity, hard, brown to light brown, dry, trace clay, some pebbles (25 mm)			8		100		0.0
11.5		349.23						
12.0	SANDY SILT and subangular to rounded GRAVEL, no plasticity, hard, brown to dark brown, moist to wet, trace clay, some pebbles (25 mm), possible organic staining			9		100		0.0
12.5								
13.0								
13.5	- dry, some pebbles (25 mm) from 13.41 to 14.63m BGS			10		100		0.0
14.0								
14.5		346.18						
15.0	SAND, fine to medium grained, well graded, compact, brown, dry, some subangular to rounded gravel and pebbles(25 mm)							
15.5				11		100		0.0
16.0								
16.5								
17.0				12		100		0.0
17.5	- soft, moist from 17.68 to 18.90m BGS							
18.0								
18.5				13		100		0.0
19.0	- wet from 18.90 to 19.20m BGS - saturated, trace silt from 19.20 to 20.73m BGS		Sand Pack Well Screen					
19.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-7
DATE COMPLETED: 9 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5				14		100		0.0
21.0	CLAY and subangular to rounded GRAVEL, plasticity, compact, brown, saturated	340.09						
21.5				15		100		0.0
22.0	SILT, low plasticity, compact, brown, wet, trace clay	338.87						
22.5			Natural Cave-In					
23.0				16		100		0.0
23.5								
	END OF BOREHOLE @ 23.77m BGS	337.04						
24.0			COMPLETION DETAILS Screened interval: 341.61 to 340.09BGS 19.20 to 20.73m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: Sch. 40 PVC Sand Pack: 342.22 to 339.48BGS 18.59 to 21.34m BGS Material: Silica					
24.5								
25.0								
25.5								
26.0								
26.5								
27.0								
27.5								
28.0								
28.5								
29.0								
29.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-8
DATE COMPLETED: 8 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

NORTHING: 4825217.14
EASTING: 534803.18

TOP OF CASING 364.39
TOP OF RISER 364.24
GROUND SURFACE 363.21

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' Value	PID (ppm)
0.0	TOPSOIL, wet		Cement					
	SILTY CLAY, high plasticity, hard, brown, moist to wet	362.91		1		100		0.0
				CH-009				
1.0				2		100		0.0
2.0	- trace gravel from 2.13 to 2.44m BGS - some subanaguler to rounded gravel from 2.44 to 4.88m BGS							
3.0				3		100		0.0
3.5	- rock at 3.66m BGS							
4.0				4		100		0.0
5.0	SILT and subangular to rounded GRAVEL, hard, brown, dry	358.34						
5.5		357.42						
6.0	SILT, no plastic, hard, brown, moist			5		100		0.0
7.0	- dry, trace clay, some subangular to rounded gravel from 7.01 to 8.53m BGS							
8.0				6		100		0.0
8.5	- some pebbles (25 mm) from 8.23 to 8.53m BGS - moist from 8.53 to 10.06m BGS							
9.0				7		100		0.0
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-8
DATE COMPLETED: 8 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
10.5			Bentonite Chips					
11.0				8		100		0.0
11.5	- moist to dry from 11.58 to 13.11m BGS							
12.0				9		100		0.0
12.5								
13.0	- dry, increase gravel content to clay from 13.11 to 14.63m BGS							
13.5				10		100		0.0
14.0								
14.5	SANDY SILT AND subangular to rounded GRAVEL, hard, brown, dry	348.58						
15.0								
15.5				11		100		0.0
16.0	SILTY SAND, fine grained, even graded, compact, brown, dry, some subangular to rounded gravel and pebbles (25 mm)	347.06						
16.5								
17.0				12		100		0.0
17.5	- increase medium sand content from 17.37 to 17.68m BGS							
18.0	SAND, fine to medium grained, well graded, soft, brown, moist, trace silt and subangular to rounded gravel, trace pebbles (25 mm)	345.54						
18.5				13		100		0.0
19.0								
19.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66211259891 3\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Phase Two ESA
PROJECT NUMBER: 12598913
CLIENT: Schlegel Urban Developments
LOCATION: Listowel Road and Arthur Street South, Elmira, Ontario

HOLE DESIGNATION: UA-8
DATE COMPLETED: 8 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: C. Heij

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
20.5				14		100		0.0
21.0	SILTY SAND, fine grained, even graded, compact to soft, brown, saturated,	342.49						
21.5				15		100		0.0
22.0			Sand Pack Well Screen					
22.5								
23.0				16		100		0.0
23.5	- trace clay from 23.77 to 25.30m BGS							
24.0								
24.5				17		100		0.0
25.0			Natural Cave-In					
25.5	CLAYEY SILT, low plasticity, hard, brown, wet	337.61						
26.0				18		100		0.0
26.5								
27.0	END OF BOREHOLE @ 26.82m BGS	336.39						
27.5								
28.0								
28.5								
29.0								
29.5								

COMPLETION DETAILS
Screened interval:
341.88 to 340.35BGS
21.34 to 22.86m BGS
Length: 1.52m
Diameter: 51mm
Slot Size: #10
Material: Sch. 40 PVC
Sand Pack:
342.49 to 339.74BGS
20.73 to 23.47m BGS
Material: Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66212\12598913\WORKSHARE\12598913-FLD\12598913-FLD-GINT\12598913-COMBINE.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 7/6/23

Appendix D

Analytical Data Reports

CERTIFICATE OF ANALYSIS

Work Order	: **WT2225373**	Page	: 1 of 25
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 16-Dec-2022 14:20
PO	: 735-005299	Date Analysis Commenced	: 17-Dec-2022
C-O-C number	: ----	Issue Date	: 05-Jan-2023 11:32
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299		
No. of samples received	: 14		
No. of samples analysed	: 14		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Connor Randall	Analyst	Inorganics, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Metals, Waterloo, Ontario
Robert Braun	Soils Team Supervisor	Inorganics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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
°C	degrees celsius
µg/L	micrograms per litre
m/sec	metres per second
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mm/sec	millimetres per second
mS/cm	millisiemens per centimetre
none	none
pH units	pH units
sec	seconds

>: greater than.
<: 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*
AI	*Analytical interferences may be present. Result may be biased high.*
DLHM	*Detection Limit Adjusted: Sample has high moisture content.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
FR4	*As per applicable reference method(s), soil:water ratio for Fixed Ratio Leach was modified to 1:4 due to high soil organic content.*
FR5	*As per applicable reference method(s), soil:water ratio for Fixed Ratio Leach was modified to 1:5 due to high soil organic content*

Analytical Results

WT2225373-001

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

Client sample ID: S-12598913-121622-JPF-001
Client sampling date / time: 16-Dec-2022 08:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	1.71	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	21.8	0.25	%	E144	-	20-Dec-2022	785024
pH (1:2 soil:CaCl2-aq)	----	6.45	0.10	pH units	E108A	20-Dec-2022	21-Dec-2022	784155
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	19-Dec-2022	20-Dec-2022	783666
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	182	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	45.7	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	50.1	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.86	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.11	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	3.92	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	77.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.62	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	5.4	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	1.15	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.352	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	17.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	6.04	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	14.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	11.5	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0543	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.43	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	12.5	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.46	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.101	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.493	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	30.5	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	72.8	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	21-Dec-2022	783000
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306

Analytical Results

WT2225373-001

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-001

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 08:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	71.2	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene-d12	1719-03-5	72.4	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene-d8	1146-65-2	80.2	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene-d10	1517-22-2	80.9	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306

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

Analytical Results

WT2225373-002

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-002

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	1.59	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	29.1	0.25	%	E144	-	20-Dec-2022	785024
pH (1:2 soil:CaCl2-aq)	----	6.20	0.10	pH units	E108A	20-Dec-2022	21-Dec-2022	784155
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	19-Dec-2022	20-Dec-2022	783666
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	123	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	59.1	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	40.7	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.75	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.18	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	4.97	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	45.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.45	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	9.6	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	2.19	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.387	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	14.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	5.23	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	18.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	13.5	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0366	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975

Analytical Results

WT2225373-002

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

Client sample ID: S-12598913-121622-JPF-002
Client sampling date / time: 16-Dec-2022 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
molybdenum	7439-98-7	0.83	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	10.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.41	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.086	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.659	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	25.7	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	141	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(a)pyrene	50-32-8	0.086	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(b+j)fluoranthene	n/a	0.118	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(g,h,i)perylene	191-24-2	0.095	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene	218-01-9	0.076	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluoranthene	206-44-0	0.057	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
indeno(1,2,3-c,d)pyrene	193-39-5	0.070	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
pyrene	129-00-0	0.060	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	89.4	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene-d12	1719-03-5	73.8	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene-d8	1146-65-2	89.8	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene-d10	1517-22-2	93.3	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306

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

Analytical Results

WT2225373-003

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

Client sample ID: S-12598913-121622-JPF-003
Client sampling date / time: 16-Dec-2022 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								

Analytical Results

WT2225373-003

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-003

Client sampling date / time: 16-Dec-2022 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	1.58	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	26.8	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	6.18	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	19-Dec-2022	20-Dec-2022	783666
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	124	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	63.0	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	42.9	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.78	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.18	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	4.68	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	46.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.42	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	10.5	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	2.24	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.428	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	13.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	5.00	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	19.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	13.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0357	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.86	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	10.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.35	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.083	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.652	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	25.0	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	163	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.054	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.074	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.064	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.055	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009

Analytical Results

WT2225373-003

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-003

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.014 DLM	0.014	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	81.0	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	78.1	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	87.5	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	87.7	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-004

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-004

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 09:20

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	0.914	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	22.0	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	6.38	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	19-Dec-2022	20-Dec-2022	783666
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	492	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	65.6	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	16.5	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.18	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.16	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	5.36	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	49.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.46	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	10.6	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	1.33	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.320	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	15.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	5.71	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	15.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	13.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0368	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975

Analytical Results

WT2225373-004

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

Client sample ID: S-12598913-121622-JPF-004
Client sampling date / time: 16-Dec-2022 09:20

Analyte	CAS Number	Result		LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals									
molybdenum	7439-98-7	0.63		0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	11.1		0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.35		0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10		0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.090		0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.670		0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	28.4		0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	96.7		2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals									
chromium, hexavalent [Cr VI]	18540-29-9	<0.10		0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Polycyclic Aromatic Hydrocarbons									
acenaphthene	83-32-9	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.150		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.211		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.144		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	0.084		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.084	AI.	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	0.051		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	0.130		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030		0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050		0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030		0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.014	DLM.	0.014	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	<0.050		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	0.064		0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates									
acridine-d9	34749-75-2	82.3		0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	75.8		0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	84.8		0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	86.6		0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-005

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

Client sample ID: S-12598913-121622-JPF-005
Client sampling date / time: 16-Dec-2022 09:30

Analyte	CAS Number	Result		LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									

Analytical Results

WT2225373-005

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-005

Client sampling date / time: 16-Dec-2022 09:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	1.23	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	23.8	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	6.32	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	19-Dec-2022	20-Dec-2022	783666
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	94.4	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	33.7	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	28.8	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.65	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.16	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	4.96	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	46.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.42	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	8.2	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	1.80	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.327	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	14.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	5.16	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	18.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	13.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0403	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.69	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	10.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.33	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.085	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.685	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	26.5	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	112	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.084	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.058 AL	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009

Analytical Results

WT2225373-005

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

Client sample ID: S-12598913-121622-JPF-005
Client sampling date / time: 16-Dec-2022 09:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.014 DLM	0.014	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	80.0	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	80.2	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	85.7	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	88.4	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-006

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

Client sample ID: S-12598913-121622-JPF-006
Client sampling date / time: 16-Dec-2022 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	2.76	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	35.0	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	5.96	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	333	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	71.9	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	20.6	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	0.27	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.12	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	3.95	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	73.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.54	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	6.4	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	1.42	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.758	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	16.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	4.99	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	18.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	10.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0978	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975

Analytical Results

WT2225373-006

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

Client sample ID: S-12598913-121622-JPF-006
Client sampling date / time: 16-Dec-2022 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
molybdenum	7439-98-7	0.44	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	12.8	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	1.06	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	0.11	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.100	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.572	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	27.6	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	67.4	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	84.2	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	99.6	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	108	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	108	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-007

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

Client sample ID: S-12598913-121622-JPF-007
Client sampling date / time: 16-Dec-2022 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								

Analytical Results

WT2225373-007

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-007

Client sampling date / time: 16-Dec-2022 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	3.79	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	44.3	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	7.38	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	59.7	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	5.49	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	771	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	25.6	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.45	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	2.75	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	44.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.34	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	7.3	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.39	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.200	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	20.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	4.00	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	26.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	10.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0263	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.54	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	10.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.22	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.066	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.430	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	19.8	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	108	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0050	0.0050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	383	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008

Analytical Results

WT2225373-007

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-007

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	378	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	498	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F4G-sg	----	2070	250	mg/kg	E601.F4G-L	05-Jan-2023	05-Jan-2023	790305
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	881	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	NO	-	-	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	85.0	1.0	%	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
dichlorotoluene, 3,4-	97-75-0	68.1	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	82.4	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	94.5	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	0.057	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	0.308	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.567	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.843	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.454	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	0.327	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.633	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	0.060	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	1.34	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	0.416	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.016 DLM	0.016	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	0.462	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	1.07	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	80.5	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	78.7	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	86.8	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	88.2	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-008

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-008

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 11:45

Analytical Results

WT2225373-008

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-008

Client sampling date / time: 16-Dec-2022 11:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	5.78 FR5.	0.0100	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	62.2	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	7.13	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	164	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	8.14	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	872	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	18.0	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.52	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	4.90	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	92.9	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.79	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	13.0	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.41 DLM, FR4.	0.20	mg/kg	E487	29-Dec-2022	29-Dec-2022	786559
cadmium	7440-43-9	0.337	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	29.8	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	9.08	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	33.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	17.2	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0452	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.60	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	21.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.29	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.170	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.582	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	40.5	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	136	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0061 DLHM,	0.0061	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<12 DLHM,	12	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	404	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008

Analytical Results

WT2225373-008

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

Client sample ID: S-12598913-121622-JPF-008
Client sampling date / time: 16-Dec-2022 11:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	402	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	399	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F4G-sg	----	1540	260	mg/kg	E601.F4G-L	05-Jan-2023	05-Jan-2023	790305
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	803	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	NO	-	-	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	89.0	1.5	%	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
dichlorotoluene, 3,4-	97-75-0	71.0	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	81.7	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	93.9	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	0.087	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.181	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.333	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.184	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	0.130	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.255	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	0.456	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	0.165	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.030 DLM	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	0.113	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	0.380	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	84.9	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	81.4	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	89.5	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	91.2	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-009

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

Client sample ID: S-12598913-121622-JPF-009
Client sampling date / time: 16-Dec-2022 12:05

Analytical Results

WT2225373-009

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-009

Client sampling date / time: 16-Dec-2022 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	4.86 FR5,	0.0100	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	62.0	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	7.00	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	91.9	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	5.90	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	479	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	13.1	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.55	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	6.25	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	108	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.91	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	13.9	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.32	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.410	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	34.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	10.4	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	35.3	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	21.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0559	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.68	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	24.6	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.43	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.203	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.742	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	46.6	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	154	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0062 DLHM,	0.0062	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.016 DLHM,	0.016	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<12 DLHM,	12	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	407	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008

Analytical Results

WT2225373-009

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-009

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	406	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	367	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F4G-sg	----	1350	260	mg/kg	E601.F4G-L	05-Jan-2023	05-Jan-2023	790305
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	774	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	NO	-	-	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	91.8	1.5	%	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
dichlorotoluene, 3,4-	97-75-0	75.2	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	84.0	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	95.6	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.084	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.156	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.094	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	0.061	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.128	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	0.204	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	0.082	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.030 DLM	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	0.055	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	0.156	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	85.6	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	84.0	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	90.4	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	91.0	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-010

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-010

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 12:05

Analytical Results

WT2225373-010

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-010

Client sampling date / time: 16-Dec-2022 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	5.04 FR5,	0.0100	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	62.8	0.25	%	E144	-	20-Dec-2022	785010
pH (1:2 soil:CaCl2-aq)	----	7.02	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785007
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	99.0	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	5.41	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	498	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	13.2	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.57	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	6.30	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	106	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.89	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	13.9	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.27	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.430	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	33.8	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	10.7	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	35.2	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	22.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0552	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.69	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	24.8	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.44	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.209	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.765	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	47.2	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	156	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0064 DLHM,	0.0064	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.016 DLHM,	0.016	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<12 DLHM,	12	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	411	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008

Analytical Results

WT2225373-010

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

Client sample ID: S-12598913-121622-JPF-010
Client sampling date / time: 16-Dec-2022 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	410	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	354	50	mg/kg	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
F4G-sg	----	1630	260	mg/kg	E601.F4G-L	05-Jan-2023	05-Jan-2023	790305
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	765	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	NO	-	-	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	88.2	1.4	%	E601.SG-L	23-Dec-2022	05-Jan-2023	785008
dichlorotoluene, 3,4-	97-75-0	71.3	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	83.1	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	96.2	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(a)pyrene	50-32-8	0.082	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(b+j)fluoranthene	n/a	0.162	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(g,h,i)perylene	191-24-2	0.095	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
benzo(k)fluoranthene	207-08-9	0.069	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene	218-01-9	0.136	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluoranthene	206-44-0	0.218	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
indeno(1,2,3-c,d)pyrene	193-39-5	0.090	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene	91-20-3	<0.029 DLM	0.029	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene	85-01-8	0.056	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
pyrene	129-00-0	0.168	0.050	mg/kg	E641A	23-Dec-2022	05-Jan-2023	785009
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	82.5	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
chrysene-d12	1719-03-5	80.8	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
naphthalene-d8	1146-65-2	86.4	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009
phenanthrene-d10	1517-22-2	88.6	0.1	%	E641A	23-Dec-2022	05-Jan-2023	785009

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

Analytical Results

WT2225373-011

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

Client sample ID: S-12598913-121622-JPF-011
Client sampling date / time: 16-Dec-2022 12:25

Analytical Results

WT2225373-011

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-011

Client sampling date / time: 16-Dec-2022 12:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	0.283	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	22.4	0.25	%	E144	-	21-Dec-2022	785110
pH (1:2 soil:CaCl2-aq)	----	7.47	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785292
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	21.4	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	2.12	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	27.5	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	1.52	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.19	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	4.79	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	62.6	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.60	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	6.7	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.27	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.318	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	19.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	6.53	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	15.8	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	14.5	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0534	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.35	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	14.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.21	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.113	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.534	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	32.0	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	73.8	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0050	0.0050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307

Analytical Results

WT2225373-011

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

Client sample ID: S-12598913-121622-JPF-011
Client sampling date / time: 16-Dec-2022 12:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	<50	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	87.5	1.0	%	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
dichlorotoluene, 3,4-	97-75-0	70.7	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	84.9	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	98.8	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	88.4	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene-d12	1719-03-5	73.3	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene-d8	1146-65-2	82.6	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene-d10	1517-22-2	89.1	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306

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

Analytical Results

WT2225373-012

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

Client sample ID: S-12598913-121622-JPF-012
Client sampling date / time: 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot

Analytical Results

WT2225373-012

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-012

Client sampling date / time: 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
conductivity (1:2 leachate)	----	1.10	0.00500	mS/cm	E100-L	21-Dec-2022	03-Jan-2023	783978
Moisture	----	46.8	0.25	%	E144	-	21-Dec-2022	785110
pH (1:2 soil:CaCl2-aq)	----	7.25	0.10	pH units	E108A	21-Dec-2022	22-Dec-2022	785292
Cyanides								
cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	20-Dec-2022	21-Dec-2022	783959
Fixed-Ratio Extractables								
calcium, soluble ion content	7440-70-2	36.1	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
magnesium, soluble ion content	7439-95-4	5.52	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium, soluble ion content	17341-25-2	113	0.50	mg/L	E484	21-Dec-2022	21-Dec-2022	783977
sodium adsorption ratio [SAR]	----	4.63	0.10	-	E484	21-Dec-2022	21-Dec-2022	783977
Metals								
antimony	7440-36-0	0.31	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
arsenic	7440-38-2	5.32	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
barium	7440-39-3	84.7	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
beryllium	7440-41-7	0.72	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron	7440-42-8	10.3	5.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
boron, hot water soluble	7440-42-8	0.39	0.10	mg/kg	E487	21-Dec-2022	21-Dec-2022	783979
cadmium	7440-43-9	0.298	0.020	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
chromium	7440-47-3	25.5	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
cobalt	7440-48-4	8.46	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Copper	7440-50-8	23.1	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
lead	7439-92-1	16.4	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
mercury	7439-97-6	0.0461	0.0050	mg/kg	E510	21-Dec-2022	21-Dec-2022	783975
molybdenum	7439-98-7	0.39	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
nickel	7440-02-0	19.0	0.50	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
selenium	7782-49-2	0.28	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
thallium	7440-28-0	0.142	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
uranium	7440-61-1	0.488	0.050	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
vanadium	7440-62-2	37.1	0.20	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
zinc	7440-66-6	109	2.0	mg/kg	E440	21-Dec-2022	21-Dec-2022	783976
Speciated Metals								
chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	19-Dec-2022	20-Dec-2022	783790
Volatile Organic Compounds								
benzene	71-43-2	<0.0050	0.0050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
F2-naphthalene	----	<25	25	mg/kg	EC600	-	29-Dec-2022	-
F3 (C16-C34)	----	69	50	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307

Analytical Results

WT2225373-012

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

Client sample ID: S-12598913-121622-JPF-012
Client sampling date / time: 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3-PAH	n/a	69	50	mg/kg	EC600	-	29-Dec-2022	-
F4 (C34-C50)	----	69	50	mg/kg	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
hydrocarbons, total (C6-C50)	----	138	80	mg/kg	EC581	-	22-Dec-2022	-
chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	85.2	1.0	%	E601.SG-L	21-Dec-2022	30-Dec-2022	785307
dichlorotoluene, 3,4-	97-75-0	74.0	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	83.8	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	96.5	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	21-Dec-2022	28-Dec-2022	785306
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	91.9	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
chrysene-d12	1719-03-5	73.4	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
naphthalene-d8	1146-65-2	85.1	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306
phenanthrene-d10	1517-22-2	90.2	0.1	%	E641A	21-Dec-2022	28-Dec-2022	785306

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

Analytical Results

WT2225373-013

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

Client sample ID: S-12598913-121622-JPF-013
Client sampling date / time: 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot

Analytical Results

WT2225373-013

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-121622-JPF-013

Client sampling date / time: 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
ignitability	----	Negative	-	none	E209	-	17-Dec-2022	-
sample comment	----	BROWN SEDIMENT WITH ORGANIC DEBRIS	-	none	E209	-	17-Dec-2022	-
time to ignition	----	Not Determined	1	sec	E209	-	17-Dec-2022	-
burning rate	----	Not Determined	0.01	mm/sec	E209	-	17-Dec-2022	-
temperature of test material	----	20.0	1.0	°C	E209	-	17-Dec-2022	-
air velocity of fume hood	----	0.43	0.10	m/sec	E209	-	17-Dec-2022	-
TCLP Anions & Nutrients								
nitrate + nitrite (as N), TCLP	----	<7.50	7.5	mg/L	EC240.N+N	-	21-Dec-2022	-
TCLP Extractables								
benzo(a)pyrene, TCLP	50-32-8	<0.00050	0.00050	mg/L	E644	20-Dec-2022	21-Dec-2022	784701
cyanide, weak acid dissociable, TCLP	----	<0.10	0.10	mg/L	E337A	20-Dec-2022	20-Dec-2022	784609
fluoride, TCLP	16984-48-8	<10	10	mg/L	E240.F	20-Dec-2022	20-Dec-2022	784454
nitrate (as N), TCLP	14797-55-8	<5.0	5.0	mg/L	E240.NO3	20-Dec-2022	20-Dec-2022	784452
nitrite (as N), TCLP	14797-65-0	<5.0	5.0	mg/L	E240.NO2	20-Dec-2022	20-Dec-2022	784453
TCLP Extractables Surrogates								
chrysene-d12, TCLP	1719-03-5	96.6	5.0	%	E644	20-Dec-2022	21-Dec-2022	784701
naphthalene-d8, TCLP	1146-65-2	86.5	5.0	%	E644	20-Dec-2022	21-Dec-2022	784701
phenanthrene-d10, TCLP	1517-22-2	108	5.0	%	E644	20-Dec-2022	21-Dec-2022	784701
TCLP Metals								
arsenic, TCLP	7440-38-2	<1.0	1.0	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
barium, TCLP	7440-39-3	<2.5	2.5	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
boron, TCLP	7440-42-8	<0.50	0.50	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
cadmium, TCLP	7440-43-9	<0.050	0.050	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
chromium, TCLP	7440-47-3	<0.25	0.25	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
lead, TCLP	7439-92-1	<0.25	0.25	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
mercury, TCLP	7439-97-6	<0.0010	0.0010	mg/L	E512	20-Dec-2022	20-Dec-2022	784053
pH, TCLP 1st preliminary	----	8.62	0.010	pH units	EPP444	-	19-Dec-2022	-
pH, TCLP 2nd preliminary	----	5.38	0.010	pH units	EPP444	-	19-Dec-2022	-
pH, TCLP extraction fluid initial	----	2.88	0.010	pH units	EPP444	-	19-Dec-2022	-
pH, TCLP final	----	4.84	0.010	pH units	EPP444	-	19-Dec-2022	-
selenium, TCLP	7782-49-2	<0.10	0.10	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
silver, TCLP	7440-22-4	<0.050	0.050	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
uranium, TCLP	7440-61-1	<0.20	0.20	mg/L	E444	20-Dec-2022	20-Dec-2022	784032
TCLP VOCs								
benzene, TCLP	71-43-2	<0.0050	0.0050	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
carbon tetrachloride, TCLP	56-23-5	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
chlorobenzene, TCLP	108-90-7	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
chloroform, TCLP	67-66-3	<0.10	0.10	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
dichlorobenzene, 1,2-, TCLP	95-50-1	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
dichlorobenzene, 1,4-, TCLP	106-46-7	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
dichloroethane, 1,2-, TCLP	107-06-2	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024

Analytical Results

WT2225373-013

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-12598913-121622-JPF-013

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
TCLP VOCs								
dichloroethylene, 1,1-, TCLP	75-35-4	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
dichloromethane, TCLP	75-09-2	<0.10	0.10	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
methyl ethyl ketone [MEK], TCLP	78-93-3	<0.10	0.10	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
tetrachloroethylene, TCLP	127-18-4	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
trichloroethylene, TCLP	79-01-6	<0.025	0.025	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
vinyl chloride, TCLP	75-01-4	<0.050	0.050	mg/L	E615B	20-Dec-2022	20-Dec-2022	784024
TCLP VOCs Surrogates								
bromofluorobenzene, 4-, TCLP	460-00-4	89.1	1.0	%	E615B	20-Dec-2022	20-Dec-2022	784024
difluorobenzene, 1,4-, TCLP	540-36-3	127	1.0	%	E615B	20-Dec-2022	20-Dec-2022	784024

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

Analytical Results

WT2225373-014

Sub-Matrix:**Soil/Solid** *Client sample ID:* TRIP BLANK-20221216

(Matrix: **Soil/Solid**) *Client sampling date / time:* 16-Dec-2022 00:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	<0.25	0.25	%	E144	-	20-Dec-2022	784515
Volatile Organic Compounds								
benzene	71-43-2	<0.0050	0.0050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
toluene	108-88-3	<0.050	0.050	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
BTEX, total	----	<0.10	0.1	mg/kg	E611A	20-Dec-2022	21-Dec-2022	784606
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	20-Dec-2022	21-Dec-2022	784607
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	22-Dec-2022	-
Hydrocarbons Surrogates								
dichlorotoluene, 3,4-	97-75-0	84.0	1.0	%	E581.F1	20-Dec-2022	21-Dec-2022	784607
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	97.4	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606
difluorobenzene, 1,4-	540-36-3	112	0.10	%	E611A	20-Dec-2022	21-Dec-2022	784606

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2225373**	Page	: 1 of 28
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 16-Dec-2022 14:20
PO	: 735-005299	Issue Date	: 05-Jan-2023 11:33
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299		
No. of samples received	: 14		
No. of samples analysed	: 14		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E336A	16-Dec-2022	19-Dec-2022	14 days	3 days	✓	20-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E336A	16-Dec-2022	19-Dec-2022	14 days	3 days	✓	20-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E336A	16-Dec-2022	19-Dec-2022	14 days	3 days	✓	20-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E336A	16-Dec-2022	19-Dec-2022	14 days	3 days	✓	20-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E336A	16-Dec-2022	19-Dec-2022	14 days	3 days	✓	20-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E336A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	14 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E484	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-121622-JPF-007	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-008	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-009	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-010	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-011	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-012	E581.F1	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] TRIP BLANK-20221216	E581.F1	16-Dec-2022	20-Dec-2022	14 days	5 days	✓	21-Dec-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry (Low Level)										
Glass soil jar/Teflon lined cap S-12598913-121622-JPF-007	E601.F4G-L	16-Dec-2022	05-Jan-2023	14 days	20 days	× EHT	05-Jan-2023	27 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry (Low Level)										
Glass soil jar/Teflon lined cap S-12598913-121622-JPF-008	E601.F4G-L	16-Dec-2022	05-Jan-2023	14 days	20 days	× EHT	05-Jan-2023	27 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry (Low Level)										
Glass soil jar/Teflon lined cap S-12598913-121622-JPF-009	E601.F4G-L	16-Dec-2022	05-Jan-2023	14 days	20 days	× EHT	05-Jan-2023	27 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F4G by Gravimetry (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E601.F4G-L	16-Dec-2022	05-Jan-2023	14 days	20 days	× EHT	05-Jan-2023	27 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E601.SG-L	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	30-Dec-2022	40 days	9 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E601.SG-L	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	30-Dec-2022	40 days	9 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E601.SG-L	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	29-Dec-2022	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E601.SG-L	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	29-Dec-2022	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E601.SG-L	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	29-Dec-2022	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E601.SG-L	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	29-Dec-2022	40 days	6 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E487	16-Dec-2022	29-Dec-2022	180 days	13 days	✓	29-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E487	16-Dec-2022	21-Dec-2022	180 days	5 days	✓	21-Dec-2022	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E510	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	28 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E440	16-Dec-2022	21-Dec-2022	----	----		21-Dec-2022	180 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E100-L	16-Dec-2022	21-Dec-2022	----	----		28-Dec-2022	30 days	12 days	✓
Physical Tests : Ignitability (O. Reg. 347/558)										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-013	E209	16-Dec-2022	----	----	----		17-Dec-2022	30 days	1 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E144	16-Dec-2022	----	----	----		21-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E144	16-Dec-2022	----	----	----		21-Dec-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil methanol vial [ON MECP]										
TRIP BLANK-20221216	E144	16-Dec-2022	----	----	----		20-Dec-2022	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E108A	16-Dec-2022	20-Dec-2022	----	----		21-Dec-2022	30 days	5 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E108A	16-Dec-2022	20-Dec-2022	----	----		21-Dec-2022	30 days	5 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E108A	16-Dec-2022	21-Dec-2022	----	----		22-Dec-2022	30 days	6 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E641A	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	28-Dec-2022	40 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E641A	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	28-Dec-2022	40 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E641A	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	28-Dec-2022	40 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E641A	16-Dec-2022	21-Dec-2022	14 days	5 days	✓	28-Dec-2022	40 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E641A	16-Dec-2022	23-Dec-2022	14 days	7 days	✓	28-Dec-2022	40 days	5 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-002	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-003	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-004	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-005	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-006	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-007	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-008	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-009	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-010	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-011	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-012	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	20-Dec-2022	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-121622-JPF-001	E532	16-Dec-2022	19-Dec-2022	30 days	3 days	✓	21-Dec-2022	7 days	2 days	✓
TCLP Extractables : Fluoride by IC (TCLP)										
HDPE [ON MECP]										
S-12598913-121622-JPF-013	E240.F	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	28 days	4 days	✓
TCLP Extractables : Nitrate by IC (TCLP)										
HDPE [ON MECP]										
S-12598913-121622-JPF-013	E240.NO3	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	7 days	4 days	✓
TCLP Extractables : Nitrite by IC (TCLP)										
HDPE [ON MECP]										
S-12598913-121622-JPF-013	E240.NO2	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	7 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
TCLP Extractables : PAHs by GC-MS (TCLP)										
UV-inhibited HDPE - total (sodium hydroxide)										
S-12598913-121622-JPF-013	E644	19-Dec-2022	20-Dec-2022	17 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
TCLP Extractables : WAD Cyanide (TCLP)										
UV-inhibited HDPE - total (sodium hydroxide)										
S-12598913-121622-JPF-013	E337A	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	14 days	4 days	✓
TCLP Metals : Mercury by CVAAS (TCLP)										
Glass vial - total (lab preserved)										
S-12598913-121622-JPF-013	E512	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	28 days	4 days	✓
TCLP Metals : Metals by CRC ICPMS (TCLP)										
HDPE - total (lab preserved)										
S-12598913-121622-JPF-013	E444	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	180 days	4 days	✓
TCLP Metals : TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)										
Lab Split - Non-Volatile Leach: 14 day HT (e.g. CN, SVOC, NOx)										
S-12598913-121622-JPF-013	EPP444	16-Dec-2022	19-Dec-2022	----	----		----	----	----	
TCLP VOCs : VOCs by Headspace GC-MS (TCLP)										
Glass vial (sodium bisulfate)										
S-12598913-121622-JPF-013	E615B	19-Dec-2022	20-Dec-2022	----	----		20-Dec-2022	14 days	4 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-121622-JPF-007	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-121622-JPF-008	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-121622-JPF-009	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-010	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-011	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-12598913-121622-JPF-012	E611A	16-Dec-2022	20-Dec-2022	14 days	4 days	✓	21-Dec-2022	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP] TRIP BLANK-20221216	E611A	16-Dec-2022	20-Dec-2022	14 days	5 days	✓	21-Dec-2022	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	783979	2	32	6.2	5.0	✓
BTEX by Headspace GC-MS	E611A	784606	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	784607	1	20	5.0	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	790305	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	785008	2	32	6.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	783978	1	20	5.0	5.0	✓
Fluoride by IC (TCLP)	E240.F	784454	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	783000	2	39	5.1	5.0	✓
Mercury by CVAAS (TCLP)	E512	784053	1	6	16.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	783975	1	20	5.0	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	784032	1	6	16.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	783976	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	784515	4	80	5.0	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	784452	1	4	25.0	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	784453	1	4	25.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	784701	1	6	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	785009	2	20	10.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	784155	3	60	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	783977	1	20	5.0	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	784024	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	783666	2	40	5.0	5.0	✓
WAD Cyanide (TCLP)	E337A	784609	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	783979	4	32	12.5	10.0	✓
BTEX by Headspace GC-MS	E611A	784606	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	784607	1	20	5.0	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	790305	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	785008	2	32	6.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	783978	2	20	10.0	10.0	✓
Fluoride by IC (TCLP)	E240.F	784454	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	783000	4	39	10.2	10.0	✓
Mercury by CVAAS (TCLP)	E512	784053	1	6	16.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	783975	2	20	10.0	10.0	✓
Metals by CRC ICPMS (TCLP)	E444	784032	1	6	16.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	783976	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	784515	4	80	5.0	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Nitrate by IC (TCLP)	E240.NO3	784452	1	4	25.0	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	784453	1	4	25.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	784701	1	6	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	785009	2	20	10.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	784155	3	60	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	783977	2	20	10.0	10.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	784024	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	783666	2	40	5.0	5.0	✓
WAD Cyanide (TCLP)	E337A	784609	1	4	25.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	783979	2	32	6.2	5.0	✓
BTEX by Headspace GC-MS	E611A	784606	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	784607	1	20	5.0	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	790305	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	785008	2	32	6.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	783978	1	20	5.0	5.0	✓
Fluoride by IC (TCLP)	E240.F	784454	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	783000	2	39	5.1	5.0	✓
Mercury by CVAAS (TCLP)	E512	784053	1	6	16.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	783975	1	20	5.0	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	784032	1	6	16.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	783976	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	784515	4	80	5.0	5.0	✓
Nitrate by IC (TCLP)	E240.NO3	784452	1	4	25.0	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	784453	1	4	25.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	784701	1	6	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	785009	2	20	10.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	783977	1	20	5.0	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	784024	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	783666	2	40	5.0	5.0	✓
WAD Cyanide (TCLP)	E337A	784609	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	784606	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	784607	1	20	5.0	5.0	✓
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L	790305	0	4	0.0	5.0	×
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	785008	2	32	6.2	5.0	✓
Fluoride by IC (TCLP)	E240.F	784454	1	4	25.0	5.0	✓
Mercury by CVAAS (TCLP)	E512	784053	1	6	16.6	5.0	✓
Metals by CRC ICPMS (TCLP)	E444	784032	1	6	16.6	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Nitrate by IC (TCLP)	E240.NO3	784452	1	4	25.0	5.0	✓
Nitrite by IC (TCLP)	E240.NO2	784453	1	4	25.0	5.0	✓
PAHs by GC-MS (TCLP)	E644	784701	1	6	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	785009	2	20	10.0	5.0	✓
VOCs by Headspace GC-MS (TCLP)	E615B	784024	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	783666	2	40	5.0	5.0	✓
WAD Cyanide (TCLP)	E337A	784609	1	4	25.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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.
Ignitability (O. Reg. 347/558)	E209 Waterloo - Environmental	Soil/Solid	EPA 1030 (mod)	Ignitability is determined by placing a sample on a ceramic tile and formed into a test strip. One end of the strip is then heated with a torch. Any burn rate for non-metallic samples that exceeds 2.2 mm/sec is considered to have a positive result. For metals, a burn rate of more than 0.17 mm/sec is considered to have a positive result.
Fluoride by IC (TCLP)	E240.F Waterloo - Environmental	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 Ion Chromatography with conductivity and/or UV detection.
Nitrite by IC (TCLP)	E240.NO2 Waterloo - Environmental	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 Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (TCLP)	E240.NO3 Waterloo - Environmental	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 Ion Chromatography with conductivity and/or UV detection.
WAD Cyanide (0.01M NaOH Extraction)	E336A Waterloo - Environmental	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.
WAD Cyanide (TCLP)	E337A Waterloo - Environmental	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Metals by CRC ICPMS (TCLP)	E444 Waterloo - Environmental	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.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Mercury by CVAAS (TCLP)	E512 Waterloo - Environmental	Soil/Solid	SW 846 -1311/245.1 CVAA ON TCLP LEACHATE	An extract produced by the Toxicity Characteristic Leachate Procedure (TCLP) as per EPA 1311 is analyzed by CVAAS.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F4G by Gravimetry (Low Level)	E601.F4G-L Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	A portion of the silica gel treated sample extract is filtered and dried at 105°C and the mass of the residual gravimetric heavy hydrocarbons (F4G) is determined gravimetrically.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
BTEX by Headspace GC-MS	E611A Waterloo - 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 the headspace in accordance with Henry's law.
VOCs by Headspace GC-MS (TCLP)	E615B Waterloo - 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 the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A Waterloo - 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 PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
PAHs by GC-MS (TCLP)	E644 Waterloo - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
Nitrate and Nitrite (as N), (TCLP) (Calculation)	EC240.N+N Waterloo - Environmental	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).
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
F2 to F3 minus PAH	EC600 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F2-PAH = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus select Polycyclic Aromatic Hydrocarbons (PAH) as per CCME Soil Tier 1

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Waterloo - Environmental	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A Waterloo - Environmental	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 Waterloo - Environmental	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	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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.
VOCs Preparation for Headspace Analysis (TCLP)	EP582 Waterloo - Environmental	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 aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Waterloo - Environmental	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.
PHCs and PAHs Extraction (TCLP)	EP602 Waterloo - Environmental	Soil/Solid	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
TCLP Leachate Preparation (Metals, Inorganics, and SVOCs)	EPP444 Waterloo - Environmental	Soil/Solid	EPA 1311	Preparation of a Toxicity Characteristic Leaching Procedure (TCLP) solid sample involves particle size reduction, homogenization, then determination of appropriate extraction fluid. A measured portion of fresh subsample is placed in an extraction bottle 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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TCLP Leachate Preparation (VOCs)	EPP582 Waterloo - Environmental	Soil/Solid	EPA 1311	An extract produced by the Toxicity Characteristic Leaching Procedure (TCLP) as per EPA 1311.

QUALITY CONTROL REPORT

Work Order	: **WT2225373**	Page	: 1 of 22
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 16-Dec-2022 14:20
PO	: 735-005299	Date Analysis Commenced	: 17-Dec-2022
C-O-C number	: ----	Issue Date	: 05-Jan-2023 11:33
Sampler	: ---- ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299		
No. of samples received	: 14		
No. of samples analysed	: 14		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Connor Randall	Analyst	Waterloo Inorganics, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
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Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
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Jon Fisher	Department Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Robert Braun	Soils Team Supervisor	Waterloo Inorganics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 783978)											
WT2225373-001	S-12598913-121622-JPF-001	conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	1.71 mS/cm	1850	8.15%	20%	----
Physical Tests (QC Lot: 784155)											
CG2217315-003	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.77	7.86	1.15%	5%	----
Physical Tests (QC Lot: 784515)											
CG2217315-003	Anonymous	Moisture	----	E144	0.25	%	17.2	16.9	1.79%	20%	----
Physical Tests (QC Lot: 785007)											
WT2225335-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.85	7.91	0.761%	5%	----
Physical Tests (QC Lot: 785010)											
WT2225335-001	Anonymous	Moisture	----	E144	0.25	%	6.88	6.92	0.614%	20%	----
Physical Tests (QC Lot: 785024)											
WT2225312-019	Anonymous	Moisture	----	E144	0.25	%	6.70	6.69	0.134%	20%	----
Physical Tests (QC Lot: 785110)											
WT2225278-002	Anonymous	Moisture	----	E144	0.25	%	4.43	4.35	1.81%	20%	----
Physical Tests (QC Lot: 785292)											
WT2224961-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.24	7.23	0.138%	5%	----
Cyanides (QC Lot: 783666)											
WT2225228-001	Anonymous	cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 783959)											
WT2225373-006	S-12598913-121622-JPF-006	cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 783975)											
WT2225373-001	S-12598913-121622-JPF-001	mercury	7439-97-6	E510	0.0050	mg/kg	0.0543	0.0558	2.84%	40%	----
Metals (QC Lot: 783976)											
WT2225373-001	S-12598913-121622-JPF-001	antimony	7440-36-0	E440	0.10	mg/kg	0.11	0.11	0.005	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	3.92	4.20	7.13%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	77.7	80.2	3.20%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.62	0.70	0.08	Diff <2x LOR	----
		boron	7440-42-8	E440	5.0	mg/kg	5.4	5.7	0.4	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.352	0.361	2.36%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 783976) - continued											
WT2225373-001	S-12598913-121622-JPF-001	chromium	7440-47-3	E440	0.50	mg/kg	17.7	18.8	5.86%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	6.04	6.33	4.71%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	14.1	15.1	6.52%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	11.5	11.6	1.51%	40%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.43	0.43	0.002	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.50	mg/kg	12.5	13.3	6.40%	30%	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.46	0.51	0.05	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.101	0.103	0.002	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.050	mg/kg	0.493	0.517	4.68%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	30.5	32.3	5.95%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	72.8	76.0	4.35%	30%	----
Metals (QC Lot: 783977)											
WT2225373-001	S-12598913-121622-JPF-001	calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	182	177	2.78%	30%	----
		magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	45.7	44.5	2.66%	30%	----
		sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	50.1	49.2	1.81%	30%	----
Metals (QC Lot: 783979)											
WT2225373-001	S-12598913-121622-JPF-001	boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	1.15	1.13	1.74%	40%	----
Metals (QC Lot: 786559)											
WT2225502-002	Anonymous	boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.19	0.20	0.01	Diff <2x LOR	----
Speciated Metals (QC Lot: 783000)											
RG2201815-001	Anonymous	chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.13	0.11	0.02	Diff <2x LOR	----
Speciated Metals (QC Lot: 783790)											
WT2225373-002	S-12598913-121622-JPF-002	chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
TCLP Extractables (QC Lot: 784452)											
WT2225258-024	Anonymous	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: 784453)											
WT2225258-024	Anonymous	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: 784454)											
WT2225258-024	Anonymous	fluoride, TCLP	16984-48-8	E240.F	10	mg/L	<10	<10	0	Diff <2x LOR	----
TCLP Extractables (QC Lot: 784609)											
WT2225258-024	Anonymous	cyanide, weak acid dissociable, TCLP	----	E337A	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
TCLP Extractables (QC Lot: 784701)											
WT2224028-019	Anonymous	benzo(a)pyrene, TCLP	50-32-8	E644	0.50	µg/L	<0.00050 mg/L	<0.50	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 784032)											
WT2225256-001	Anonymous	arsenic, TCLP	7440-38-2	E444	1.0	mg/L	1.2	1.2	0.02	Diff <2x LOR	----
		barium, TCLP	7440-39-3	E444	2.5	mg/L	<2.5	<2.5	0	Diff <2x LOR	----
		boron, TCLP	7440-42-8	E444	0.50	mg/L	1.14	1.12	0.03	Diff <2x LOR	----
		cadmium, TCLP	7440-43-9	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		chromium, TCLP	7440-47-3	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		lead, TCLP	7439-92-1	E444	0.25	mg/L	<0.25	<0.25	0	Diff <2x LOR	----
		selenium, TCLP	7782-49-2	E444	0.10	mg/L	10.8	10.6	1.32%	50%	----
		silver, TCLP	7440-22-4	E444	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		uranium, TCLP	7440-61-1	E444	0.20	mg/L	<0.20	<0.20	0	Diff <2x LOR	----
TCLP Metals (QC Lot: 784053)											
WT2225256-001	Anonymous	mercury, TCLP	7439-97-6	E512	0.0010	mg/L	0.0238	0.0234	1.69%	50%	----
TCLP VOCs (QC Lot: 784024)											
WT2224406-001	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	----
		chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		chloroform, TCLP	67-66-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		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 mg/L	<25	0	Diff <2x LOR	----
		dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		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	----
		methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	<0.10 mg/L	<100	0	Diff <2x LOR	----
		tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	<0.025 mg/L	<25	0	Diff <2x LOR	----
		vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	<0.050 mg/L	<50	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 784606)											
WT2225373-007	S-12598913-121622-JPF-007	benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----

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: 784607)											
WT2225373-007	S-12598913-121622-JPF-007	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 785008)											
WT2225373-007	S-12598913-121622-JPF-007	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	383	365	4.80%	40%	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	498	492	1.29%	40%	----
Hydrocarbons (QC Lot: 785307)											
WT2225261-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 790305)											
WT2225373-007	S-12598913-121622-JPF-007	F4G-sg	----	E601.F4G-L	250	mg/kg	2070	1890	9.13%	40%	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 785009)											
WT2225373-003	S-12598913-121622-JPF-003	acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	0.054	0.082	0.027	Diff <2x LOR	J
		benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	0.074	0.090	0.016	Diff <2x LOR	J
		benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	0.064	0.116	0.052	Diff <2x LOR	J
		benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chrysene	218-01-9	E641A	0.050	mg/kg	0.055	0.082	0.027	Diff <2x LOR	J
		dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	0.062	0.012	Diff <2x LOR	J
		fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	0.058	0.008	Diff <2x LOR	J
		methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A	0.015	mg/kg	<0.014	<0.015	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	0.071	0.021	Diff <2x LOR	J
Polycyclic Aromatic Hydrocarbons (QC Lot: 785306)											
WT2225261-001	Anonymous	acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 785306) - continued											
WT2225261-001	Anonymous	acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	0.060	0.010	Diff <2x LOR	J
		fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
J	*Duplicate results and limits are expressed in terms of absolute difference.*

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: 783978)						
conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 784515)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 785010)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 785024)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 785110)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 783666)						
cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 783959)						
cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 783975)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 783976)						
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 783976) - continued						
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 783977)						
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: 783979)						
boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 786559)						
boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 783000)						
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 783790)						
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
TCLP Extractables (QCLot: 784452)						
nitrate (as N), TCLP	14797-55-8	E240.NO3	5	mg/L	<5.0	----
TCLP Extractables (QCLot: 784453)						
nitrite (as N), TCLP	14797-65-0	E240.NO2	5	mg/L	<5.0	----
TCLP Extractables (QCLot: 784454)						
fluoride, TCLP	16984-48-8	E240.F	10	mg/L	<10	----
TCLP Extractables (QCLot: 784609)						
cyanide, weak acid dissociable, TCLP	----	E337A	0.1	mg/L	<0.10	----
TCLP Extractables (QCLot: 784701)						
benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	<0.50	----
TCLP Metals (QCLot: 784032)						
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	----
TCLP Metals (QCLot: 784053)						

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
TCLP Metals (QCLot: 784053) - continued						
mercury, TCLP	7439-97-6	E512	0.001	mg/L	<0.0010	----
TCLP VOCs (QCLot: 784024)						
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	----
Volatile Organic Compounds (QCLot: 784606)						
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: 784607)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 785008)						
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: 785307)						
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: 790305)						
F4G-sg	----	E601.F4G-L	250	mg/kg	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785009)						
acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 785009) - continued						
acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785306)						
acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 785306) - continued						
pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 783978)									
conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	96.8	90.0	110	----
Physical Tests (QCLot: 784155)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 784515)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 785007)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 785010)									
Moisture	----	E144	0.25	%	50 %	99.3	90.0	110	----
Physical Tests (QCLot: 785024)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 785110)									
Moisture	----	E144	0.25	%	50 %	99.1	90.0	110	----
Physical Tests (QCLot: 785292)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Cyanides (QCLot: 783666)									
cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	93.0	80.0	125	----
Cyanides (QCLot: 783959)									
cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	99.9	80.0	125	----
Metals (QCLot: 783975)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	102	80.0	120	----
Metals (QCLot: 783976)									
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	99.8	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	95.5	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	92.5	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	96.2	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	97.8	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	98.2	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 783976) - continued									
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.5	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	92.3	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	99.2	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	97.9	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	96.0	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	91.2	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	89.7	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	88.9	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	101	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	96.3	80.0	120	----
Metals (QCLot: 783977)									
calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	107	80.0	120	----
magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	99.4	80.0	120	----
Metals (QCLot: 783979)									
boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	99.3	70.0	130	----
Metals (QCLot: 786559)									
boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	102	70.0	130	----
Speciated Metals (QCLot: 783000)									
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	90.2	80.0	120	----
Speciated Metals (QCLot: 783790)									
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	82.2	80.0	120	----
TCLP Extractables (QCLot: 784452)									
nitrate (as N), TCLP	14797-55-8	E240.NO3	5	mg/L	2.5 mg/L	95.2	70.0	130	----
TCLP Extractables (QCLot: 784453)									
nitrite (as N), TCLP	14797-65-0	E240.NO2	5	mg/L	0.5 mg/L	103	70.0	130	----
TCLP Extractables (QCLot: 784454)									
fluoride, TCLP	16984-48-8	E240.F	10	mg/L	1 mg/L	92.9	70.0	130	----
TCLP Extractables (QCLot: 784609)									
cyanide, weak acid dissociable, TCLP	----	E337A	0.1	mg/L	6.25 mg/L	106	70.0	130	----
TCLP Extractables (QCLot: 784701)									
benzo(a)pyrene, TCLP	50-32-8	E644	0.5	µg/L	0.5263 µg/L	91.7	60.0	140	----
TCLP Metals (QCLot: 784032)									

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 Metals (QCLot: 784032) - continued									
arsenic, TCLP	7440-38-2	E444	1	mg/L	0.05 mg/L	106	70.0	130	----
barium, TCLP	7440-39-3	E444	2.5	mg/L	0.0125 mg/L	105	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	98.1	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	99.5	70.0	130	----
selenium, TCLP	7782-49-2	E444	0.1	mg/L	0.05 mg/L	101	70.0	130	----
silver, TCLP	7440-22-4	E444	0.05	mg/L	0.005 mg/L	91.5	70.0	130	----
uranium, TCLP	7440-61-1	E444	0.2	mg/L	0.00025 mg/L	100	70.0	130	----
TCLP Metals (QCLot: 784053)									
mercury, TCLP	7439-97-6	E512	0.001	mg/L	0.0001 mg/L	103	70.0	130	----
TCLP VOCs (QCLot: 784024)									
benzene, TCLP	71-43-2	E615B	5	µg/L	250 µg/L	101	70.0	130	----
carbon tetrachloride, TCLP	56-23-5	E615B	25	µg/L	250 µg/L	108	60.0	140	----
chlorobenzene, TCLP	108-90-7	E615B	25	µg/L	250 µg/L	95.8	70.0	130	----
chloroform, TCLP	67-66-3	E615B	100	µg/L	250 µg/L	115	70.0	130	----
dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	25	µg/L	250 µg/L	100	70.0	130	----
dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	25	µg/L	250 µg/L	102	70.0	130	----
dichloroethane, 1,2-, TCLP	107-06-2	E615B	25	µg/L	250 µg/L	120	70.0	130	----
dichloroethylene, 1,1-, TCLP	75-35-4	E615B	25	µg/L	250 µg/L	97.8	70.0	130	----
dichloromethane, TCLP	75-09-2	E615B	100	µg/L	250 µg/L	112	70.0	130	----
methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	100	µg/L	250 µg/L	111	50.0	150	----
tetrachloroethylene, TCLP	127-18-4	E615B	25	µg/L	250 µg/L	91.8	70.0	130	----
trichloroethylene, TCLP	79-01-6	E615B	25	µg/L	250 µg/L	102	70.0	130	----
vinyl chloride, TCLP	75-01-4	E615B	50	µg/L	250 µg/L	80.2	60.0	130	----
Volatile Organic Compounds (QCLot: 784606)									
benzene	71-43-2	E611A	0.005	mg/kg	3.475 mg/kg	99.5	70.0	130	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	3.475 mg/kg	100	70.0	130	----
toluene	108-88-3	E611A	0.05	mg/kg	3.475 mg/kg	97.3	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	6.95 mg/kg	105	70.0	130	----
xylene, o-	95-47-6	E611A	0.03	mg/kg	3.475 mg/kg	102	70.0	130	----
Hydrocarbons (QCLot: 784607)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	109	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 785008)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	883.825 mg/kg	92.9	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1385.22 mg/kg	84.3	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	797.55 mg/kg	88.4	70.0	130	----
Hydrocarbons (QCLot: 785307)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	883.825 mg/kg	88.0	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1385.22 mg/kg	82.5	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	797.55 mg/kg	93.9	70.0	130	----
Hydrocarbons (QCLot: 790305)									
F4G-sg	----	E601.F4G-L	250	mg/kg	1298.6 mg/kg	96.2	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785009)									
acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	93.7	60.0	130	----
acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	99.5	60.0	130	----
anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	102	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	107	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	108	60.0	130	----
benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	103	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	86.0	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	103	60.0	130	----
chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	115	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	91.2	60.0	130	----
fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	98.1	60.0	130	----
fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	95.6	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	86.7	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	91.6	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	88.8	60.0	130	----
naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	88.6	60.0	130	----
phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	92.9	60.0	130	----
pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	97.7	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785306)									
acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	82.3	60.0	130	----
acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	88.2	60.0	130	----
anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	87.2	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	84.9	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	91.5	60.0	130	----
benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	88.1	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 785306) - continued									
benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	81.9	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	85.9	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	83.7	60.0	130	----
fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	83.4	60.0	130	----
fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	83.9	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	79.6	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	82.1	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	80.8	60.0	130	----
naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	81.6	60.0	130	----
phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	79.7	60.0	130	----
pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	83.5	60.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 783666)										
WT2225228-001	Anonymous	cyanide, weak acid dissociable	----	E336A	1.23 mg/kg	2.5 mg/kg	98.2	70.0	130	----
Cyanides (QCLot: 783959)										
WT2225373-006	S-12598913-121622-JPF-006	cyanide, weak acid dissociable	----	E336A	1.14 mg/kg	2.5 mg/kg	92.0	70.0	130	----
TCLP Extractables (QCLot: 784452)										
WT2225258-024	Anonymous	nitrate (as N), TCLP	14797-55-8	E240.NO3	47.8 mg/L	50 mg/L	95.7	50.0	150	----
TCLP Extractables (QCLot: 784453)										
WT2225258-024	Anonymous	nitrite (as N), TCLP	14797-65-0	E240.NO2	10.0 mg/L	10 mg/L	100	50.0	150	----
TCLP Extractables (QCLot: 784454)										
WT2225258-024	Anonymous	fluoride, TCLP	16984-48-8	E240.F	19 mg/L	20 mg/L	94.2	50.0	150	----
TCLP Extractables (QCLot: 784609)										
WT2225258-024	Anonymous	cyanide, weak acid dissociable, TCLP	----	E337A	6.63 mg/L	6.25 mg/L	106	50.0	140	----
TCLP Extractables (QCLot: 784701)										
WT2224028-019	Anonymous	benzo(a)pyrene, TCLP	50-32-8	E644	0.44 µg/L	0.5263 µg/L	83.9	50.0	140	----
TCLP Metals (QCLot: 784032)										
WT2225256-001	Anonymous	arsenic, TCLP	7440-38-2	E444	13.1 mg/L	10 mg/L	131	50.0	140	----
		barium, TCLP	7440-39-3	E444	12.5 mg/L	12.5 mg/L	99.8	50.0	140	----
		boron, TCLP	7440-42-8	E444	11.4 mg/L	10 mg/L	114	50.0	140	----
		cadmium, TCLP	7440-43-9	E444	12.6 mg/L	10 mg/L	126	50.0	140	----
		chromium, TCLP	7440-47-3	E444	13.3 mg/L	10 mg/L	133	50.0	140	----
		lead, TCLP	7439-92-1	E444	8.63 mg/L	10 mg/L	86.3	50.0	140	----
		selenium, TCLP	7782-49-2	E444	ND mg/L	10 mg/L	ND	50.0	140	----
		silver, TCLP	7440-22-4	E444	0.064 mg/L	0.1 mg/L	64.1	50.0	140	----
		uranium, TCLP	7440-61-1	E444	12.3 mg/L	10 mg/L	123	50.0	140	----
TCLP Metals (QCLot: 784053)										
WT2225256-001	Anonymous	mercury, TCLP	7439-97-6	E512	ND mg/L	0.003 mg/L	ND	50.0	140	----
TCLP VOCs (QCLot: 784024)										
WT2224406-001	Anonymous	benzene, TCLP	71-43-2	E615B	216 µg/L	250 µg/L	86.3	50.0	140	----
		carbon tetrachloride, TCLP	56-23-5	E615B	210 µg/L	250 µg/L	83.8	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
TCLP VOCs (QCLot: 784024) - continued										
WT2224406-001	Anonymous	chlorobenzene, TCLP	108-90-7	E615B	212 µg/L	250 µg/L	84.6	50.0	140	----
		chloroform, TCLP	67-66-3	E615B	260 µg/L	250 µg/L	103	50.0	140	----
		dichlorobenzene, 1,2-, TCLP	95-50-1	E615B	232 µg/L	250 µg/L	92.9	50.0	140	----
		dichlorobenzene, 1,4-, TCLP	106-46-7	E615B	228 µg/L	250 µg/L	91.0	50.0	140	----
		dichloroethane, 1,2-, TCLP	107-06-2	E615B	308 µg/L	250 µg/L	123	50.0	140	----
		dichloroethylene, 1,1-, TCLP	75-35-4	E615B	190 µg/L	250 µg/L	76.0	50.0	140	----
		dichloromethane, TCLP	75-09-2	E615B	260 µg/L	250 µg/L	103	50.0	140	----
		methyl ethyl ketone [MEK], TCLP	78-93-3	E615B	300 µg/L	250 µg/L	119	50.0	140	----
		tetrachloroethylene, TCLP	127-18-4	E615B	175 µg/L	250 µg/L	70.0	50.0	140	----
		trichloroethylene, TCLP	79-01-6	E615B	207 µg/L	250 µg/L	82.8	50.0	140	----
		vinyl chloride, TCLP	75-01-4	E615B	152 µg/L	250 µg/L	61.0	50.0	140	----
Volatile Organic Compounds (QCLot: 784606)										
WT2225373-007	S-12598913-121622-JPF-007	benzene	71-43-2	E611A	3.31 mg/kg	3.125 mg/kg	96.2	60.0	140	----
		ethylbenzene	100-41-4	E611A	3.23 mg/kg	3.125 mg/kg	93.7	60.0	140	----
		toluene	108-88-3	E611A	3.20 mg/kg	3.125 mg/kg	92.9	60.0	140	----
		xylene, m+p-	179601-23-1	E611A	6.81 mg/kg	6.25 mg/kg	98.9	60.0	140	----
		xylene, o-	95-47-6	E611A	3.31 mg/kg	3.125 mg/kg	96.2	60.0	140	----
Hydrocarbons (QCLot: 784607)										
WT2225373-007	S-12598913-121622-JPF-007	F1 (C6-C10)	----	E581.F1	63.8 mg/kg	62.5 mg/kg	92.6	60.0	140	----
Hydrocarbons (QCLot: 785008)										
WT2225335-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	697 mg/kg	883.825 mg/kg	89.9	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1010 mg/kg	1385.22 mg/kg	82.9	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	653 mg/kg	797.55 mg/kg	93.3	60.0	140	----
Hydrocarbons (QCLot: 785307)										
WT2225261-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	611 mg/kg	883.825 mg/kg	90.1	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	920 mg/kg	1385.22 mg/kg	86.6	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	622 mg/kg	797.55 mg/kg	102	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785009)										
WT2225373-003	S-12598913-121622-JPF-003	acenaphthene	83-32-9	E641A	0.338 mg/kg	0.5 mg/kg	85.5	50.0	140	----
		acenaphthylene	208-96-8	E641A	0.367 mg/kg	0.5 mg/kg	92.9	50.0	140	----
		anthracene	120-12-7	E641A	0.375 mg/kg	0.5 mg/kg	94.9	50.0	140	----
		benz(a)anthracene	56-55-3	E641A	0.420 mg/kg	0.5 mg/kg	106	50.0	140	----
		benzo(a)pyrene	50-32-8	E641A	0.527 mg/kg	0.5 mg/kg	133	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 785009) - continued										
WT2225373-003	S-12598913-121622-JPF-003	benzo(b+j)fluoranthene	n/a	E641A	0.524 mg/kg	0.5 mg/kg	133	50.0	140	----
		benzo(g,h,i)perylene	191-24-2	E641A	0.418 mg/kg	0.5 mg/kg	106	50.0	140	----
		benzo(k)fluoranthene	207-08-9	E641A	0.464 mg/kg	0.5 mg/kg	118	50.0	140	----
		chrysene	218-01-9	E641A	0.482 mg/kg	0.5 mg/kg	122	50.0	140	----
		dibenz(a,h)anthracene	53-70-3	E641A	0.384 mg/kg	0.5 mg/kg	97.3	50.0	140	----
		fluoranthene	206-44-0	E641A	0.497 mg/kg	0.5 mg/kg	126	50.0	140	----
		fluorene	86-73-7	E641A	0.350 mg/kg	0.5 mg/kg	88.8	50.0	140	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.388 mg/kg	0.5 mg/kg	98.3	50.0	140	----
		methylnaphthalene, 1-	90-12-0	E641A	0.344 mg/kg	0.5 mg/kg	87.2	50.0	140	----
		methylnaphthalene, 2-	91-57-6	E641A	0.334 mg/kg	0.5 mg/kg	84.6	50.0	140	----
		naphthalene	91-20-3	E641A	0.339 mg/kg	0.5 mg/kg	85.8	50.0	140	----
		phenanthrene	85-01-8	E641A	0.346 mg/kg	0.5 mg/kg	87.7	50.0	140	----
		pyrene	129-00-0	E641A	0.514 mg/kg	0.5 mg/kg	130	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 785306)										
WT2225261-001	Anonymous	acenaphthene	83-32-9	E641A	0.325 mg/kg	0.5 mg/kg	83.2	50.0	140	----
		acenaphthylene	208-96-8	E641A	0.349 mg/kg	0.5 mg/kg	89.2	50.0	140	----
		anthracene	120-12-7	E641A	0.360 mg/kg	0.5 mg/kg	92.0	50.0	140	----
		benz(a)anthracene	56-55-3	E641A	0.312 mg/kg	0.5 mg/kg	79.8	50.0	140	----
		benzo(a)pyrene	50-32-8	E641A	0.363 mg/kg	0.5 mg/kg	92.9	50.0	140	----
		benzo(b+j)fluoranthene	n/a	E641A	0.327 mg/kg	0.5 mg/kg	83.7	50.0	140	----
		benzo(g,h,i)perylene	191-24-2	E641A	0.277 mg/kg	0.5 mg/kg	70.7	50.0	140	----
		benzo(k)fluoranthene	207-08-9	E641A	0.337 mg/kg	0.5 mg/kg	86.2	50.0	140	----
		chrysene	218-01-9	E641A	0.287 mg/kg	0.5 mg/kg	73.3	50.0	140	----
		dibenz(a,h)anthracene	53-70-3	E641A	0.329 mg/kg	0.5 mg/kg	84.1	50.0	140	----
		fluoranthene	206-44-0	E641A	0.315 mg/kg	0.5 mg/kg	80.5	50.0	140	----
		fluorene	86-73-7	E641A	0.334 mg/kg	0.5 mg/kg	85.4	50.0	140	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.284 mg/kg	0.5 mg/kg	72.6	50.0	140	----
		methylnaphthalene, 1-	90-12-0	E641A	0.328 mg/kg	0.5 mg/kg	83.8	50.0	140	----
		methylnaphthalene, 2-	91-57-6	E641A	0.326 mg/kg	0.5 mg/kg	83.4	50.0	140	----
		naphthalene	91-20-3	E641A	0.330 mg/kg	0.5 mg/kg	84.4	50.0	140	----
		phenanthrene	85-01-8	E641A	0.315 mg/kg	0.5 mg/kg	80.4	50.0	140	----
		pyrene	129-00-0	E641A	0.319 mg/kg	0.5 mg/kg	81.5	50.0	140	----

Reference Material (RM) Report

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

Sub-Matrix:

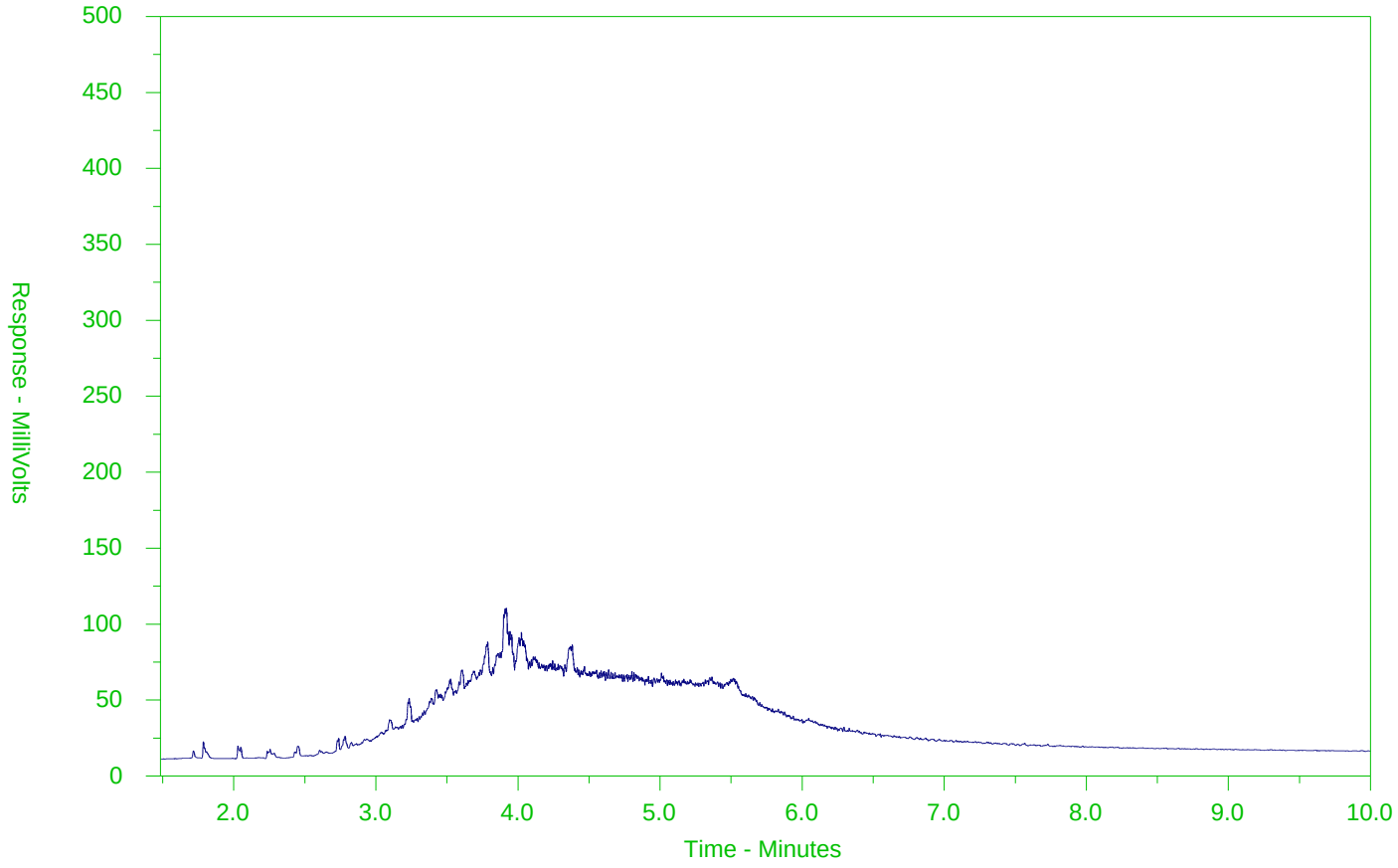
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 783978)									
	RM	conductivity (1:2 leachate)	----	E100-L	1031.5 µS/cm	105	70.0	130	----
Metals (QCLot: 783975)									
	RM	mercury	7439-97-6	E510	0.0585 mg/kg	83.3	70.0	130	----
Metals (QCLot: 783976)									
	RM	antimony	7440-36-0	E440	3.99 mg/kg	97.0	70.0	130	----
	RM	arsenic	7440-38-2	E440	3.73 mg/kg	98.5	70.0	130	----
	RM	barium	7440-39-3	E440	105 mg/kg	98.1	70.0	130	----
	RM	beryllium	7440-41-7	E440	0.349 mg/kg	101	70.0	130	----
	RM	boron	7440-42-8	E440	8.5 mg/kg	103	40.0	160	----
	RM	cadmium	7440-43-9	E440	0.91 mg/kg	100	70.0	130	----
	RM	chromium	7440-47-3	E440	101 mg/kg	96.3	70.0	130	----
	RM	cobalt	7440-48-4	E440	6.9 mg/kg	97.9	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	98.8	70.0	130	----
	RM	lead	7439-92-1	E440	267 mg/kg	94.4	70.0	130	----
	RM	molybdenum	7439-98-7	E440	1.03 mg/kg	115	70.0	130	----
	RM	nickel	7440-02-0	E440	26.7 mg/kg	100	70.0	130	----
	RM	thallium	7440-28-0	E440	0.0786 mg/kg	95.2	40.0	160	----
	RM	uranium	7440-61-1	E440	0.52 mg/kg	91.6	70.0	130	----
	RM	vanadium	7440-62-2	E440	32.7 mg/kg	97.4	70.0	130	----
	RM	zinc	7440-66-6	E440	297 mg/kg	96.6	70.0	130	----
Metals (QCLot: 783977)									
	RM	calcium, soluble ion content	7440-70-2	E484	86.59 mg/L	95.6	70.0	130	----
	RM	magnesium, soluble ion content	7439-95-4	E484	25.74 mg/L	97.1	70.0	130	----
	RM	sodium, soluble ion content	17341-25-2	E484	30.05 mg/L	95.5	70.0	130	----
Metals (QCLot: 783979)									
	RM	boron, hot water soluble	7440-42-8	E487	1.4938 mg/kg	116	60.0	140	----
Metals (QCLot: 786559)									
	RM	boron, hot water soluble	7440-42-8	E487	1.4938 mg/kg	95.6	60.0	140	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 783000)									
	RM	chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	113	70.0	130	----
Speciated Metals (QCLot: 783790)									
	RM	chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	97.9	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-007-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-007



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

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

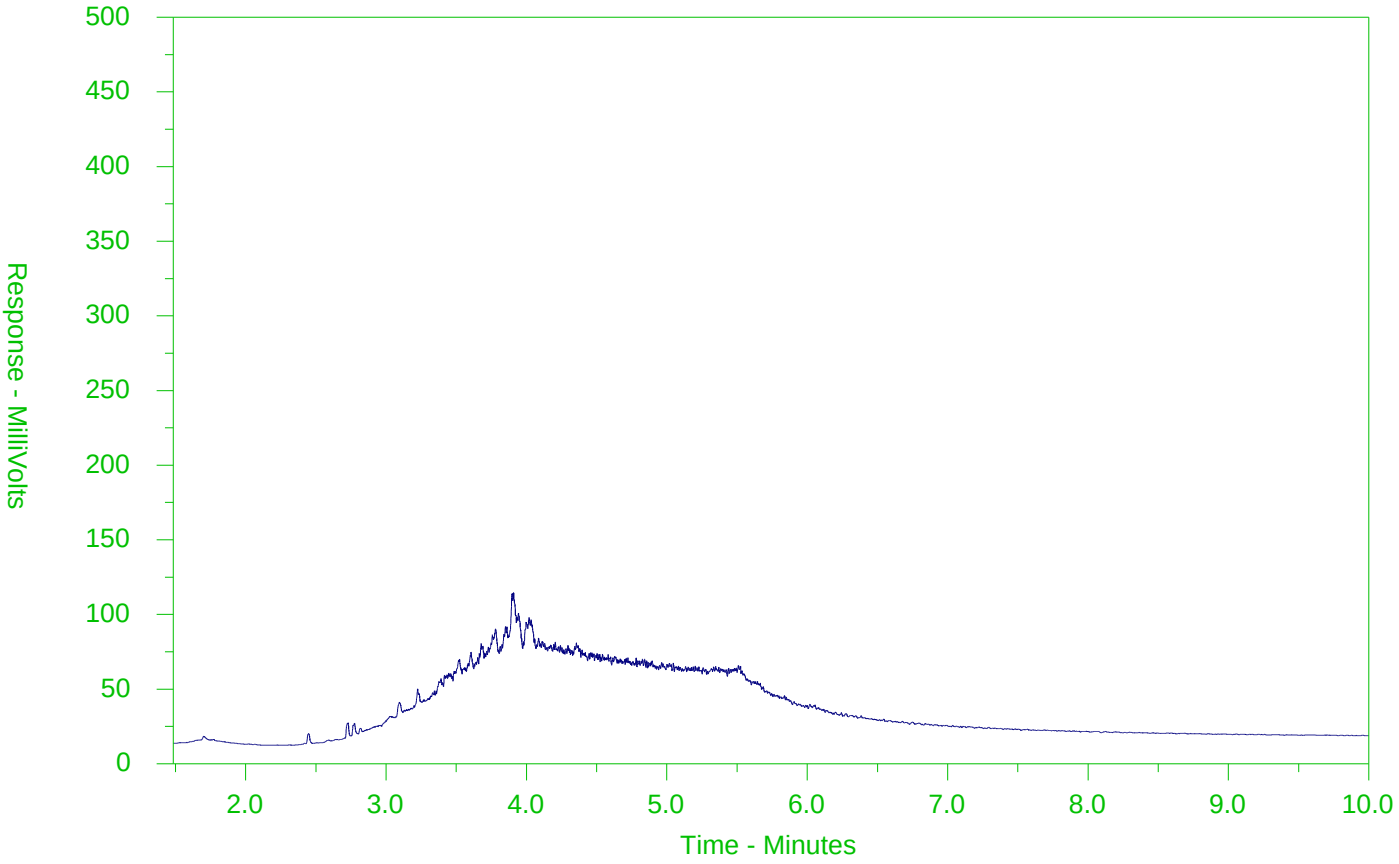
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-007-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-007



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

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

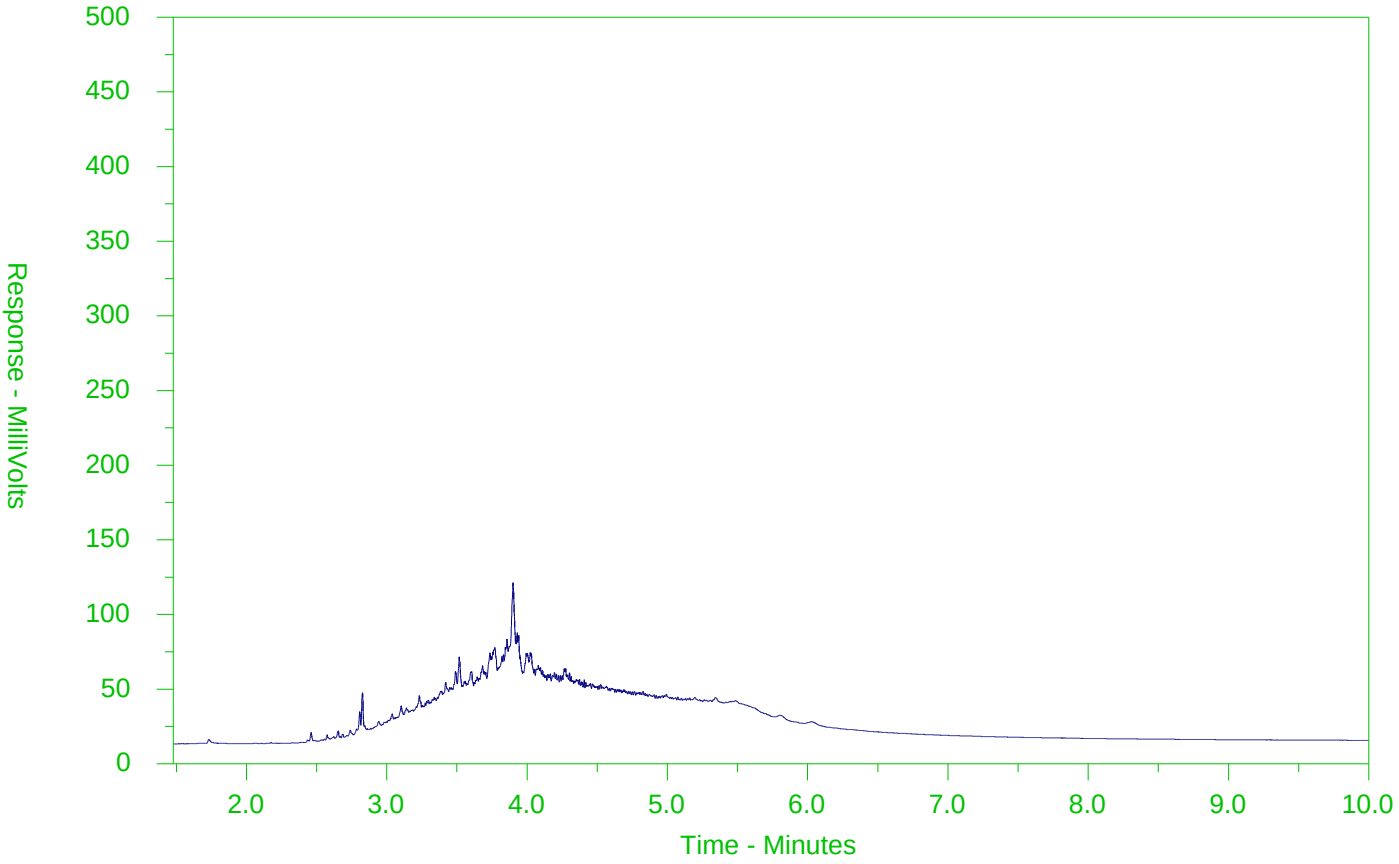
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-008-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-008



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

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

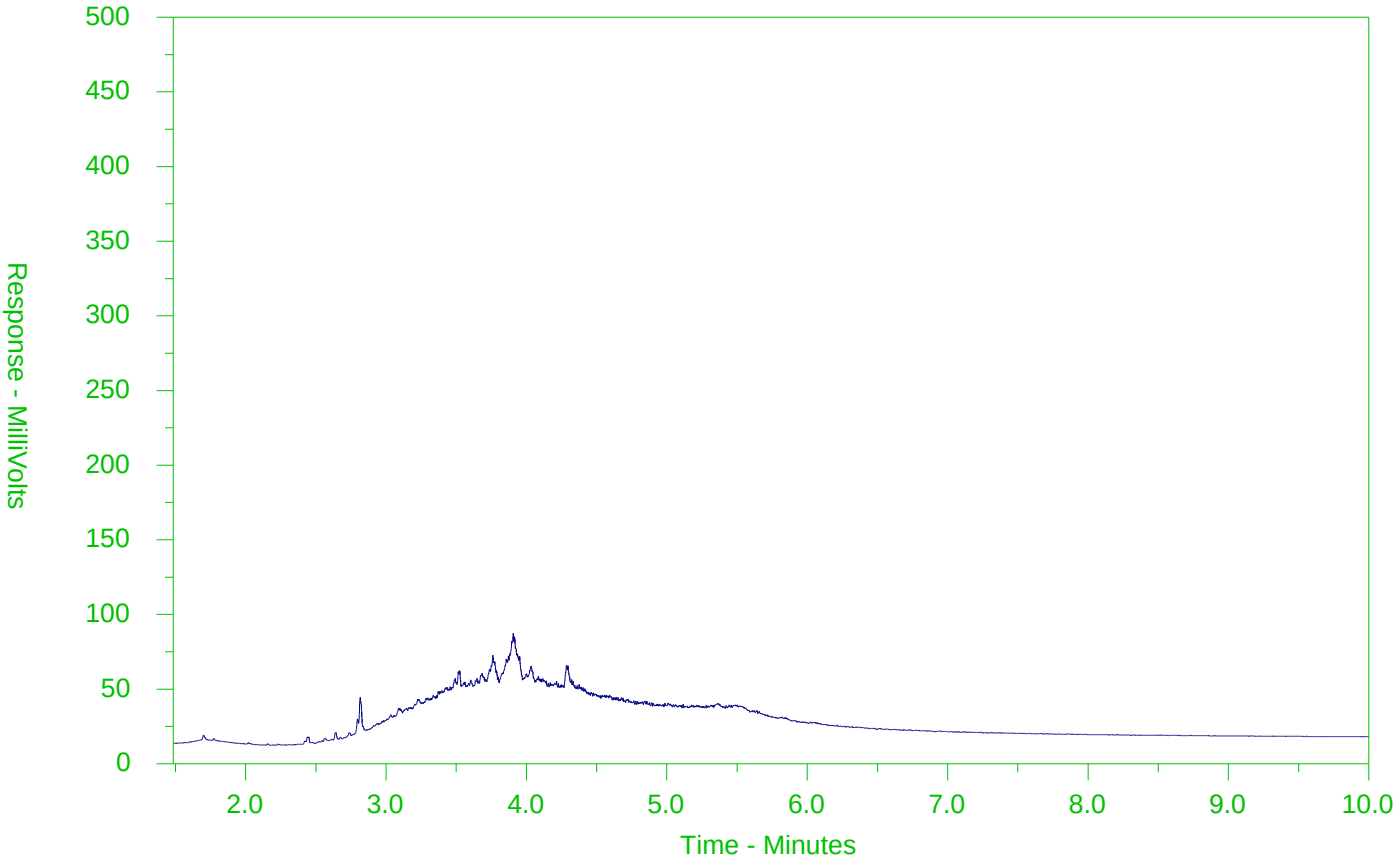
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-009-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-009



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

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

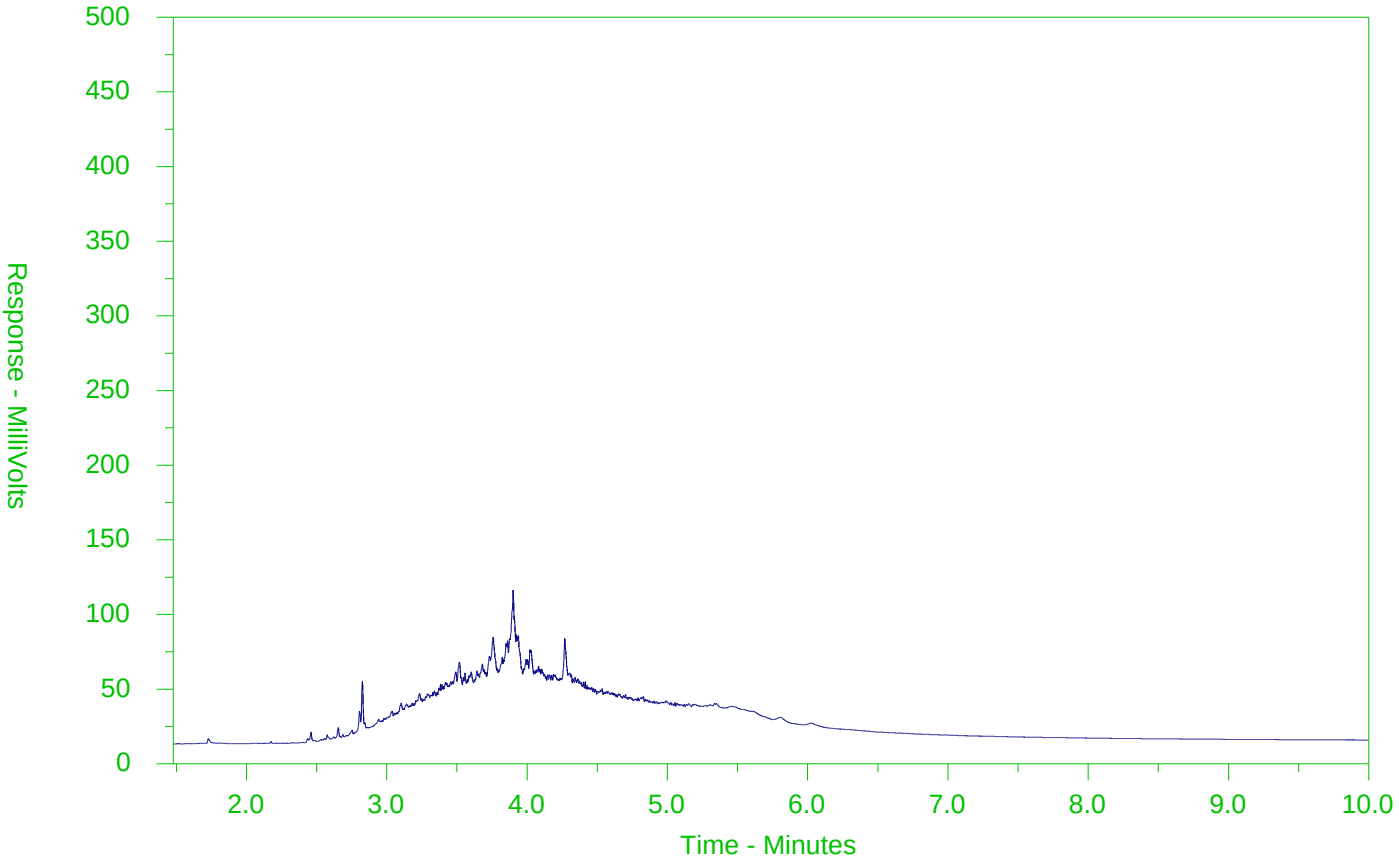
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-010-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-010



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

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

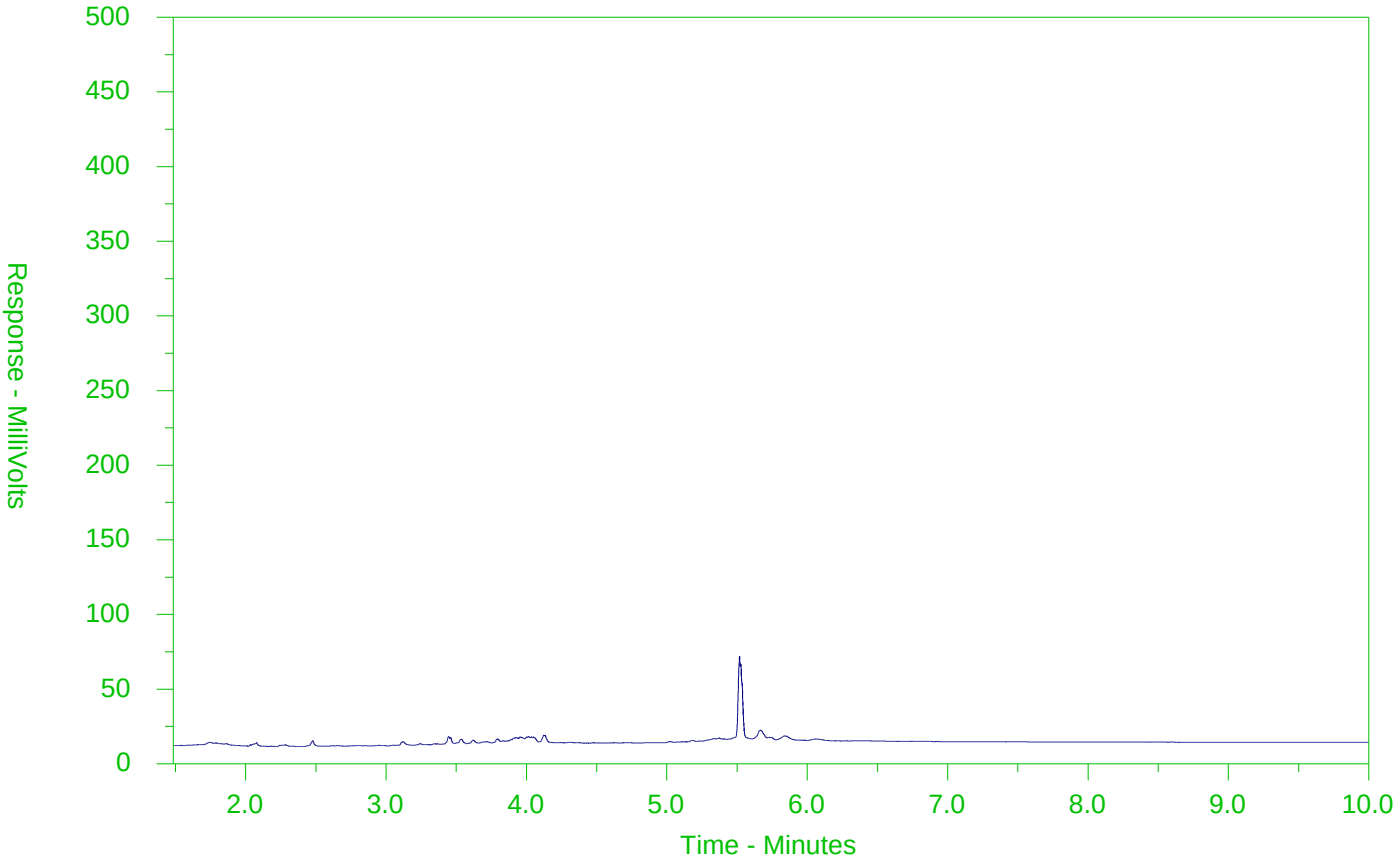
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-011-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-011



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

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

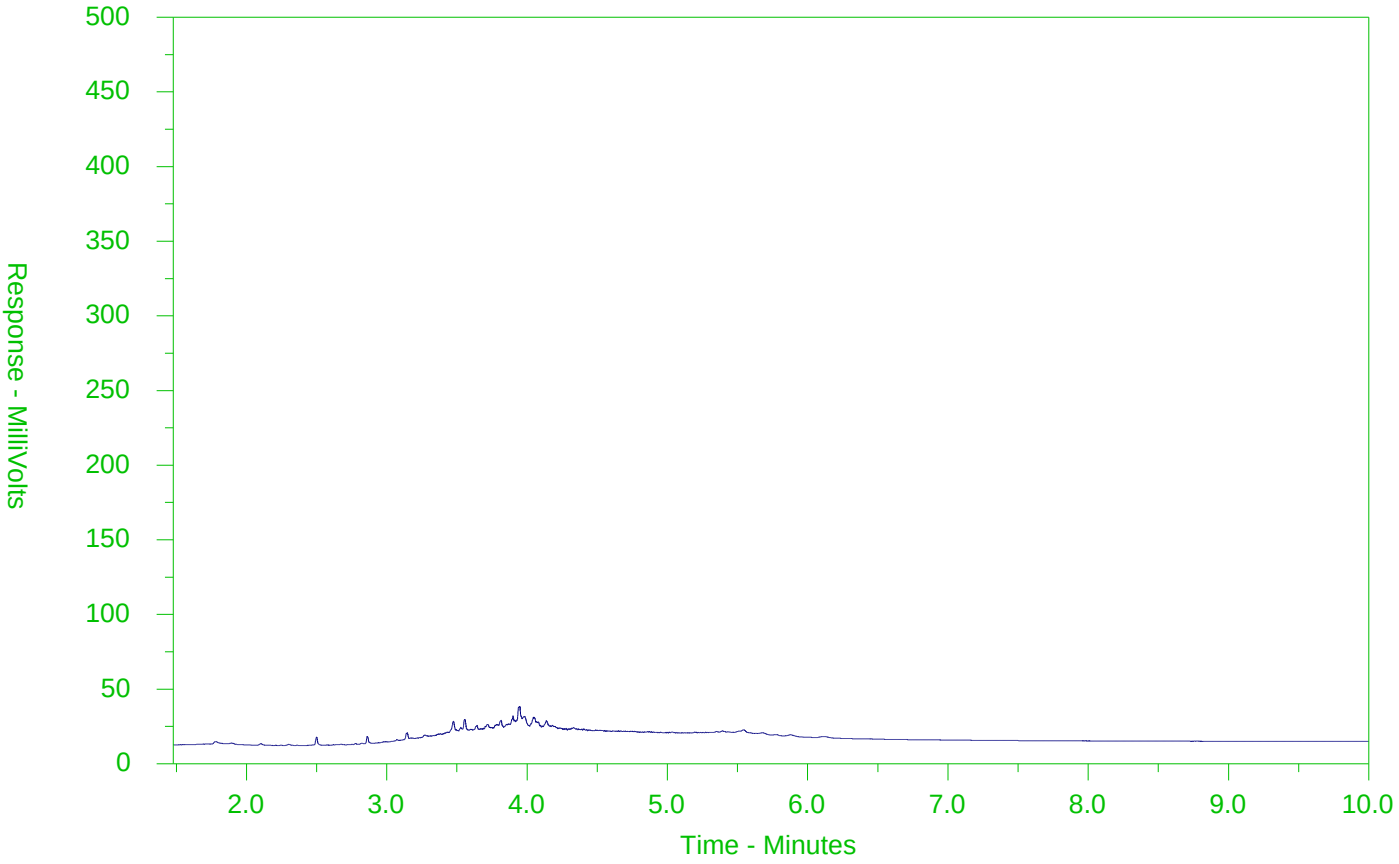
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2225373-012-E601.SG-L
Client Sample ID: S-12598913-121622-JPF-012



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

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

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

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

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

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo
Work Order Reference
WT2225373

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Pascal Renella
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Turnaround Time (TAT) Requested

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

Date and Time Required for all E&P TATs:

For tests that can not be performed according to t

Project Information

ALS Account # / Quote #:	
Job #:	12598913-03
PO / AFE:	WT2022GHDL1000234
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): MLP
ALS Contact: Rick H
Sampler: J-PF/eRAS

Analysis Re

Indicate Filtered (F), Preserved (P) or Filtered ar.

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	PAHs	BTEX,F1	F2-F4	Trip Blank _ PHC F1	SAMPLES ON HOLD	EXTENDED STORAGE REQUIR	SUSPECTED HAZARD (see not
	S-12598913-121622-JPF-001	16-Dec-22	0845	SOIL	2	X	X						
	S-12598913-121622-JPF-002		0905	SOIL	2	X	X						
	S-12598913-121622-JPF-003		0905	SOIL	2	X	X						
	S-12598913-121622-JPF-004		0920	SOIL	2	X	X						
	S-12598913-121622-JPF-005		0930	SOIL	2	X	X						
	S-12598913-121622-JPF-006		0935	SOIL	2	X	X						
	S-12598913-121622-JPF-007	16 DEC 22	1125	SOIL	4	X	X	X	X				
	S-12598913-121622-JPF-008		1145	SOIL	4	X	X	X	X				
	S-12598913-121622-JPF-009		1205	SOIL	4	X	X	X	X				
	S-12598913-121622-JPF-010		1205	SOIL	4	X	X	X	X				
	S-12598913-121622-JPF-011		1225	SOIL	4	X	X	X	X				
	S-12598913-121622-JPF-012	16-DEC-22	0845	SOIL	4	X	X	X	X				

Drinking Water (DW) Samples[1] (client use)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☑ NO

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

DistList: Greg Brooks, Laura Bender, J-P Fleras, Brian Packer, Mellisa Endicott Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				-2.3	0.2		

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	2022-DEC-16	13:50

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
R.M	16/12/22	2:20p

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
WHITE - LABORATORY COPY YELLOW - CLIENT COPY
AUG 2022 FRONT

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

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

T-254 & SOL-162,167 & VS-237

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1002637

Page 2 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Enb Ltd Acct GNDL 100
Contact:	Pascal Renalla
Phone:	5198840510
	Company address below will appear on the final report
Street:	455 Phillip St
City/Province:	Waterloo ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	Enb Ltd (GNDL 100)
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☐ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Sierra.Sloan@enb.com

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accounts.payable@enbgroup.com

Email 2:

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

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

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:

Job #: 12598913-03

PO / AFE: WT2022GNDL100234

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (ALS use only): MNP

ALS Contact:

Sampler: JPTew

Analysis Request

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

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTEX F1 (Add Blank)	Temp pm	Temp metals/inorg	Temp BTEX F1 P	Phenolics/Hydrides	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	5-12598913-121622-JDF-013	16-Dec-22	12:45	SOIL	3		X	X	X	X	X		
	TRIP BLANK-202216	16-Dec-22	—	—	1	X							

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

Are samples taken from a Regulated DW System? ☐ YES ☒ NO

Are samples for human consumption/ use? ☐ YES ☒ NO

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

See notes on Pg 1/2

SAMPLE RECEIPT DETAILS (ALS use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				-2.3	0.2		

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
JPTew	2022-DEC-16	13:50

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
R.M	16/12/22	2:20P

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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ALS 2020 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **WT2304664**	Page	: 1 of 18
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 24-Feb-2023 17:17
PO	: 735-005299-1	Date Analysis Commenced	: 25-Feb-2023
C-O-C number	: ----	Issue Date	: 06-Mar-2023 15:34
Sampler	: Christopher Heij		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

>: greater than.
<: 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.

Analytical Results

WT2304664-001

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

Client sample ID: S-12598913-022323-CH-001
Client sampling date / time: 23-Feb-2023 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.117	0.00500	mS/cm	E100-L	01-Mar-2023	02-Mar-2023	845886
Moisture	----	9.20	0.25	%	E144	-	25-Feb-2023	845889
pH (1:2 soil:CaCl2-aq)	----	7.99	0.10	pH units	E108A	26-Feb-2023	02-Mar-2023	845884
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	25-Feb-2023	01-Mar-2023	845878
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	5.43	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Magnesium, soluble ion content	7439-95-4	1.93	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium, soluble ion content	17341-25-2	6.38	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium adsorption ratio [SAR]	----	0.60	0.10	-	E484	01-Mar-2023	02-Mar-2023	845885
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Arsenic	7440-38-2	1.64	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Barium	7440-39-3	11.5	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Beryllium	7440-41-7	0.13	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron	7440-42-8	5.3	5.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron, hot water soluble	7440-42-8	<0.10	0.10	mg/kg	E487	01-Mar-2023	02-Mar-2023	845887
Cadmium	7440-43-9	0.090	0.020	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Chromium	7440-47-3	8.11	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Cobalt	7440-48-4	2.28	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Copper	7440-50-8	7.20	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Lead	7439-92-1	7.20	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Mercury	7439-97-6	<0.0050	0.0050	mg/kg	E510	01-Mar-2023	02-Mar-2023	845882
Molybdenum	7439-98-7	0.21	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Nickel	7440-02-0	4.80	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Thallium	7440-28-0	<0.050	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Uranium	7440-61-1	0.343	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Vanadium	7440-62-2	15.3	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Zinc	7440-66-6	26.5	2.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	25-Feb-2023	28-Feb-2023	845877
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-001

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

Client sample ID: S-12598913-022323-CH-001
Client sampling date / time: 23-Feb-2023 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	03-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F3-PAH	n/a	<50	50	mg/kg	EC600	-	03-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	28-Feb-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	84.4	1.0	%	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Dichlorotoluene, 3,4-	95-75-0	87.3	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	80.6	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-001

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

Client sample ID: S-12598913-022323-CH-001
Client sampling date / time: 23-Feb-2023 11:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds Surrogates								
Difluorobenzene, 1,4-	540-36-3	97.0	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene	91-20-3	0.011	0.010	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	87.0	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene-d12	1719-03-5	70.4	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene-d8	1146-65-2	83.0	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene-d10	1517-22-2	84.6	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879

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

Analytical Results

WT2304664-002

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

Client sample ID: S-12598913-022323-CH-002
Client sampling date / time: 23-Feb-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.181	0.00500	mS/cm	E100-L	01-Mar-2023	02-Mar-2023	845886
Moisture	----	2.50	0.25	%	E144	-	25-Feb-2023	845889
pH (1:2 soil:CaCl2-aq)	----	8.50	0.10	pH units	E108A	26-Feb-2023	02-Mar-2023	845884
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	25-Feb-2023	01-Mar-2023	845878
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.35	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Magnesium, soluble ion content	7439-95-4	7.09	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium, soluble ion content	17341-25-2	8.11	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885

Analytical Results

WT2304664-002

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

Client sample ID: S-12598913-022323-CH-002
Client sampling date / time: 23-Feb-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Fixed-Ratio Extractables								
Sodium adsorption ratio [SAR]	----	0.51	0.10	-	E484	01-Mar-2023	02-Mar-2023	845885
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Arsenic	7440-38-2	3.06	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Barium	7440-39-3	21.9	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Beryllium	7440-41-7	0.21	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron	7440-42-8	12.9	5.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron, hot water soluble	7440-42-8	0.18	0.10	mg/kg	E487	01-Mar-2023	02-Mar-2023	845887
Cadmium	7440-43-9	0.109	0.020	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Chromium	7440-47-3	10.6	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Cobalt	7440-48-4	4.18	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Copper	7440-50-8	16.0	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Lead	7439-92-1	11.7	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Mercury	7439-97-6	0.0072	0.0050	mg/kg	E510	01-Mar-2023	02-Mar-2023	845882
Molybdenum	7439-98-7	0.44	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Nickel	7440-02-0	7.86	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Thallium	7440-28-0	0.077	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Uranium	7440-61-1	0.496	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Vanadium	7440-62-2	17.5	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Zinc	7440-66-6	46.5	2.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	25-Feb-2023	28-Feb-2023	845877
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-002

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

Client sample ID: S-12598913-022323-CH-002
Client sampling date / time: 23-Feb-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	03-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F3-PAH	n/a	<50	50	mg/kg	EC600	-	03-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	28-Feb-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	87.9	1.0	%	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Dichlorotoluene, 3,4-	95-75-0	90.6	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	76.4	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Difluorobenzene, 1,4-	540-36-3	91.3	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879

Analytical Results

WT2304664-002

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

Client sample ID: S-12598913-022323-CH-002
Client sampling date / time: 23-Feb-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	84.1	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene-d12	1719-03-5	73.2	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene-d8	1146-65-2	85.4	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene-d10	1517-22-2	85.1	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879

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

Analytical Results

WT2304664-003

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

Client sample ID: S-12598913-022423-CH-003
Client sampling date / time: 24-Feb-2023 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.168	0.00500	mS/cm	E100-L	01-Mar-2023	02-Mar-2023	845886
Moisture	----	2.76	0.25	%	E144	-	25-Feb-2023	845889
pH (1:2 soil:CaCl2-aq)	----	8.20	0.10	pH units	E108A	26-Feb-2023	02-Mar-2023	845884
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	25-Feb-2023	01-Mar-2023	845878
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.49	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Magnesium, soluble ion content	7439-95-4	4.78	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium, soluble ion content	17341-25-2	10.0	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium adsorption ratio [SAR]	----	0.70	0.10	-	E484	01-Mar-2023	02-Mar-2023	845885
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Arsenic	7440-38-2	2.55	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Barium	7440-39-3	16.4	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Beryllium	7440-41-7	0.19	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron	7440-42-8	11.4	5.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron, hot water soluble	7440-42-8	0.17	0.10	mg/kg	E487	01-Mar-2023	02-Mar-2023	845887
Cadmium	7440-43-9	0.102	0.020	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883

Analytical Results

WT2304664-003

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

Client sample ID: S-12598913-022423-CH-003
Client sampling date / time: 24-Feb-2023 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Chromium	7440-47-3	10.4	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Cobalt	7440-48-4	3.44	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Copper	7440-50-8	14.3	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Lead	7439-92-1	7.77	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Mercury	7439-97-6	0.0120	0.0050	mg/kg	E510	01-Mar-2023	02-Mar-2023	845882
Molybdenum	7439-98-7	0.34	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Nickel	7440-02-0	7.76	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Thallium	7440-28-0	<0.050	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Uranium	7440-61-1	0.493	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Vanadium	7440-62-2	14.4	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Zinc	7440-66-6	41.7	2.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	25-Feb-2023	28-Feb-2023	845877
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-003

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

Client sample ID: S-12598913-022423-CH-003
Client sampling date / time: 24-Feb-2023 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	03-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F3-PAH	n/a	<50	50	mg/kg	EC600	-	03-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	28-Feb-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	84.1	1.0	%	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Dichlorotoluene, 3,4-	95-75-0	93.9	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	75.8	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Difluorobenzene, 1,4-	540-36-3	90.8	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879

Analytical Results

WT2304664-003

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

Client sample ID: S-12598913-022423-CH-003

Client sampling date / time: 24-Feb-2023 09:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.011	0.010	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	81.4	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene-d12	1719-03-5	72.8	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene-d8	1146-65-2	79.6	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene-d10	1517-22-2	80.7	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879

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

Analytical Results

WT2304664-004

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

Client sample ID: S-12598913-022423-CH-004

Client sampling date / time: 24-Feb-2023 15:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.126	0.00500	mS/cm	E100-L	01-Mar-2023	02-Mar-2023	845886
Moisture	----	10.5	0.25	%	E144	-	25-Feb-2023	845889
pH (1:2 soil:CaCl2-aq)	----	7.92	0.10	pH units	E108A	26-Feb-2023	02-Mar-2023	845884
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	25-Feb-2023	01-Mar-2023	845878
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	9.77	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Magnesium, soluble ion content	7439-95-4	3.79	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium, soluble ion content	17341-25-2	3.04	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium adsorption ratio [SAR]	----	0.21	0.10	-	E484	01-Mar-2023	02-Mar-2023	845885
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Arsenic	7440-38-2	4.15	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Barium	7440-39-3	33.2	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Beryllium	7440-41-7	0.46	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron	7440-42-8	13.0	5.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron, hot water soluble	7440-42-8	<0.10	0.10	mg/kg	E487	01-Mar-2023	02-Mar-2023	845887
Cadmium	7440-43-9	0.108	0.020	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Chromium	7440-47-3	18.7	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Cobalt	7440-48-4	7.74	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Copper	7440-50-8	17.9	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Lead	7439-92-1	12.5	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Mercury	7439-97-6	0.0141	0.0050	mg/kg	E510	01-Mar-2023	02-Mar-2023	845882
Molybdenum	7439-98-7	0.18	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Nickel	7440-02-0	16.1	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883

Analytical Results

WT2304664-004

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

Client sample ID: S-12598913-022423-CH-004
Client sampling date / time: 24-Feb-2023 15:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Thallium	7440-28-0	0.101	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Uranium	7440-61-1	0.492	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Vanadium	7440-62-2	23.6	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Zinc	7440-66-6	51.2	2.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	25-Feb-2023	28-Feb-2023	845877
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-004

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

Client sample ID: S-12598913-022423-CH-004
Client sampling date / time: 24-Feb-2023 15:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	03-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F3-PAH	n/a	<50	50	mg/kg	EC600	-	03-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	28-Feb-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	86.9	1.0	%	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Dichlorotoluene, 3,4-	95-75-0	89.5	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	73.9	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Difluorobenzene, 1,4-	540-36-3	89.4	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene	91-20-3	0.010	0.010	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	84.3	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene-d12	1719-03-5	78.9	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene-d8	1146-65-2	86.0	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene-d10	1517-22-2	85.6	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879

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

Analytical Results

WT2304664-005

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

Client sample ID: S-12598913-022423-CH-005
Client sampling date / time: 24-Feb-2023 15:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.135	0.00500	mS/cm	E100-L	01-Mar-2023	02-Mar-2023	845886
Moisture	----	11.7	0.25	%	E144	-	25-Feb-2023	845889
pH (1:2 soil:CaCl2-aq)	----	7.88	0.10	pH units	E108A	26-Feb-2023	02-Mar-2023	845884
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	25-Feb-2023	01-Mar-2023	845878
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	10.8	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Magnesium, soluble ion content	7439-95-4	4.35	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium, soluble ion content	17341-25-2	3.29	0.50	mg/L	E484	01-Mar-2023	02-Mar-2023	845885
Sodium adsorption ratio [SAR]	----	0.21	0.10	-	E484	01-Mar-2023	02-Mar-2023	845885
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Arsenic	7440-38-2	6.02	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Barium	7440-39-3	60.0	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Beryllium	7440-41-7	0.80	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron	7440-42-8	22.3	5.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Boron, hot water soluble	7440-42-8	0.10	0.10	mg/kg	E487	01-Mar-2023	02-Mar-2023	845887
Cadmium	7440-43-9	0.163	0.020	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Chromium	7440-47-3	40.6	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Cobalt	7440-48-4	13.4	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Copper	7440-50-8	25.9	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Lead	7439-92-1	18.6	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Mercury	7439-97-6	0.0192	0.0050	mg/kg	E510	01-Mar-2023	02-Mar-2023	845882
Molybdenum	7439-98-7	0.25	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Nickel	7440-02-0	31.9	0.50	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Thallium	7440-28-0	0.178	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Uranium	7440-61-1	0.548	0.050	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Vanadium	7440-62-2	35.4	0.20	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Zinc	7440-66-6	84.8	2.0	mg/kg	E440	01-Mar-2023	02-Mar-2023	845883
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	25-Feb-2023	28-Feb-2023	845877
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-005

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

Client sample ID: S-12598913-022423-CH-005
Client sampling date / time: 24-Feb-2023 15:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	03-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F3-PAH	n/a	<50	50	mg/kg	EC600	-	03-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	28-Feb-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	83.7	1.0	%	E601.SG-L	25-Feb-2023	03-Mar-2023	845880
Dichlorotoluene, 3,4-	95-75-0	85.8	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	72.1	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-005

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

Client sample ID: S-12598913-022423-CH-005
Client sampling date / time: 24-Feb-2023 15:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds Surrogates								
Difluorobenzene, 1,4-	540-36-3	87.9	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	25-Feb-2023	03-Mar-2023	845879
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	86.2	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Chrysene-d12	1719-03-5	83.2	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Naphthalene-d8	1146-65-2	89.7	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879
Phenanthrene-d10	1517-22-2	87.5	0.1	%	E641A	25-Feb-2023	03-Mar-2023	845879

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

Analytical Results

WT2304664-006

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

Client sample ID: TB-12598913-022323-CH-001 -
Client sampling date / time: 23-Feb-2023 15:40

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	<0.25	0.25	%	E144	-	26-Feb-2023	846372
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369

Analytical Results

WT2304664-006

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

Client sample ID: TB-12598913-022323-CH-001 -
Client sampling date / time: 23-Feb-2023 15:40

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
BTEX, total	----	<0.10	0.1	mg/kg	E611D	26-Feb-2023	28-Feb-2023	846369
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	26-Feb-2023	28-Feb-2023	846370
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	28-Feb-2023	-
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	92.4	1.0	%	E581.F1	26-Feb-2023	28-Feb-2023	846370
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	75.1	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369
Difluorobenzene, 1,4-	540-36-3	92.8	0.10	%	E611D	26-Feb-2023	28-Feb-2023	846369

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2304664**	Page	: 1 of 15
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 24-Feb-2023 17:17
PO	: 735-005299-1	Issue Date	: 06-Mar-2023 15:34
C-O-C number	: ----		
Sampler	: Christopher Heij		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E336A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	01-Mar-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E336A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	01-Mar-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E336A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	01-Mar-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E336A	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	01-Mar-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E336A	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	01-Mar-2023	14 days	4 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E484	24-Feb-2023	01-Mar-2023	180 days	5 days	✓	02-Mar-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E484	24-Feb-2023	01-Mar-2023	180 days	5 days	✓	02-Mar-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E484	23-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E484	23-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E484	24-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-004	E581.F1	24-Feb-2023	26-Feb-2023	14 days	2 days	✓	28-Feb-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-005	E581.F1	24-Feb-2023	26-Feb-2023	14 days	2 days	✓	28-Feb-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022323-CH-001	E581.F1	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022323-CH-002	E581.F1	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-003	E581.F1	24-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
TB-12598913-022323-CH-001	E581.F1	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E601.SG-L	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E601.SG-L	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E601.SG-L	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E601.SG-L	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	03-Mar-2023	40 days	6 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E601.SG-L	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	03-Mar-2023	40 days	6 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E487	24-Feb-2023	01-Mar-2023	180 days	5 days	✓	02-Mar-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E487	24-Feb-2023	01-Mar-2023	180 days	5 days	✓	02-Mar-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E487	23-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E487	23-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E487	24-Feb-2023	01-Mar-2023	180 days	6 days	✓	02-Mar-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E510	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E510	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	28 days	5 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E510	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E510	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E510	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	28 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E440	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E440	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E440	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	180 days	6 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E440	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E440	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	180 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E100-L	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E100-L	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E100-L	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	30 days	7 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E100-L	23-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	30 days	7 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E100-L	24-Feb-2023	01-Mar-2023	----	----		02-Mar-2023	30 days	7 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E144	23-Feb-2023	----	----	----		25-Feb-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E144	23-Feb-2023	----	----	----		25-Feb-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E144	24-Feb-2023	----	----	----		25-Feb-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E144	24-Feb-2023	----	----	----		25-Feb-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E144	24-Feb-2023	----	----	----		25-Feb-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil methanol vial [ON MECP]										
TB-12598913-022323-CH-001	E144	23-Feb-2023	----	----	----		26-Feb-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E108A	24-Feb-2023	26-Feb-2023	----	----		02-Mar-2023	30 days	5 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E108A	24-Feb-2023	26-Feb-2023	----	----		02-Mar-2023	30 days	5 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E108A	23-Feb-2023	26-Feb-2023	----	----		02-Mar-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E108A	24-Feb-2023	26-Feb-2023	----	----		02-Mar-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E108A	23-Feb-2023	26-Feb-2023	----	----		02-Mar-2023	30 days	7 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E641A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E641A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E641A	24-Feb-2023	25-Feb-2023	14 days	1 days	✓	03-Mar-2023	40 days	6 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E641A	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	03-Mar-2023	40 days	6 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E641A	23-Feb-2023	25-Feb-2023	14 days	2 days	✓	03-Mar-2023	40 days	6 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-003	E532	24-Feb-2023	25-Feb-2023	30 days	1 days	✓	28-Feb-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-004	E532	24-Feb-2023	25-Feb-2023	30 days	1 days	✓	28-Feb-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022423-CH-005	E532	24-Feb-2023	25-Feb-2023	30 days	1 days	✓	28-Feb-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-001	E532	23-Feb-2023	25-Feb-2023	30 days	2 days	✓	28-Feb-2023	7 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022323-CH-002	E532	23-Feb-2023	25-Feb-2023	30 days	2 days	✓	28-Feb-2023	7 days	3 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-004	E611D	24-Feb-2023	26-Feb-2023	14 days	2 days	✓	28-Feb-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-005	E611D	24-Feb-2023	26-Feb-2023	14 days	2 days	✓	28-Feb-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022323-CH-001	E611D	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022323-CH-002	E611D	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022423-CH-003	E611D	24-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
TB-12598913-022323-CH-001	E611D	23-Feb-2023	26-Feb-2023	14 days	3 days	✓	28-Feb-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	845887	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	846370	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	845880	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	845886	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	845877	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	845882	1	20	5.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	845883	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	845889	2	38	5.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	845879	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	845884	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	845885	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	846369	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	845878	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	845887	2	20	10.0	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	846370	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	845880	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	845886	2	20	10.0	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	845877	2	20	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	845882	2	20	10.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	845883	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	845889	2	38	5.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	845879	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	845884	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	845885	2	20	10.0	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	846369	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	845878	1	20	5.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	845887	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	846370	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	845880	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	845886	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	845877	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	845882	1	20	5.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	845883	1	20	5.0	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Moisture Content by Gravimetry	E144	845889	2	38	5.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	845879	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	845885	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	846369	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	845878	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	846370	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	845880	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	845879	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	846369	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	845878	1	20	5.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - 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 the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A Waterloo - 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 PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
F2 to F3 minus PAH	EC600 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F2-PAH = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus select Polycyclic Aromatic Hydrocarbons (PAH) as per CCME Soil Tier 1

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Waterloo - Environmental	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A Waterloo - Environmental	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 Waterloo - Environmental	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	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2304664**	Page	: 1 of 19
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 24-Feb-2023 17:17
PO	: 735-005299-1	Date Analysis Commenced	: 25-Feb-2023
C-O-C number	: ----	Issue Date	: 06-Mar-2023 15:34
Sampler	: Christopher Heij 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 845884)											
WT2304635-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.29	7.45	2.17%	5%	----
Physical Tests (QC Lot: 845886)											
WT2304664-001	S-12598913-022323-CH-001	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.117 mS/cm	113	2.95%	20%	----
Physical Tests (QC Lot: 845889)											
WT2304635-001	Anonymous	Moisture	----	E144	0.25	%	13.9	13.6	2.21%	20%	----
Physical Tests (QC Lot: 846372)											
WT2304547-001	Anonymous	Moisture	----	E144	0.25	%	22.5	22.6	0.623%	20%	----
Cyanides (QC Lot: 845878)											
WT2304635-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 845882)											
WT2304635-001	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0470	0.0505	7.14%	40%	----
Metals (QC Lot: 845883)											
WT2304635-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	0.16	0.15	0.0009	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.39	3.42	0.894%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	49.1	48.5	1.26%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.37	0.37	0.0006	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	5.3	5.4	0.1	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.432	0.425	1.56%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	12.8	13.0	2.00%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	4.22	4.26	0.759%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	7.54	7.70	1.99%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	26.6	26.4	0.889%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.41	0.41	0.001	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	7.78	7.90	1.64%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.25	0.24	0.02	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.107	0.105	0.001	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.387	0.372	3.91%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	26.9	27.8	3.26%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	136	139	2.24%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 845885)											
WT2304664-001	S-12598913-022323-CH-001	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	5.43	5.35	1.48%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	1.93	1.85	0.08	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	6.38	6.20	2.86%	30%	----
Metals (QC Lot: 845887)											
WT2304664-001	S-12598913-022323-CH-001	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0.0006	Diff <2x LOR	----
Speciated Metals (QC Lot: 845877)											
WT2304635-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 846369)											
WT2304635-001	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	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 846369) - continued											
WT2304635-001	Anonymous	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: 845880)											
WT2304635-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 846370)											
WT2304635-001	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 845879)											
WT2304635-001	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 845879) - continued											
WT2304635-001	Anonymous	Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	0.013	0.011	0.002	Diff <2x LOR	J
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
J	*Duplicate results and limits are expressed in terms of absolute difference.*

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: 845886)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 845889)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 846372)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 845878)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 845882)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 845883)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 845885)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 845887)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 845877)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 846369)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 846369) - continued						
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 845880)						
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: 846370)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Polycyclic Aromatic Hydrocarbons (QCLot: 845879)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 845884)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 845886)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	98.4	90.0	110	----
Physical Tests (QCLot: 845889)									
Moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 846372)									
Moisture	----	E144	0.25	%	50 %	99.6	90.0	110	----
Cyanides (QCLot: 845878)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	99.1	80.0	120	----
Metals (QCLot: 845882)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	----
Metals (QCLot: 845883)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	98.1	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	105	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	94.9	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	93.2	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	94.2	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	100	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	97.0	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.1	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	94.7	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	98.9	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	102	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	85.0	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	98.0	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	92.9	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	96.2	80.0	120	----
Metals (QCLot: 845885)									

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 845885) - continued									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	106	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	104	80.0	120	----
Metals (QCLot: 845887)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	102	70.0	130	----
Speciated Metals (QCLot: 845877)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	86.0	80.0	120	----
Volatile Organic Compounds (QCLot: 846369)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	111	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	105	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	94.8	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	105	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	105	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	83.0	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	99.1	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	94.8	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	97.3	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	104	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	101	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	92.1	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	97.5	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	61.6	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	84.5	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	83.8	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	83.1	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	102	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	86.3	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	96.2	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	98.4	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	96.4	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	97.0	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	91.0	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	119	60.0	140	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 846369) - continued									
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	113	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	108	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	102	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	96.2	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	98.1	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	100	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	86.7	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	107	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	98.0	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	78.9	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	97.6	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	94.8	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	90.0	70.0	130	----
Hydrocarbons (QCLot: 845880)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	97.1	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	98.2	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	96.8	70.0	130	----
Hydrocarbons (QCLot: 846370)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	113	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 845879)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	85.8	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	87.6	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	84.0	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	89.8	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	86.7	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	91.2	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	99.4	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	85.4	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	102	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	87.8	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	89.8	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	87.9	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	96.2	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 845879) - continued									
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	87.6	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	84.7	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	88.6	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	83.9	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	86.2	60.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 845878)										
WT2304635-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.21 mg/kg	2.5 mg/kg	97.3	70.0	130	----
Volatile Organic Compounds (QCLot: 846369)										
WT2304635-001	Anonymous	Acetone	67-64-1	E611D	2.55 mg/kg	3.125 mg/kg	96.3	50.0	140	----
		Benzene	71-43-2	E611D	2.21 mg/kg	3.125 mg/kg	83.4	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.09 mg/kg	3.125 mg/kg	78.9	50.0	140	----
		Bromoform	75-25-2	E611D	2.42 mg/kg	3.125 mg/kg	91.4	50.0	140	----
		Bromomethane	74-83-9	E611D	2.39 mg/kg	3.125 mg/kg	90.1	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	1.65 mg/kg	3.125 mg/kg	62.1	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.12 mg/kg	3.125 mg/kg	79.8	50.0	140	----
		Chloroform	67-66-3	E611D	2.01 mg/kg	3.125 mg/kg	75.7	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.23 mg/kg	3.125 mg/kg	84.2	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.46 mg/kg	3.125 mg/kg	92.8	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.28 mg/kg	3.125 mg/kg	86.3	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.18 mg/kg	3.125 mg/kg	82.2	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.20 mg/kg	3.125 mg/kg	83.0	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	1.96 mg/kg	3.125 mg/kg	74.1	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	1.90 mg/kg	3.125 mg/kg	71.8	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	1.85 mg/kg	3.125 mg/kg	69.9	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	1.71 mg/kg	3.125 mg/kg	64.6	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.23 mg/kg	3.125 mg/kg	84.2	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	1.80 mg/kg	3.125 mg/kg	68.1	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.20 mg/kg	3.125 mg/kg	83.1	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.28 mg/kg	3.125 mg/kg	86.3	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.11 mg/kg	3.125 mg/kg	79.6	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.08 mg/kg	3.125 mg/kg	78.4	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.00 mg/kg	3.125 mg/kg	75.5	50.0	140	----
		Hexane, n-	110-54-3	E611D	1.92 mg/kg	3.125 mg/kg	72.3	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.88 mg/kg	3.125 mg/kg	108	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.57 mg/kg	3.125 mg/kg	96.9	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.54 mg/kg	3.125 mg/kg	95.9	50.0	140	----
		Styrene	100-42-5	E611D	2.18 mg/kg	3.125 mg/kg	82.1	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 846369) - continued										
WT2304635-001	Anonymous	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.08 mg/kg	3.125 mg/kg	78.5	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.58 mg/kg	3.125 mg/kg	97.2	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.13 mg/kg	3.125 mg/kg	80.3	50.0	140	----
		Toluene	108-88-3	E611D	2.11 mg/kg	3.125 mg/kg	79.7	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.75 mg/kg	3.125 mg/kg	66.1	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.46 mg/kg	3.125 mg/kg	93.0	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.05 mg/kg	3.125 mg/kg	77.5	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	1.67 mg/kg	3.125 mg/kg	63.1	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.25 mg/kg	3.125 mg/kg	85.0	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	3.94 mg/kg	6.25 mg/kg	74.4	50.0	140	----
		Xylene, o-	95-47-6	E611D	1.96 mg/kg	3.125 mg/kg	74.1	50.0	140	----
Hydrocarbons (QCLot: 845880)										
WT2304635-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	698 mg/kg	821.775 mg/kg	101	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	998 mg/kg	1151.486 mg/kg	103	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	625 mg/kg	719.6893 mg/kg	104	60.0	140	----
Hydrocarbons (QCLot: 846370)										
WT2304635-001	Anonymous	F1 (C6-C10)	----	E581.F1	45.7 mg/kg	62.5 mg/kg	86.2	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 845879)										
WT2304635-001	Anonymous	Acenaphthene	83-32-9	E641A	0.365 mg/kg	0.5 mg/kg	84.9	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.372 mg/kg	0.5 mg/kg	86.6	50.0	140	----
		Anthracene	120-12-7	E641A	0.356 mg/kg	0.5 mg/kg	82.8	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.350 mg/kg	0.5 mg/kg	81.5	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.361 mg/kg	0.5 mg/kg	84.0	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.348 mg/kg	0.5 mg/kg	81.1	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.354 mg/kg	0.5 mg/kg	82.3	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.352 mg/kg	0.5 mg/kg	82.0	50.0	140	----
		Chrysene	218-01-9	E641A	0.370 mg/kg	0.5 mg/kg	86.2	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.360 mg/kg	0.5 mg/kg	83.7	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.356 mg/kg	0.5 mg/kg	82.7	50.0	140	----
		Fluorene	86-73-7	E641A	0.372 mg/kg	0.5 mg/kg	86.6	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.369 mg/kg	0.5 mg/kg	85.8	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.361 mg/kg	0.5 mg/kg	84.0	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.363 mg/kg	0.5 mg/kg	84.6	50.0	140	----
		Naphthalene	91-20-3	E641A	0.369 mg/kg	0.5 mg/kg	85.8	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 845879) - continued										
WT2304635-001	Anonymous	Phenanthrene	85-01-8	E641A	0.344 mg/kg	0.5 mg/kg	79.9	50.0	140	----
		Pyrene	129-00-0	E641A	0.348 mg/kg	0.5 mg/kg	81.0	50.0	140	----

Reference Material (RM) Report

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

Sub-Matrix:

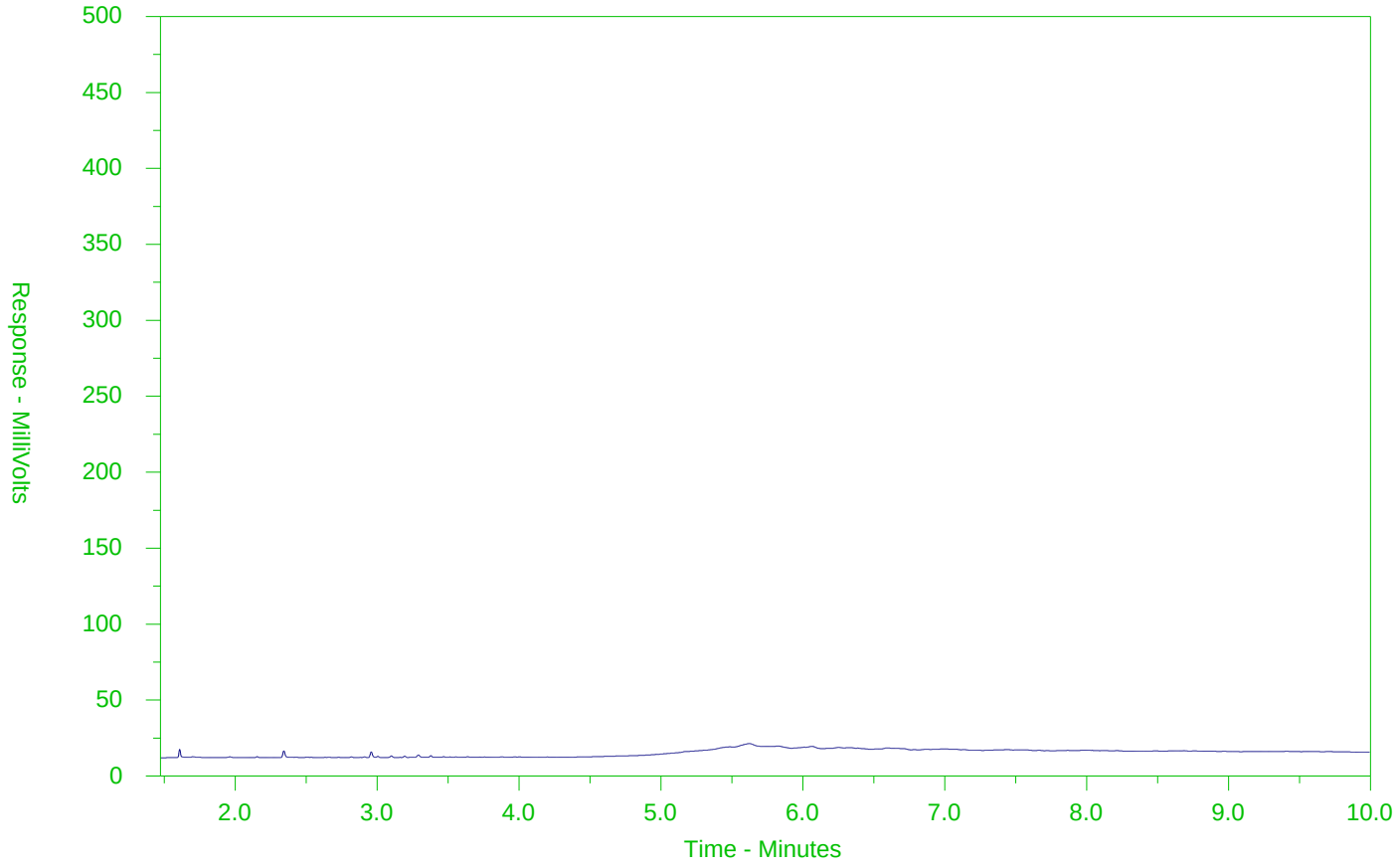
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 845886)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1876 µS/cm	104	70.0	130	----
Metals (QCLot: 845882)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	102	70.0	130	----
Metals (QCLot: 845883)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	92.4	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	99.3	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	114	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	104	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	122	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	99.6	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	107	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	99.3	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	96.0	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	100	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	104	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	92.7	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	95.4	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	101	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	107	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	99.1	70.0	130	----
Metals (QCLot: 845885)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.133 mg/L	120	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.6555 mg/L	120	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.3444 mg/L	106	70.0	130	----
Metals (QCLot: 845887)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.4938 mg/kg	106	60.0	140	----
Speciated Metals (QCLot: 845877)									

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals (QCLot: 845877) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	97.1	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304664-001-E601.SG-L
Client Sample ID: S-12598913-022323-CH-001



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

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

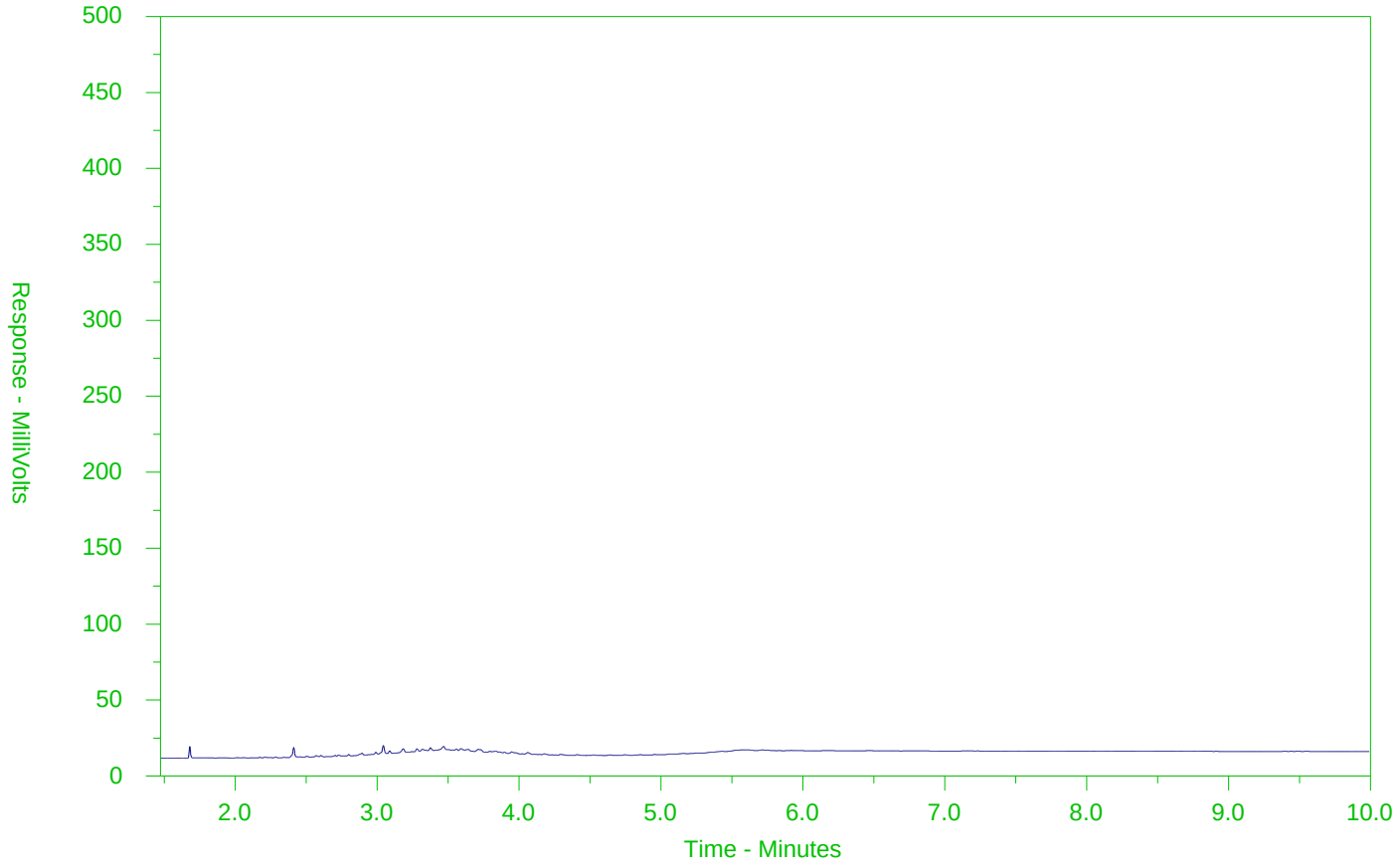
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304664-002-E601.SG-L
Client Sample ID: S-12598913-022323-CH-002



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

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

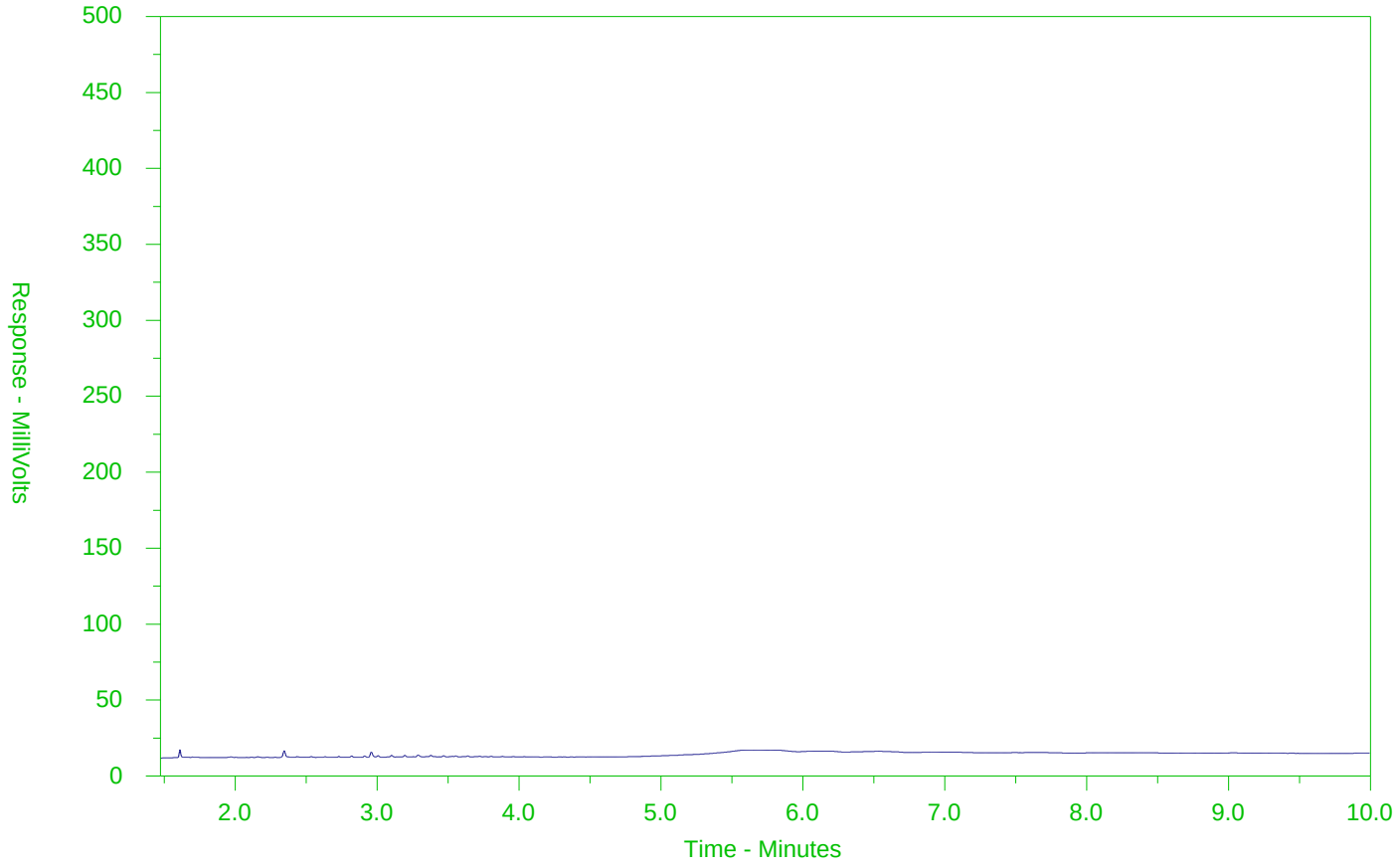
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304664-003-E601.SG-L
Client Sample ID: S-12598913-022423-CH-003



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

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

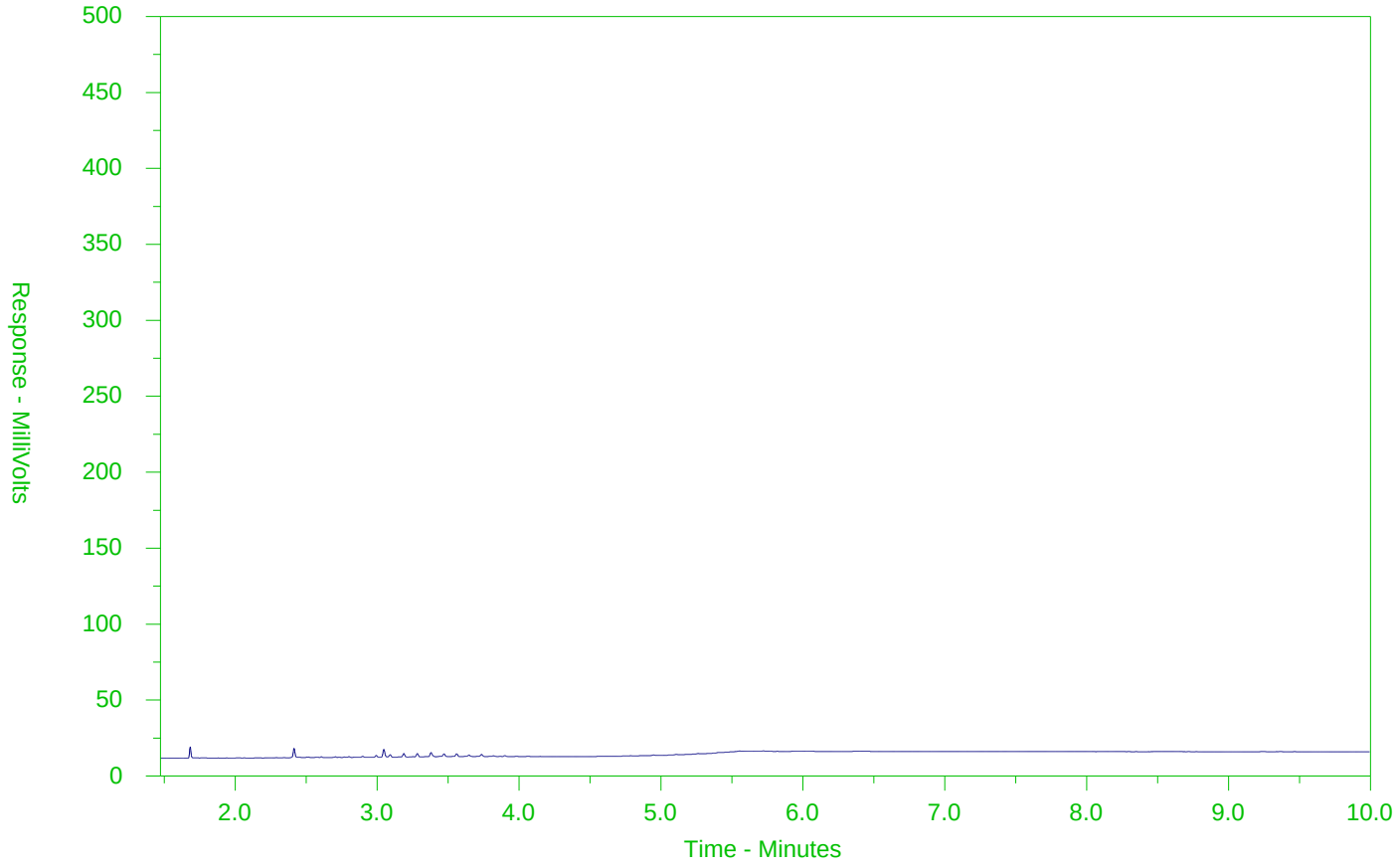
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304664-004-E601.SG-L
Client Sample ID: S-12598913-022423-CH-004



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

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

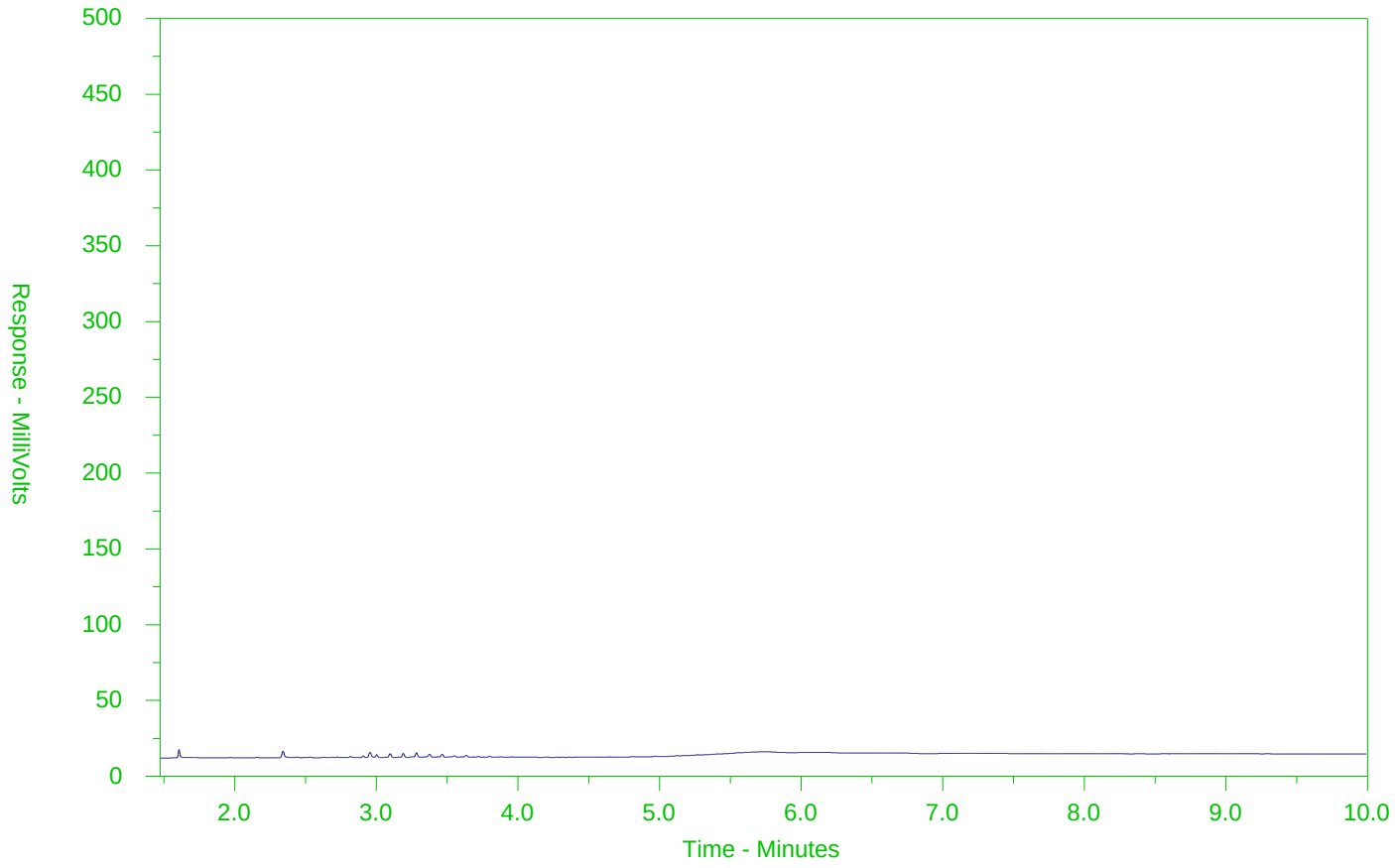
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304664-005-E601.SG-L
Client Sample ID: S-12598913-022423-CH-005



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

P

Environmental Division Waterloo
Work Order Reference
WT2304664

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge m
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge m
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge m
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge m
☐ Same day [E2] if received by 10am M-S - 200% rush surcha
fees may apply to rush resuests on weekends, statutory holid
routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according,

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2304664 FH

ALS Contact: Rick H

Sampler: CHRIJ HEIJ

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	PAHs	VOCs.F1	F2-F4	Trip Blank _ VOCs/ F1	TCLP VOCs	TCLP Metals/Inorganics	TCLP B(a)p	Ignitability	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes
	S-12598913-022323-CH-001	~~23~~-FEB-23	1125	SOIL	4	X	X	X	X								
	S-12598913-022323-CH-002	23-FEB-23	1510	SOIL	4	X	X	X	X								
	S-12598913-022423-CH-003	24-FEB-23	0935	SOIL	4	X	X	X	X								
	S-12598913-022423-CH-004	24-FEB-23	1530	SOIL	4	X	X	X	X								
	S-12598913-022423-CH-005	24-FEB-23	1535	SOIL	4	X	X	X	X								
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	TB-12598913-022~~4~~23-CH-001	23 ~~24~~-FEB-23	1540	TRIP BLANK						X							

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

Are samples taken from a Regulated DW System?
☐ YES ☐ NO

Are samples for human consumption/ use?
☐ YES ☒ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				6.3			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
CHRIJ HEIJ	24-FEB-23	1715

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
MA	2023-02-24	17:17

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

Col 87 6/87S US-169

CERTIFICATE OF ANALYSIS

Work Order	: **WT2304876**	Page	: 1 of 7
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Date Analysis Commenced	: 28-Feb-2023
C-O-C number	: ----	Issue Date	: 02-Mar-2023 16:18
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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.

Signatories	*Position*	*Laboratory Department*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Kelsey Hesch	Analyst	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

>: greater than.
<: 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*
DLB	*Detection Limit Raised. Analyte detected at comparable level in Method Blank.*

Analytical Results

WT2304876-001

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

Client sample ID: S-12598913-022723-CH-006
Client sampling date / time: 27-Feb-2023 13:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.155	0.00500	mS/cm	E100-L	01-Mar-2023	01-Mar-2023	848652
Moisture	----	14.8	0.25	%	E144	-	28-Feb-2023	848447
pH (1:2 soil:CaCl2-aq)	----	7.57	0.10	pH units	E108A	28-Feb-2023	01-Mar-2023	848438
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	28-Feb-2023	01-Mar-2023	848413
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	12.8	0.50	mg/L	E484	01-Mar-2023	01-Mar-2023	848651
Magnesium, soluble ion content	7439-95-4	2.68	0.50	mg/L	E484	01-Mar-2023	01-Mar-2023	848651
Sodium, soluble ion content	17341-25-2	4.92	0.50	mg/L	E484	01-Mar-2023	01-Mar-2023	848651
Sodium adsorption ratio [SAR]	----	0.33	0.10	-	E484	01-Mar-2023	01-Mar-2023	848651
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Arsenic	7440-38-2	2.69	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Barium	7440-39-3	22.1	0.50	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Beryllium	7440-41-7	0.25	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Boron	7440-42-8	6.1	5.0	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Boron, hot water soluble	7440-42-8	0.16	0.10	mg/kg	E487	01-Mar-2023	01-Mar-2023	848653
Cadmium	7440-43-9	0.091	0.020	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Chromium	7440-47-3	12.2	0.50	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Cobalt	7440-48-4	3.40	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Copper	7440-50-8	8.02	0.50	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Lead	7439-92-1	7.24	0.50	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Mercury	7439-97-6	0.0090	0.0050	mg/kg	E510	01-Mar-2023	01-Mar-2023	848649
Molybdenum	7439-98-7	0.47	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Nickel	7440-02-0	7.40	0.50	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Thallium	7440-28-0	0.052	0.050	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Uranium	7440-61-1	0.445	0.050	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Vanadium	7440-62-2	22.3	0.20	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Zinc	7440-66-6	33.8	2.0	mg/kg	E440	01-Mar-2023	01-Mar-2023	848650
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	28-Feb-2023	01-Mar-2023	848432
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476

Analytical Results

WT2304876-001

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

Client sample ID: S-12598913-022723-CH-006
Client sampling date / time: 27-Feb-2023 13:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	28-Feb-2023	02-Mar-2023	848476
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
BTEX, total	----	<0.10	0.1	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	28-Feb-2023	01-Mar-2023	848477
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	28-Feb-2023	01-Mar-2023	848411
F2-Naphthalene	----	<25	25	mg/kg	EC600	-	01-Mar-2023	-
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	28-Feb-2023	01-Mar-2023	848411
F3-PAH	n/a	<50	50	mg/kg	EC600	-	01-Mar-2023	-
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	28-Feb-2023	01-Mar-2023	848411
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	02-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	01-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	28-Feb-2023	01-Mar-2023	848411
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	89.8	1.0	%	E601.SG-L	28-Feb-2023	01-Mar-2023	848411
Dichlorotoluene, 3,4-	95-75-0	86.3	1.0	%	E581.F1	28-Feb-2023	01-Mar-2023	848477
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	112	0.10	%	E611D	28-Feb-2023	01-Mar-2023	848476

Analytical Results

WT2304876-001

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

Client sample ID: S-12598913-022723-CH-006
Client sampling date / time: 27-Feb-2023 13:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds Surrogates								
Difluorobenzene, 1,4-	540-36-3	87.5	0.10	%	E611D	28-Feb-2023	01-Mar-2023	848476
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Naphthalene	91-20-3	<0.026 DLB.	0.026	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A	28-Feb-2023	01-Mar-2023	848412
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	80.9	0.1	%	E641A	28-Feb-2023	01-Mar-2023	848412
Chrysene-d12	1719-03-5	71.3	0.1	%	E641A	28-Feb-2023	01-Mar-2023	848412
Naphthalene-d8	1146-65-2	78.5	0.1	%	E641A	28-Feb-2023	01-Mar-2023	848412
Phenanthrene-d10	1517-22-2	80.5	0.1	%	E641A	28-Feb-2023	01-Mar-2023	848412

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

Analytical Results

WT2304876-002

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

Client sample ID: TB-12598913-022723-CH-002
Client sampling date / time: 27-Feb-2023 13:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	<0.25	0.25	%	E144	-	28-Feb-2023	848447
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476

Analytical Results

WT2304876-002

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

Client sample ID: TB-12598913-022723-CH-002
Client sampling date / time: 27-Feb-2023 13:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
BTEX, total	----	<0.10	0.1	mg/kg	E611D	28-Feb-2023	01-Mar-2023	848476
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	28-Feb-2023	01-Mar-2023	848477
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	02-Mar-2023	-
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	84.8	1.0	%	E581.F1	28-Feb-2023	01-Mar-2023	848477
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	112	0.10	%	E611D	28-Feb-2023	01-Mar-2023	848476
Difluorobenzene, 1,4-	540-36-3	82.5	0.10	%	E611D	28-Feb-2023	01-Mar-2023	848476

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2304876**	Page	: 1 of 11
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Issue Date	: 02-Mar-2023 16:18
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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 Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- 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)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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
Method Blank (MB) Values								
Polycyclic Aromatic Hydrocarbons	QC-MRG2-8484110 01	----	Naphthalene	91-20-3	E641A	0.041 mg/kg MB-LOR	0.01 mg/kg	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

Laboratory Control Sample (LCS) Recoveries								
Volatile Organic Compounds	QC-848476-002	----	Bromoform	75-25-2	E611D	141 % LCS-H	70.0-130%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
LCS-H	*Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E336A	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	14 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E484	27-Feb-2023	01-Mar-2023	180 days	2 days	✓	01-Mar-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-022723-CH-006	E581.F1	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
TB-12598913-022723-CH-002	E581.F1	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E601.SG-L	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E487	27-Feb-2023	01-Mar-2023	180 days	2 days	✓	01-Mar-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E510	27-Feb-2023	01-Mar-2023	----	----		01-Mar-2023	28 days	2 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E440	27-Feb-2023	01-Mar-2023	----	----		01-Mar-2023	180 days	2 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E100-L	27-Feb-2023	01-Mar-2023	----	----		01-Mar-2023	30 days	2 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E144	27-Feb-2023	----	----	----		28-Feb-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil methanol vial [ON MECP]										
TB-12598913-022723-CH-002	E144	27-Feb-2023	----	----	----		28-Feb-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E108A	27-Feb-2023	28-Feb-2023	----	----		01-Mar-2023	30 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E641A	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap										
S-12598913-022723-CH-006	E532	27-Feb-2023	28-Feb-2023	30 days	1 days	✓	01-Mar-2023	7 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-022723-CH-006	E611D	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
TB-12598913-022723-CH-002	E611D	27-Feb-2023	28-Feb-2023	14 days	1 days	✓	01-Mar-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	848653	1	8	12.5	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	848477	1	10	10.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	848411	1	7	14.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	848652	1	8	12.5	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	848432	1	1	100.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	848649	1	8	12.5	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	848650	1	8	12.5	5.0	✓
Moisture Content by Gravimetry	E144	848447	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	848412	1	1	100.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	848438	1	1	100.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	848651	1	8	12.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848476	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	848413	1	1	100.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	848653	2	8	25.0	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	848477	1	10	10.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	848411	1	7	14.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	848652	2	8	25.0	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	848432	2	1	200.0	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	848649	2	8	25.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	848650	2	8	25.0	10.0	✓
Moisture Content by Gravimetry	E144	848447	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	848412	1	1	100.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	848438	1	1	100.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	848651	2	8	25.0	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848476	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	848413	1	1	100.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	848653	1	8	12.5	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	848477	1	10	10.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	848411	1	7	14.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	848652	1	8	12.5	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	848432	1	1	100.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	848649	1	8	12.5	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	848650	1	8	12.5	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Moisture Content by Gravimetry	E144	848447	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	848412	1	1	100.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	848651	1	8	12.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848476	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	848413	1	1	100.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	848477	1	10	10.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	848411	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	848412	1	1	100.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848476	1	10	10.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	848413	1	1	100.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - 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 the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A Waterloo - 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 PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
F2 to F3 minus PAH	EC600 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F2-PAH = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus select Polycyclic Aromatic Hydrocarbons (PAH) as per CCME Soil Tier 1

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Waterloo - Environmental	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A Waterloo - Environmental	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 Waterloo - Environmental	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	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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.

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QUALITY CONTROL REPORT

Work Order	: **WT2304876**	Page	: 1 of 19
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Date Analysis Commenced	: 28-Feb-2023
C-O-C number	: ----	Issue Date	: 02-Mar-2023 16:18
Sampler	: ---- 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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 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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Kelsey Hesch	Analyst	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 848438)											
WT2304876-001	S-12598913-022723-CH-006	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.57	7.59	0.264%	5%	----
Physical Tests (QC Lot: 848447)											
WT2304835-001	Anonymous	Moisture	----	E144	0.25	%	5.48	5.56	1.46%	20%	----
Physical Tests (QC Lot: 848652)											
WT2304860-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.0563 mS/cm	57.8	2.63%	20%	----
Cyanides (QC Lot: 848413)											
WT2304876-001	S-12598913-022723-CH-006	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 848649)											
WT2304860-001	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 848650)											
WT2304860-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	1.07	1.10	2.70%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	11.9	11.6	2.72%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.12	0.12	0.0008	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.030	0.027	0.003	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	3.88	3.90	0.306%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	1.51	1.53	0.865%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	3.34	3.40	1.79%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	2.15	2.16	0.02	Diff <2x LOR	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.10	0.11	0.009	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	3.58	3.40	5.16%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.295	0.315	0.020	Diff <2x LOR	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	8.24	8.10	1.79%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	10.0	9.4	0.6	Diff <2x LOR	----
Metals (QC Lot: 848651)											

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 848651) - continued											
WT2304860-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	2.40	2.49	0.09	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	0.57	0.54	0.02	Diff <2x LOR	----
Metals (QC Lot: 848653)											
WT2304860-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0.00005	Diff <2x LOR	----
Speciated Metals (QC Lot: 848432)											
WT2304876-001	S-12598913-022723-CH-006	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 848476)											
WT2304876-001	S-12598913-022723-CH-006	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 848476) - continued											
WT2304876-001	S-12598913-022723-CH-006	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: 848411)											
WT2304876-001	S-12598913-022723-CH-006	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 848477)											
WT2304876-001	S-12598913-022723-CH-006	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 848412)											
WT2304876-001	S-12598913-022723-CH-006	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 848412) - continued											
WT2304876-001	S-12598913-022723-CH-006	Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	<0.026	0.026	0.0003	Diff <2x LOR	J
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
J	*Duplicate results and limits are expressed in terms of absolute difference.*

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: 848447)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 848652)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Cyanides (QCLot: 848413)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 848649)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 848650)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 848651)						
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: 848653)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 848432)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 848476)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 848476) - 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: 848411)						
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: 848477)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Polycyclic Aromatic Hydrocarbons (QCLot: 848412)						
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	# 0.041	MB-LOR
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Qualifiers

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

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: 848438)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 848447)									
Moisture	----	E144	0.25	%	50 %	99.0	90.0	110	----
Physical Tests (QCLot: 848652)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	99.8	90.0	110	----
Cyanides (QCLot: 848413)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	94.4	80.0	120	----
Metals (QCLot: 848649)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	101	80.0	120	----
Metals (QCLot: 848650)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	94.8	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	101	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	92.7	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	92.6	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	95.0	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	95.7	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.0	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.7	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	96.2	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	94.6	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	94.2	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	87.7	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	91.8	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	95.5	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	97.1	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	92.6	80.0	120	----
Metals (QCLot: 848651)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	103	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	99.8	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 848651) - continued									
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Metals (QCLot: 848653)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	110	70.0	130	----
Speciated Metals (QCLot: 848432)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	96.1	80.0	120	----
Volatile Organic Compounds (QCLot: 848476)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	116	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	103	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	108	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	# 141	70.0	130	LCS-H
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	101	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	106	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	97.7	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	111	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	112	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	111	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	67.5	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	116	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	111	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	101	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	115	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	126	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	110	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	111	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	108	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	110	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	103	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	102	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	118	70.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 848476) - continued									
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	103	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	101	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	110	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	107	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	105	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	113	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	104	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	107	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	85.8	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	107	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	109	70.0	130	----
Hydrocarbons (QCLot: 848411)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	100	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	100	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	98.9	70.0	130	----
Hydrocarbons (QCLot: 848477)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	106	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 848412)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	80.0	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	82.5	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	83.7	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	89.9	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	85.0	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	82.6	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	73.1	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	82.9	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	94.8	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	78.7	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	85.2	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	84.0	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	84.2	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	78.2	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	77.9	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 848412) - continued									
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	84.2	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	82.7	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	81.4	60.0	130	----

Qualifiers

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 848413)										
WT2304876-001	S-12598913-022723-CH-006	Cyanide, weak acid dissociable	----	E336A	1.25 mg/kg	2.5 mg/kg	100.0	70.0	130	----
Volatile Organic Compounds (QCLot: 848476)										
WT2304876-001	S-12598913-022723-CH-006	Acetone	67-64-1	E611D	3.71 mg/kg	3.125 mg/kg	108	50.0	140	----
		Benzene	71-43-2	E611D	3.48 mg/kg	3.125 mg/kg	101	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	3.53 mg/kg	3.125 mg/kg	103	50.0	140	----
		Bromoform	75-25-2	E611D	4.59 mg/kg	3.125 mg/kg	134	50.0	140	----
		Bromomethane	74-83-9	E611D	3.51 mg/kg	3.125 mg/kg	102	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	3.68 mg/kg	3.125 mg/kg	107	50.0	140	----
		Chlorobenzene	108-90-7	E611D	3.52 mg/kg	3.125 mg/kg	103	50.0	140	----
		Chloroform	67-66-3	E611D	3.64 mg/kg	3.125 mg/kg	106	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	3.48 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	3.18 mg/kg	3.125 mg/kg	92.5	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	3.72 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	3.78 mg/kg	3.125 mg/kg	110	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	3.74 mg/kg	3.125 mg/kg	109	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.61 mg/kg	3.125 mg/kg	76.0	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	3.94 mg/kg	3.125 mg/kg	115	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	3.59 mg/kg	3.125 mg/kg	105	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	3.82 mg/kg	3.125 mg/kg	111	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	3.37 mg/kg	3.125 mg/kg	98.2	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	3.99 mg/kg	3.125 mg/kg	116	50.0	140	----
		Dichloromethane	75-09-2	E611D	4.21 mg/kg	3.125 mg/kg	122	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	3.48 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	3.57 mg/kg	3.125 mg/kg	104	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	3.63 mg/kg	3.125 mg/kg	106	50.0	140	----
		Ethylbenzene	100-41-4	E611D	3.74 mg/kg	3.125 mg/kg	109	50.0	140	----
		Hexane, n-	110-54-3	E611D	4.03 mg/kg	3.125 mg/kg	117	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	3.15 mg/kg	3.125 mg/kg	91.7	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	3.18 mg/kg	3.125 mg/kg	92.7	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	4.04 mg/kg	3.125 mg/kg	118	50.0	140	----
		Styrene	100-42-5	E611D	3.42 mg/kg	3.125 mg/kg	99.6	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 848476) - continued										
WT2304876-001	S-12598913-022723-CH-006	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	3.36 mg/kg	3.125 mg/kg	97.8	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	3.60 mg/kg	3.125 mg/kg	105	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	3.70 mg/kg	3.125 mg/kg	108	50.0	140	----
		Toluene	108-88-3	E611D	3.62 mg/kg	3.125 mg/kg	106	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	3.89 mg/kg	3.125 mg/kg	113	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	3.38 mg/kg	3.125 mg/kg	98.4	50.0	140	----
		Trichloroethylene	79-01-6	E611D	3.45 mg/kg	3.125 mg/kg	100	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	3.90 mg/kg	3.125 mg/kg	114	50.0	140	----
		Vinyl chloride	75-01-4	E611D	3.08 mg/kg	3.125 mg/kg	89.8	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	7.34 mg/kg	6.25 mg/kg	107	50.0	140	----
		Xylene, o-	95-47-6	E611D	3.75 mg/kg	3.125 mg/kg	109	50.0	140	----
Hydrocarbons (QCLot: 848411)										
WT2304876-001	S-12598913-022723-CH-006	F2 (C10-C16)	----	E601.SG-L	665 mg/kg	821.775 mg/kg	105	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1040 mg/kg	1151.486 mg/kg	116	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	604 mg/kg	719.6893 mg/kg	108	60.0	140	----
Hydrocarbons (QCLot: 848477)										
WT2304876-001	S-12598913-022723-CH-006	F1 (C6-C10)	----	E581.F1	65.6 mg/kg	62.5 mg/kg	95.6	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 848412)										
WT2304876-001	S-12598913-022723-CH-006	Acenaphthene	83-32-9	E641A	0.319 mg/kg	0.5 mg/kg	82.5	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.320 mg/kg	0.5 mg/kg	82.9	50.0	140	----
		Anthracene	120-12-7	E641A	0.338 mg/kg	0.5 mg/kg	87.7	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.326 mg/kg	0.5 mg/kg	84.4	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.341 mg/kg	0.5 mg/kg	88.4	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.290 mg/kg	0.5 mg/kg	75.0	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.284 mg/kg	0.5 mg/kg	73.6	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.315 mg/kg	0.5 mg/kg	81.5	50.0	140	----
		Chrysene	218-01-9	E641A	0.344 mg/kg	0.5 mg/kg	89.1	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.300 mg/kg	0.5 mg/kg	77.7	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.330 mg/kg	0.5 mg/kg	85.6	50.0	140	----
		Fluorene	86-73-7	E641A	0.327 mg/kg	0.5 mg/kg	84.7	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.340 mg/kg	0.5 mg/kg	88.0	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.306 mg/kg	0.5 mg/kg	79.4	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.304 mg/kg	0.5 mg/kg	78.6	50.0	140	----
		Naphthalene	91-20-3	E641A	0.311 mg/kg	0.5 mg/kg	80.6	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 848412) - continued										
WT2304876-001	S-12598913-022723-CH-006	Phenanthrene	85-01-8	E641A	0.331 mg/kg	0.5 mg/kg	85.7	50.0	140	----
		Pyrene	129-00-0	E641A	0.321 mg/kg	0.5 mg/kg	83.0	50.0	140	----

Reference Material (RM) Report

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

Sub-Matrix:

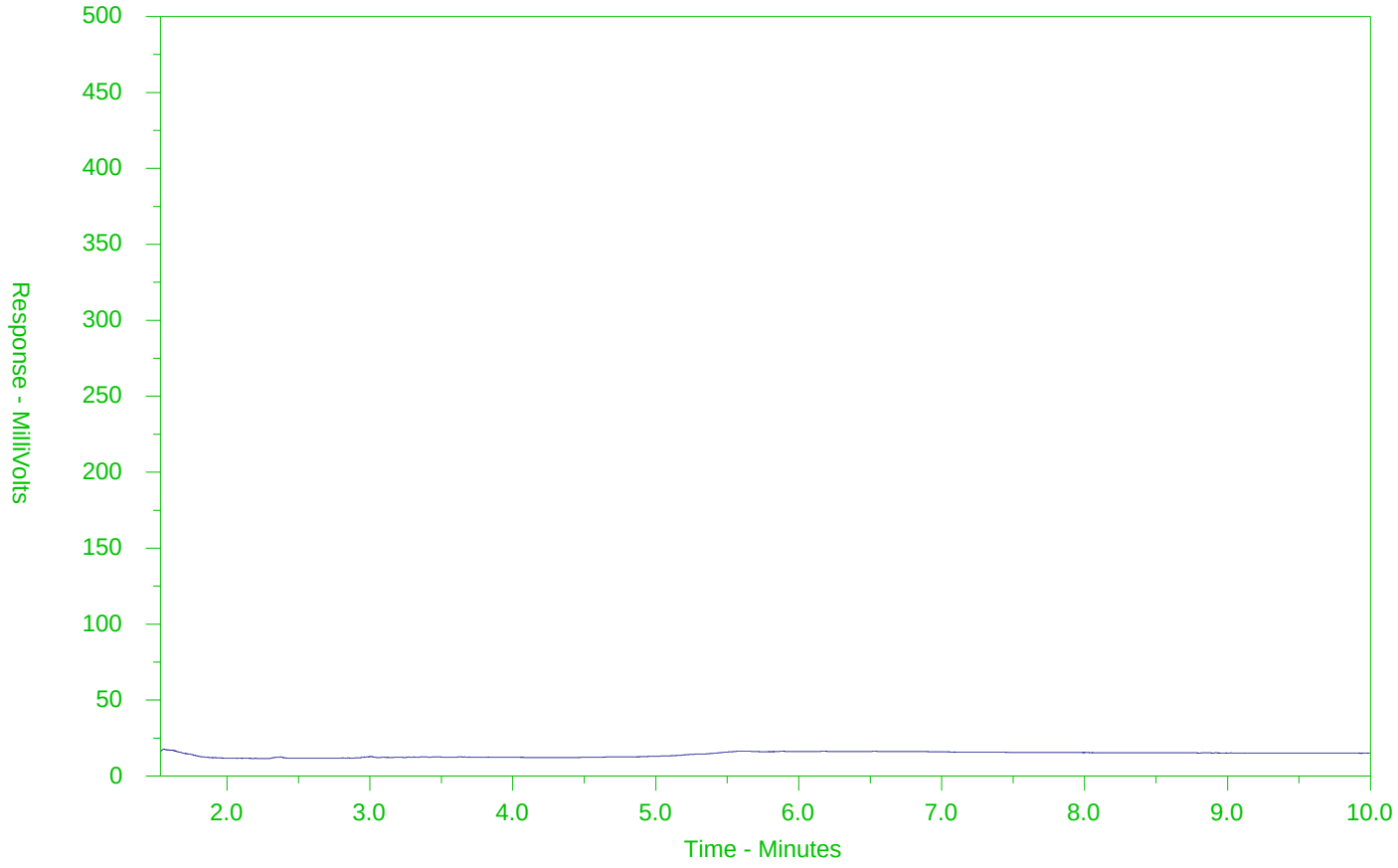
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 848652)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	100	70.0	130	----
Metals (QCLot: 848649)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	101	70.0	130	----
Metals (QCLot: 848650)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	114	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	111	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	116	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	111	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	116	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	123	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	106	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	111	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	114	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	111	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	117	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	113	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	93.6	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	115	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	113	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	109	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	106	70.0	130	----
Metals (QCLot: 848651)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	101	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	103	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	101	70.0	130	----
Metals (QCLot: 848653)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	98.5	60.0	140	----
Speciated Metals (QCLot: 848432)									

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 848432) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	100	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2304876-001-E601.SG-L
Client Sample ID: S-12598913-022723-CH-006



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page 1 of 1

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2304876

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge min
☐ 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
fees may apply to rush resuests on weekends, statutory holida
routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according t

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2304876

ALS Contact: Rick H

Sampler:

Analysis R

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	PAHs	VOCs, F1	F2-F4	Trip Blank _ VOCs/ F1	TCLP VOCs	TCLP Metals/inorganics	TCLP B(a)p	Ignitability	SAMPLES ON HOLD	EXTENDED STORAGE RE	SUSPECTED HAZARD (se
	S-12598913-022723-CH-006	27-FEB-23	1325	SOIL		X	X	X	X								
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	TB-12598913-022723-CH-002	27-FEB-23	1330	TB						X							

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				-0.7			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	02/28/23	1740

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
HD	FEB 28, 2023	1745

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VS-177 501900

CERTIFICATE OF ANALYSIS

Work Order	: **WT2304877**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Date Analysis Commenced	: 01-Mar-2023
C-O-C number	: ----	Issue Date	: 06-Mar-2023 11:54
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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.

Signatories	*Position*	*Laboratory Department*
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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*
µg/L	micrograms per litre

>: greater than.
<: 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.

Analytical Results

WT2304877-001

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

Client sample ID: TB-12598913-022823-CH-003 -
Client sampling date / time: 28-Feb-2023 15:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Benzene	71-43-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Carbon tetrachloride	56-23-5	<0.20	0.20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dibromoethane, 1,2-	106-93-4	<0.20	0.20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
BTEX, total	----	<1.0	1.0	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	80.2	1.0	%	E581.F1-L	01-Mar-2023	01-Mar-2023	848645
Volatile Organic Compounds Surrogates								

Analytical Results

WT2304877-001

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

Client sample ID: TB-12598913-022823-CH-003 -

Client sampling date / time: 28-Feb-2023 15:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	83.7	1.0	%	E611D	01-Mar-2023	01-Mar-2023	848644
Difluorobenzene, 1,4-	540-36-3	95.7	1.0	%	E611D	01-Mar-2023	01-Mar-2023	848644

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

Analytical Results

WT2304877-002

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

Client sample ID: W-12598913-022823-CH-001 -

Client sampling date / time: 28-Feb-2023 15:57

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Benzene	71-43-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromodichloromethane	75-27-4	3.59	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromoform	75-25-2	0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Carbon tetrachloride	56-23-5	<0.20	0.20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Chloroform	67-66-3	3.77	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dibromochloromethane	124-48-1	2.23	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dibromoethane, 1,2-	106-93-4	<0.20	0.20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644

Analytical Results

WT2304877-002

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

Client sample ID: W-12598913-022823-CH-001 -
Client sampling date / time: 28-Feb-2023 15:57

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
BTEX, total	----	<1.0	1.0	µg/L	E611D	01-Mar-2023	01-Mar-2023	848644
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	84.0	1.0	%	E581.F1-L	01-Mar-2023	01-Mar-2023	848645
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	84.2	1.0	%	E611D	01-Mar-2023	01-Mar-2023	848644
Difluorobenzene, 1,4-	540-36-3	95.5	1.0	%	E611D	01-Mar-2023	01-Mar-2023	848644

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

ALS Canada Ltd.

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right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2304877**	Page	: 1 of 6
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Issue Date	: 06-Mar-2023 11:54
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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.
- 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)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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) Recoveries								
Volatile Organic Compounds	QC-MRG2-8486440 02	----	Acetone	67-64-1	E611D	134 % MES	70.0-130%	Recovery greater than upper control limit
Volatile Organic Compounds	QC-MRG2-8486440 02	----	Methyl ethyl ketone [MEK]	78-93-3	E611D	131 % MES	70.0-130%	Recovery greater than upper 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).*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
TB-12598913-022823-CH-003	E611D	28-Feb-2023	01-Mar-2023	----	----		01-Mar-2023	14 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
W-12598913-022823-CH-001	E611D	28-Feb-2023	01-Mar-2023	----	----		01-Mar-2023	14 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	848645	1	13	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848644	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	848645	1	13	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848644	1	14	7.1	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	848645	1	13	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848644	1	14	7.1	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	848645	1	13	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	848644	1	14	7.1	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L Waterloo - Environmental	Water	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.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

QUALITY CONTROL REPORT

Work Order	: **WT2304877**	Page	: 1 of 10
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 28-Feb-2023 17:45
PO	: 735-005299-1	Date Analysis Commenced	: 01-Mar-2023
C-O-C number	: ----	Issue Date	: 06-Mar-2023 11:54
Sampler	: ---- 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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 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*
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 848644)											
WT2304858-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 848644) - continued											
WT2304858-001	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	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 848644)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 848644) - continued						
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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 848644)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	# 134	70.0	130	MES
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	96.6	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	123	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	93.0	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	91.2	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	93.8	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	98.7	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	92.9	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	89.7	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	92.7	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	125	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	97.5	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	113	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	104	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	94.3	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	79.1	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	# 131	70.0	130	MES
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	109	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	81.8	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	88.3	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	84.7	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	84.7	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 848644) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	92.9	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	94.7	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	99.4	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	112	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	82.7	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	78.9	70.0	130	----

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).*

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 848644)										
WT2304858-001	Anonymous	Acetone	67-64-1	E611D	116 µg/L	100 µg/L	116	60.0	140	----
		Benzene	71-43-2	E611D	94.4 µg/L	100 µg/L	94.4	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		Bromoform	75-25-2	E611D	86.8 µg/L	100 µg/L	86.8	60.0	140	----
		Bromomethane	74-83-9	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	86.3 µg/L	100 µg/L	86.3	60.0	140	----
		Chlorobenzene	108-90-7	E611D	85.0 µg/L	100 µg/L	85.0	60.0	140	----
		Chloroform	67-66-3	E611D	94.1 µg/L	100 µg/L	94.1	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	85.6 µg/L	100 µg/L	85.6	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	87.0 µg/L	100 µg/L	87.0	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	84.8 µg/L	100 µg/L	84.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	92.8 µg/L	100 µg/L	92.8	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	91.8 µg/L	100 µg/L	91.8	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		Dichloromethane	75-09-2	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	96.0 µg/L	100 µg/L	96.0	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	94.1 µg/L	100 µg/L	94.1	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	84.5 µg/L	100 µg/L	84.5	60.0	140	----
		Ethylbenzene	100-41-4	E611D	74.5 µg/L	100 µg/L	74.5	60.0	140	----
		Hexane, n-	110-54-3	E611D	89.8 µg/L	100 µg/L	89.8	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	114 µg/L	100 µg/L	114	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	94 µg/L	100 µg/L	94.4	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	94.1 µg/L	100 µg/L	94.1	60.0	140	----
		Styrene	100-42-5	E611D	75.2 µg/L	100 µg/L	75.2	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	82.3 µg/L	100 µg/L	82.3	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	92.3 µg/L	100 µg/L	92.3	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 848644) - continued										
WT2304858-001	Anonymous	Tetrachloroethylene	127-18-4	E611D	79.2 µg/L	100 µg/L	79.2	60.0	140	----
		Toluene	108-88-3	E611D	79.1 µg/L	100 µg/L	79.1	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	85.8 µg/L	100 µg/L	85.8	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	92.3 µg/L	100 µg/L	92.3	60.0	140	----
		Trichloroethylene	79-01-6	E611D	87.7 µg/L	100 µg/L	87.7	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		Vinyl chloride	75-01-4	E611D	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	155 µg/L	200 µg/L	77.6	60.0	140	----
		Xylene, o-	95-47-6	E611D	73.8 µg/L	100 µg/L	73.8	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo
Work Order Reference
WT2304877

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2

Invoice To		
	Same as Report To	☑ YES ☐ NO
	Copy of Invoice with Report	☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)	
Contact:		

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Oil and Gas Required Fields (client use)

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

Turnaround Time (TAT) Requested

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

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the TAT r… you will be contacted.

ALS Lab Work Order # (lab use only): WT2304877 FH

ALS Contact: Rick H

Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	VOCs.F1	F2-F4	PAHs	Trip Blank _ VOCs/PHC F1	NDMA – trace analysis	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	TB GW-12598913-022823-CH-003	28-FEB-23	1555	WATER			X			X				
	GW-12598913-022823-CH-001	28-FEB-23	1557	WATER			X							
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										

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

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

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				-0.3			

SHIPMENT RELEASE (client use)

Released by: | Date: 02/28/23 | Time: 1740

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: | Date: | Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by: HRJ | Date: FEB 28, 2023 | Time: 17 45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VW-122

CERTIFICATE OF ANALYSIS

Work Order	: **WT2305360**	Page	: 1 of 16
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 06-Mar-2023 14:40
PO	: 735-005299-1	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 07-Mar-2023 16:19
Sampler	: Jeffrey Bisson		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

>: greater than.
<: 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*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
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.*

Analytical Results

WT2305360-001

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

Client sample ID: GW-12598913-230306-JB-UA1
Client sampling date / time: 06-Mar-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity	----	0.491	0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.90	0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients								
Chloride	16887-00-6	6.25	0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides								
Cyanide, weak acid dissociable	----	<2.0	2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals								
Antimony, dissolved	7440-36-0	<0.10	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.18	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	6.04	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020	0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	<10	10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	<0.0050	0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	<0.10	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	0.24	0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	<0.050	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050	0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	0.783	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	<0.500 DLM	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	4780	50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	<0.010	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	0.955	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	0.57	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	2.3	1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field	-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field	-	-	EP421	-	06-Mar-2023	853984
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.58	0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-001

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

Client sample ID: GW-12598913-230306-JB-UA1

Client sampling date / time: 06-Mar-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	86.2	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	96.6	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	92.1	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	107	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-002

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

Client sample ID: GW-12598913-230306-JB-UA1(S)
Client sampling date / time: 06-Mar-2023 11:00

Analyte	CAS Number	Result		LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
Conductivity	----	0.874		0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.81		0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients									
Chloride	16887-00-6	47.0		0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides									
Cyanide, weak acid dissociable	----	<2.0		2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals									
Antimony, dissolved	7440-36-0	0.23		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.62		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	88.4		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020		0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	40		10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	0.0200	DLM	0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	0.38		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	1.11		0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	<0.050		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050		0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	41.9		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	0.83		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	0.502	DLM	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	30900		50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	0.014		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	2.45		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	4.0		1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field		-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field		-	-	EP421	-	06-Mar-2023	853984
Speciated Metals									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.53		0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds									
Acetone	67-64-1	<20		20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20		0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20		0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50		0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-002

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

Client sample ID: GW-12598913-230306-JB-UA1(S)

Client sampling date / time: 06-Mar-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	89.4	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	93.8	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	91.3	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	107	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-003

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

Client sample ID: GW-12598913-230306-JB-UA2
Client sampling date / time: 06-Mar-2023 11:45

Analyte	CAS Number	Result		LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
Conductivity	----	0.652		0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.80		0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients									
Chloride	16887-00-6	13.4		0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides									
Cyanide, weak acid dissociable	----	<2.0		2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals									
Antimony, dissolved	7440-36-0	0.12		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.28		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	32.9		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020		0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	29		10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	0.0056		0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	0.27		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	0.41		0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	<0.050		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050		0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	12.8		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	0.86		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	<0.500	DLM.	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	9980		50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	0.011		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	0.624		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	<1.0		1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field		-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field		-	-	EP421	-	06-Mar-2023	853984
Speciated Metals									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.64		0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds									
Acetone	67-64-1	<20	OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20	OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20	OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-003

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

Client sample ID: GW-12598913-230306-JB-UA2

Client sampling date / time: 06-Mar-2023 11:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0 OWP.	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50 OWP.	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40 OWP.	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25 OWP.	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	320	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	93.7	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	91.1	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	90.6	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	106	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-004

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

Client sample ID: GW-12598913-230306-JB-UA3
Client sampling date / time: 06-Mar-2023 12:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity	----	0.942	0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.67	0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients								
Chloride	16887-00-6	56.0	0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides								
Cyanide, weak acid dissociable	----	<2.0	2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals								
Antimony, dissolved	7440-36-0	0.14	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.27	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	78.3	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020	0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	50	10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	0.0153	0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	0.95	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	1.02	0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	0.051	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050	0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	18.9	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	2.07	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	<0.500 DLM.	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	37600	50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	0.011	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	0.811	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	1.8	1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field	-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field	-	-	EP421	-	06-Mar-2023	853984
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.52	0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds								
Acetone	67-64-1	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	0.53 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20 OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20 OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-004

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

Client sample ID: GW-12598913-230306-JB-UA3

Client sampling date / time: 06-Mar-2023 12:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0 OWP.	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50 OWP.	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	0.79 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40 OWP.	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	1.3	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25 OWP.	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	83.8	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	93.2	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	89.5	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	106	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-005

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

Client sample ID: GW-12598913-230306-JB-UA4
Client sampling date / time: 06-Mar-2023 13:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity	----	1.07	0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.71	0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients								
Chloride	16887-00-6	94.1	0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides								
Cyanide, weak acid dissociable	----	<2.0	2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals								
Antimony, dissolved	7440-36-0	0.18	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.32	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	49.8	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020	0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	11	10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	0.0086	0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	0.14	0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	0.46	0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	<0.050	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050	0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	2.86	0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	0.62	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	<0.500 DLM	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	38900	50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	<0.010	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	1.64	0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	<0.50	0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	3.8	1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field	-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field	-	-	EP421	-	06-Mar-2023	853984
Speciated Metals								
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.58	0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-005

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

Client sample ID: GW-12598913-230306-JB-UA4

Client sampling date / time: 06-Mar-2023 13:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	280	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	94.1	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	94.4	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	90.5	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	106	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-006

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

Client sample ID: GW-12598913-230306-JB-DUP01
Client sampling date / time: 06-Mar-2023 12:30

Analyte	CAS Number	Result		LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
Conductivity	----	0.939		0.0010	mS/cm	E100	06-Mar-2023	07-Mar-2023	853852
pH	----	7.66		0.10	pH units	E108	06-Mar-2023	07-Mar-2023	853854
Anions and Nutrients									
Chloride	16887-00-6	56.4		0.50	mg/L	E235.Cl	06-Mar-2023	06-Mar-2023	853859
Cyanides									
Cyanide, weak acid dissociable	----	<2.0		2.0	µg/L	E336	07-Mar-2023	07-Mar-2023	854377
Dissolved Metals									
Antimony, dissolved	7440-36-0	0.14		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Arsenic, dissolved	7440-38-2	0.25		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Barium, dissolved	7440-39-3	77.9		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Beryllium, dissolved	7440-41-7	<0.020		0.020	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Boron, dissolved	7440-42-8	51		10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cadmium, dissolved	7440-43-9	0.0142		0.0050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Chromium, dissolved	7440-47-3	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Cobalt, dissolved	7440-48-4	0.93		0.10	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Copper, dissolved	7440-50-8	1.08		0.20	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Lead, dissolved	7439-92-1	0.061		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Mercury, dissolved	7439-97-6	<0.0050		0.0050	µg/L	E509	06-Mar-2023	06-Mar-2023	853903
Molybdenum, dissolved	7439-98-7	18.4		0.050	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Nickel, dissolved	7440-02-0	2.03		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Selenium, dissolved	7782-49-2	<0.500	DLM.	0.500	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Silver, dissolved	7440-22-4	<0.010		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Sodium, dissolved	7440-23-5	37400		50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Thallium, dissolved	7440-28-0	0.012		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Uranium, dissolved	7440-61-1	0.806		0.010	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Vanadium, dissolved	7440-62-2	<0.50		0.50	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Zinc, dissolved	7440-66-6	2.0		1.0	µg/L	E421	06-Mar-2023	06-Mar-2023	853984
Dissolved mercury filtration location	----	Field		-	-	EP509	-	06-Mar-2023	853903
Dissolved metals filtration location	----	Field		-	-	EP421	-	06-Mar-2023	853984
Speciated Metals									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	0.53		0.50	µg/L	E532A	-	07-Mar-2023	854290
Volatile Organic Compounds									
Acetone	67-64-1	<20	OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	0.56	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20	OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20	OWP.	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50	OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040

Analytical Results

WT2305360-006

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

Client sample ID: GW-12598913-230306-JB-DUP01

Client sampling date / time: 06-Mar-2023 12:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloroethane, 1,1-	75-34-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0 OWP.	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50 OWP.	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20 OWP.	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	0.84 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50 OWP.	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40 OWP.	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30 OWP.	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	1.4	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25 OWP.	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F3 (C16-C34)	----	270	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	06-Mar-2023	07-Mar-2023	853914
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	07-Mar-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	06-Mar-2023	07-Mar-2023	853914
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	84.2	1.0	%	E601.SG	06-Mar-2023	07-Mar-2023	853914
Dichlorotoluene, 3,4-	95-75-0	92.0	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	90.5	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	106	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

Analytical Results

WT2305360-007

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

Client sample ID: GW-12598913-230306-JB-TRIP BLANK -
Client sampling date / time: 06-Mar-2023 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Acetone	67-64-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Benzene	71-43-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Bromomethane	74-83-9	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Carbon tetrachloride	56-23-5	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chlorobenzene	108-90-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dibromoethane, 1,2-	106-93-4	<0.20	0.20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,2-	95-50-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,3-	541-73-1	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorobenzene, 1,4-	106-46-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichlorodifluoromethane	75-71-8	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,1-	75-34-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethane, 1,2-	107-06-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, 1,1-	75-35-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, cis-1,2-	156-59-2	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloroethylene, trans-1,2-	156-60-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloromethane	75-09-2	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropane, 1,2-	78-87-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, cis-1,3-	10061-01-5	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Dichloropropylene, trans-1,3-	10061-02-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Ethylbenzene	100-41-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hexane, n-	110-54-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl ethyl ketone [MEK]	78-93-3	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl isobutyl ketone [MIBK]	108-10-1	<20	20	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Styrene	100-42-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Tetrachloroethylene	127-18-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Toluene	108-88-3	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,1-	71-55-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethane, 1,1,2-	79-00-5	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichloroethylene	79-01-6	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Trichlorofluoromethane	75-69-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Vinyl chloride	75-01-4	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, m+p-	179601-23-1	<0.40	0.40	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylene, o-	95-47-6	<0.30	0.30	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
BTEX, total	----	<1.0	1.0	µg/L	E611D	06-Mar-2023	06-Mar-2023	854040
Hydrocarbons								
F1 (C6-C10)	----	<25	25	µg/L	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
F1-BTEX	----	<25	25	µg/L	EC580	-	07-Mar-2023	-

Analytical Results

WT2305360-007

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

Client sample ID: GW-12598913-230306-JB-TRIP BLANK -
Client sampling date / time: 06-Mar-2023 14:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	113	1.0	%	E581.F1-L	06-Mar-2023	06-Mar-2023	854041
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	91.5	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040
Difluorobenzene, 1,4-	540-36-3	106	1.0	%	E611D	06-Mar-2023	06-Mar-2023	854040

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2305360**	Page	: 1 of 14
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 06-Mar-2023 14:40
PO	: 735-005299-1	Issue Date	: 07-Mar-2023 16:19
C-O-C number	: ----		
Sampler	: Jeffrey Bisson		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-DUP01	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1(S)	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA2	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA3	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA4	E235.Cl	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide)										
GW-12598913-230306-JB-DUP01	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) GW-12598913-230306-JB-UA1	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) GW-12598913-230306-JB-UA1(S)	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) GW-12598913-230306-JB-UA2	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) GW-12598913-230306-JB-UA3	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide										
HDPE - total (sodium hydroxide) GW-12598913-230306-JB-UA4	E336	06-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-DUP01	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-UA1	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-UA1(S)	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-UA2	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-UA3	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) GW-12598913-230306-JB-UA4	E509	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-DUP01	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-UA1	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-UA1(S)	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-UA2	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-UA3	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) GW-12598913-230306-JB-UA4	E421	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-DUP01	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-TRIP BLANK	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-UA1	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-UA1(S)	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-UA2	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-UA3	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-230306-JB-UA4	E581.F1-L	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GW-12598913-230306-JB-DUP01	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GW-12598913-230306-JB-UA1	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) GW-12598913-230306-JB-UA1(S)	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
GW-12598913-230306-JB-UA2	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
GW-12598913-230306-JB-UA3	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
GW-12598913-230306-JB-UA4	E601.SG	06-Mar-2023	06-Mar-2023	14 days	0 days	✓	07-Mar-2023	40 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-DUP01	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1(S)	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA2	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA3	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA4	E100	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-DUP01	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA1(S)	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA2	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA3	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP]										
GW-12598913-230306-JB-UA4	E108	06-Mar-2023	06-Mar-2023	----	----		07-Mar-2023	14 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-DUP01	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-UA1	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-UA1(S)	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-UA2	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-UA3	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (NaOH+Buf) [ON MECP]										
GW-12598913-230306-JB-UA4	E532A	06-Mar-2023	----	----	----		07-Mar-2023	28 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-DUP01	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-TRIP BLANK	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-UA1	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-UA1(S)	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-UA2	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-UA3	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
GW-12598913-230306-JB-UA4	E611D	06-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	14 days	0 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	854041	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	853859	1	7	14.2	5.0	✓
Conductivity in Water	E100	853852	1	7	14.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	854290	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	853903	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	853984	1	6	16.6	5.0	✓
pH by Meter	E108	853854	1	7	14.2	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	854040	1	7	14.2	5.0	✓
WAD Cyanide	E336	854377	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	854041	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	853859	1	7	14.2	5.0	✓
Conductivity in Water	E100	853852	1	7	14.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	854290	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	853903	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	853984	1	6	16.6	5.0	✓
pH by Meter	E108	853854	1	7	14.2	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	853914	1	18	5.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	854040	1	7	14.2	5.0	✓
WAD Cyanide	E336	854377	1	6	16.6	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	854041	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	853859	1	7	14.2	5.0	✓
Conductivity in Water	E100	853852	1	7	14.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	854290	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	853903	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	853984	1	6	16.6	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	853914	1	18	5.5	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	854040	1	7	14.2	5.0	✓
WAD Cyanide	E336	854377	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	854041	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	853859	1	7	14.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	854290	1	6	16.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	853903	1	6	16.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Dissolved Metals in Water by CRC ICPMS	E421	853984	1	6	16.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	854040	1	7	14.2	5.0	✓
WAD Cyanide	E336	854377	1	6	16.6	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Waterloo - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Waterloo - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Dissolved Metals in Water by CRC ICPMS	E421 Waterloo - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 Waterloo - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. sample pretreatment involved field or lab filtration following by sample preservation.
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L Waterloo - Environmental	Water	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.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Waterloo - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 Waterloo - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Waterloo - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **WT2305360**	Page	: 1 of 14
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 06-Mar-2023 14:40
PO	: 735-005299-1	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 07-Mar-2023 16:19
Sampler	: Jeffrey Bisson 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 853852)											
WT2304773-020	Anonymous	Conductivity	----	E100	1.0	µS/cm	603	600	0.499%	10%	----
Physical Tests (QC Lot: 853854)											
WT2304773-020	Anonymous	pH	----	E108	0.10	pH units	7.58	7.60	0.264%	4%	----
Anions and Nutrients (QC Lot: 853859)											
WT2304773-020	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	8.20	8.14	0.721%	20%	----
Cyanides (QC Lot: 854377)											
WT2305360-001	GW-12598913-230306-JB-UA1	Cyanide, weak acid dissociable	----	E336	0.0020	mg/L	<2.0 µg/L	<0.0020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 853903)											
WT2305360-001	GW-12598913-230306-JB-UA1	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 853984)											
WT2305360-001	GW-12598913-230306-JB-UA1	Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.18 µg/L	0.00016	0.00002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	6.04 µg/L	0.00601	0.547%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<10 µg/L	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.24 µg/L	0.00024	0.000004	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.783 µg/L	0.000788	0.637%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000500	mg/L	<0.500 µg/L	<0.000500	0	Diff <2x LOR	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	4780 µg/L	4.85	1.49%	20%	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.955 µg/L	0.000937	1.89%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.57 µg/L	0.00057	0.000005	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	2.3 µg/L	0.0023	0.00005	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Speciated Metals (QC Lot: 854290)											
WT2305360-001	GW-12598913-230306-JB-UA1	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	0.58 µg/L	0.00057	0.00001	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 854040)											
WT2305360-001	GW-12598913-230306-JB-UA1	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 854040) - continued											
WT2305360-001	GW-12598913-230306-JB-UA1	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	----
Hydrocarbons (QC Lot: 854041)											
WT2305360-001	GW-12598913-230306-JB-UA1	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 853852)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Anions and Nutrients (QCLot: 853859)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Cyanides (QCLot: 854377)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Dissolved Metals (QCLot: 853903)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 853984)						
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	----
Speciated Metals (QCLot: 854290)						
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
Volatile Organic Compounds (QCLot: 854040)						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 854040) - continued						
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 854040) - continued						
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 853914)						
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: 854041)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 853852)									
Conductivity	----	E100	1	µS/cm	1409 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 853854)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 853859)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Cyanides (QCLot: 854377)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	97.0	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.9	80.0	120	----
Dissolved Metals (QCLot: 853984)									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	103	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	108	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.0125 mg/L	104	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	98.0	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	97.9	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	106	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.0125 mg/L	104	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.0125 mg/L	105	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.0125 mg/L	102	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	110	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.0125 mg/L	103	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	104	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	105	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	96.6	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	111	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	107	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.00025 mg/L	110	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	105	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	108	80.0	120	----
Speciated Metals (QCLot: 854290)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 854290) - continued									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.025 mg/L	99.8	80.0	120	----
Volatile Organic Compounds (QCLot: 854040)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	113	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	96.0	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	97.2	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	92.6	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	97.7	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	99.0	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	93.3	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	98.0	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	93.0	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	97.6	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	96.3	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	96.1	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	94.8	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	83.8	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	96.7	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	95.5	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	102	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	99.8	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	92.1	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	88.8	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	86.6	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	97.3	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	104	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	92.4	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	92.7	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	93.6	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	95.0	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	92.3	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	88.3	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 854040) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	99.9	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	96.9	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	96.6	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	114	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	95.1	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	90.7	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	86.1	70.0	130	----
Hydrocarbons (QCLot: 853914)									
F2 (C10-C16)	----	E601.SG	100	µg/L	4613.474 µg/L	103	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	6464.481 µg/L	99.2	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4040.361 µg/L	103	70.0	130	----
Hydrocarbons (QCLot: 854041)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	111	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 853859)										
WT2304773-020	Anonymous	Chloride	16887-00-6	E235.Cl	100.0 mg/L	100 mg/L	100.0	75.0	125	----
Cyanides (QCLot: 854377)										
WT2305360-001	GW-12598913-230306-JB-UA1	Cyanide, weak acid dissociable	----	E336	0.126 mg/L	0.125 mg/L	101	75.0	125	----
Dissolved Metals (QCLot: 853903)										
WT2305360-002	GW-12598913-230306-JB-UA1(S)	Mercury, dissolved	7439-97-6	E509	0.0000995 mg/L	0.0001 mg/L	99.5	70.0	130	----
Dissolved Metals (QCLot: 853984)										
WT2305360-002	GW-12598913-230306-JB-UA1(S)	Antimony, dissolved	7440-36-0	E421	0.0543 mg/L	0.05 mg/L	108	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0652 mg/L	0.05 mg/L	130	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	0.00522 mg/L	0.005 mg/L	104	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.050 mg/L	0.05 mg/L	101	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00524 mg/L	0.005 mg/L	105	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0136 mg/L	0.0125 mg/L	108	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0132 mg/L	0.0125 mg/L	105	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0125 mg/L	0.0125 mg/L	99.8	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0265 mg/L	0.025 mg/L	106	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0258 mg/L	0.025 mg/L	103	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.512 mg/L	0.5 mg/L	102	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00464 mg/L	0.005 mg/L	92.8	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2.5 mg/L	ND	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0520 mg/L	0.05 mg/L	104	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.00025 mg/L	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0278 mg/L	0.025 mg/L	111	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.0263 mg/L	0.025 mg/L	105	70.0	130	----
Speciated Metals (QCLot: 854290)										
WT2305360-001	GW-12598913-230306-JB-UA1	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
Volatile Organic Compounds (QCLot: 854040)										

Sub-Matrix: **Water**

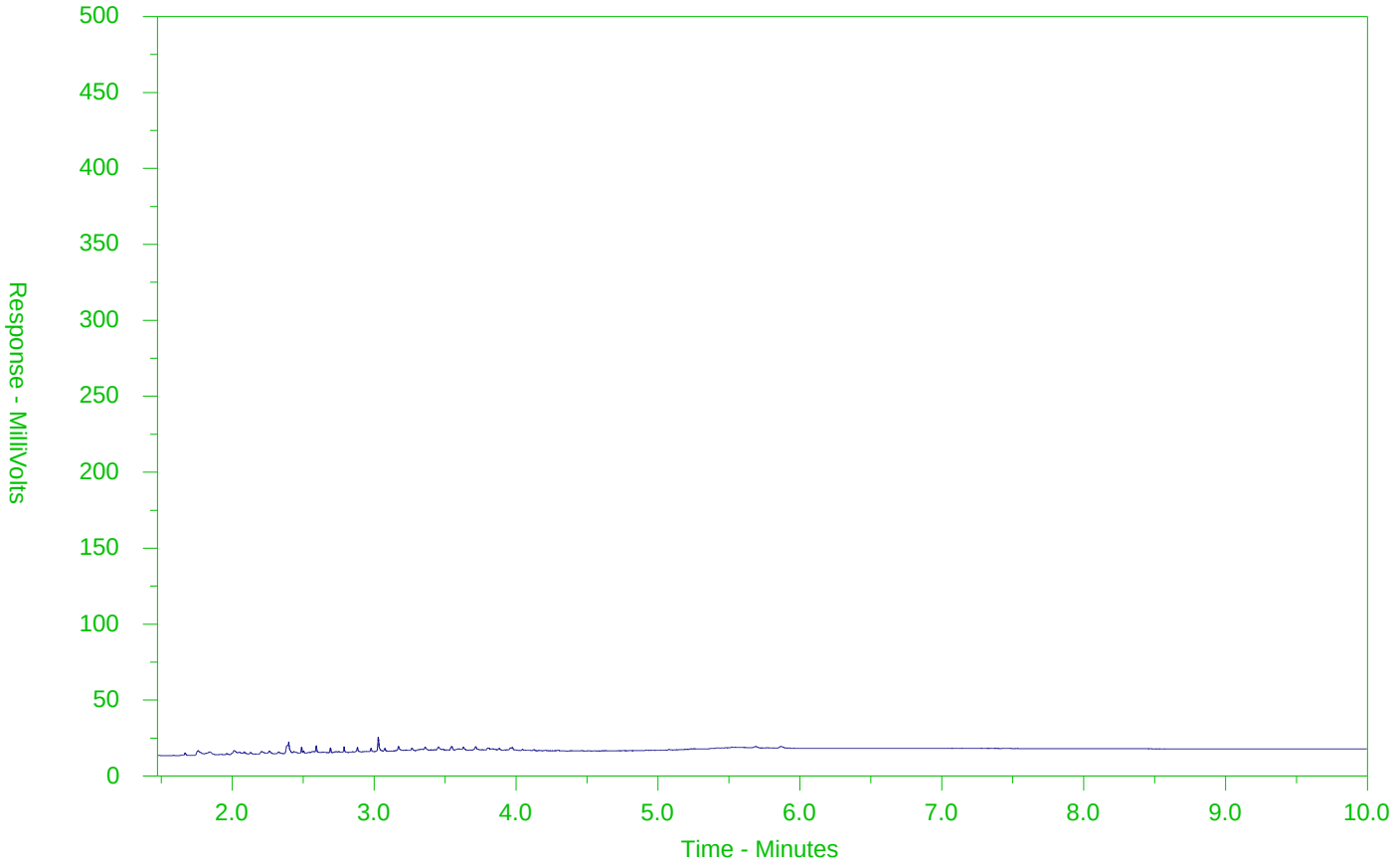
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 854040) - continued										
WT2305360-001	GW-12598913-230306-JB-UA1	Acetone	67-64-1	E611D	88 µg/L	100 µg/L	88.5	60.0	140	----
		Benzene	71-43-2	E611D	87.8 µg/L	100 µg/L	87.8	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		Bromoform	75-25-2	E611D	70.9 µg/L	100 µg/L	70.9	60.0	140	----
		Bromomethane	74-83-9	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	92.9 µg/L	100 µg/L	92.9	60.0	140	----
		Chlorobenzene	108-90-7	E611D	85.4 µg/L	100 µg/L	85.4	60.0	140	----
		Chloroform	67-66-3	E611D	89.2 µg/L	100 µg/L	89.2	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	82.0 µg/L	100 µg/L	82.0	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	83.1 µg/L	100 µg/L	83.1	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	73.9 µg/L	100 µg/L	73.9	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	89.1 µg/L	100 µg/L	89.1	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	85.9 µg/L	100 µg/L	85.9	60.0	140	----
		Dichloromethane	75-09-2	E611D	85.5 µg/L	100 µg/L	85.5	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	81.1 µg/L	100 µg/L	81.1	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	77.0 µg/L	100 µg/L	77.0	60.0	140	----
		Ethylbenzene	100-41-4	E611D	80.8 µg/L	100 µg/L	80.8	60.0	140	----
		Hexane, n-	110-54-3	E611D	88.9 µg/L	100 µg/L	88.9	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	84 µg/L	100 µg/L	83.5	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	75 µg/L	100 µg/L	75.3	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		Styrene	100-42-5	E611D	81.0 µg/L	100 µg/L	81.0	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	85.3 µg/L	100 µg/L	85.3	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	78.8 µg/L	100 µg/L	78.8	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	86.9 µg/L	100 µg/L	86.9	60.0	140	----
		Toluene	108-88-3	E611D	81.7 µg/L	100 µg/L	81.7	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	92.6 µg/L	100 µg/L	92.6	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	83.9 µg/L	100 µg/L	83.9	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 854040) - continued										
WT2305360-001	GW-12598913-230306-JB-UA1	Trichloroethylene	79-01-6	E611D	89.6 µg/L	100 µg/L	89.6	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Vinyl chloride	75-01-4	E611D	88.2 µg/L	100 µg/L	88.2	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	171 µg/L	200 µg/L	85.6	60.0	140	----
		Xylene, o-	95-47-6	E611D	77.3 µg/L	100 µg/L	77.3	60.0	140	----
Hydrocarbons (QCLot: 854041)										
WT2305360-001	GW-12598913-230306-JB-UA1	F1 (C6-C10)	----	E581.F1-L	2180 µg/L	2000 µg/L	109	60.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-001-E601.SG
Client Sample ID: GW-12598913-230306-JB-UA1



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

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

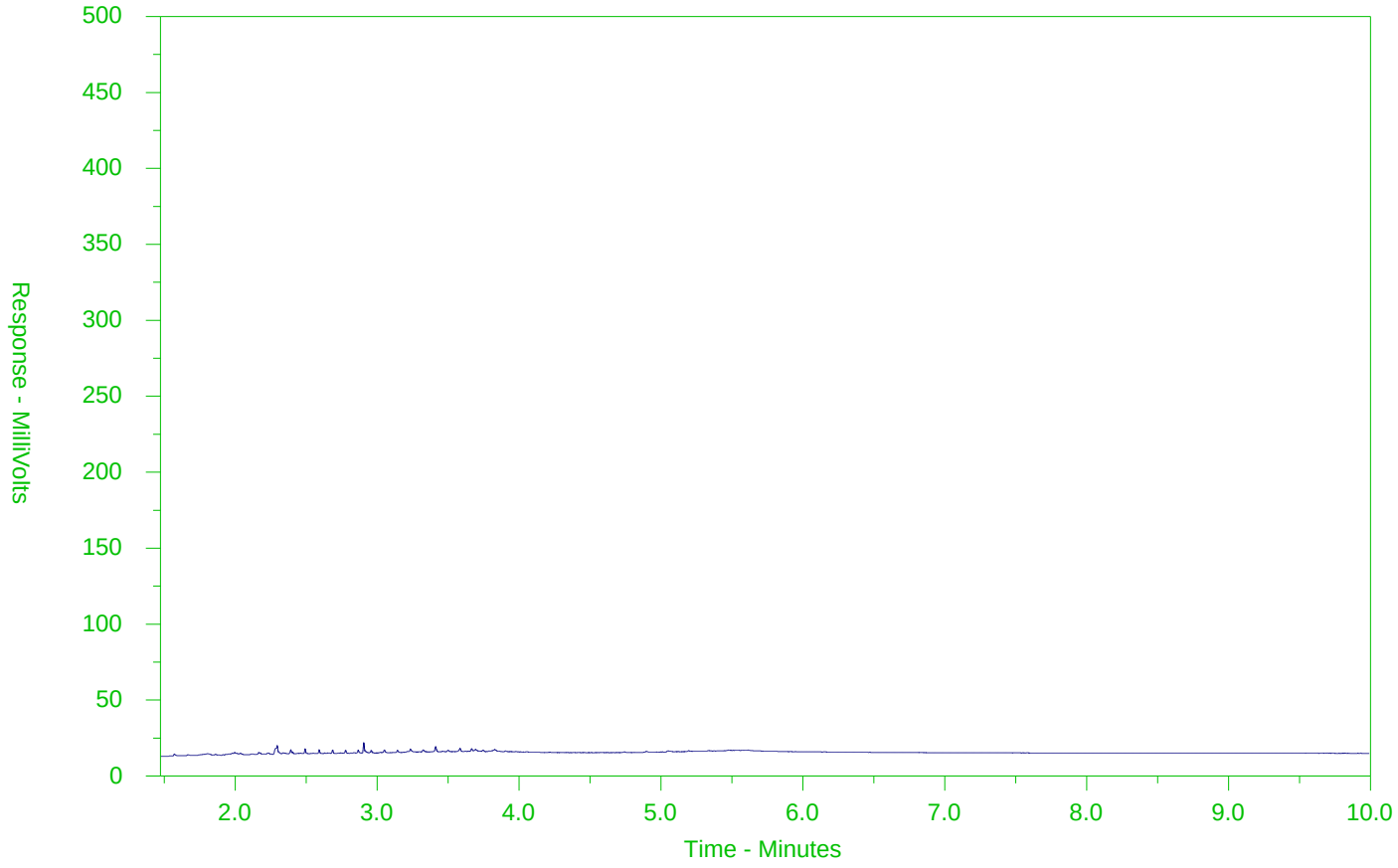
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-002-E601.SG
Client Sample ID: GW-12598913-230306-JB-UA1(S)



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

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

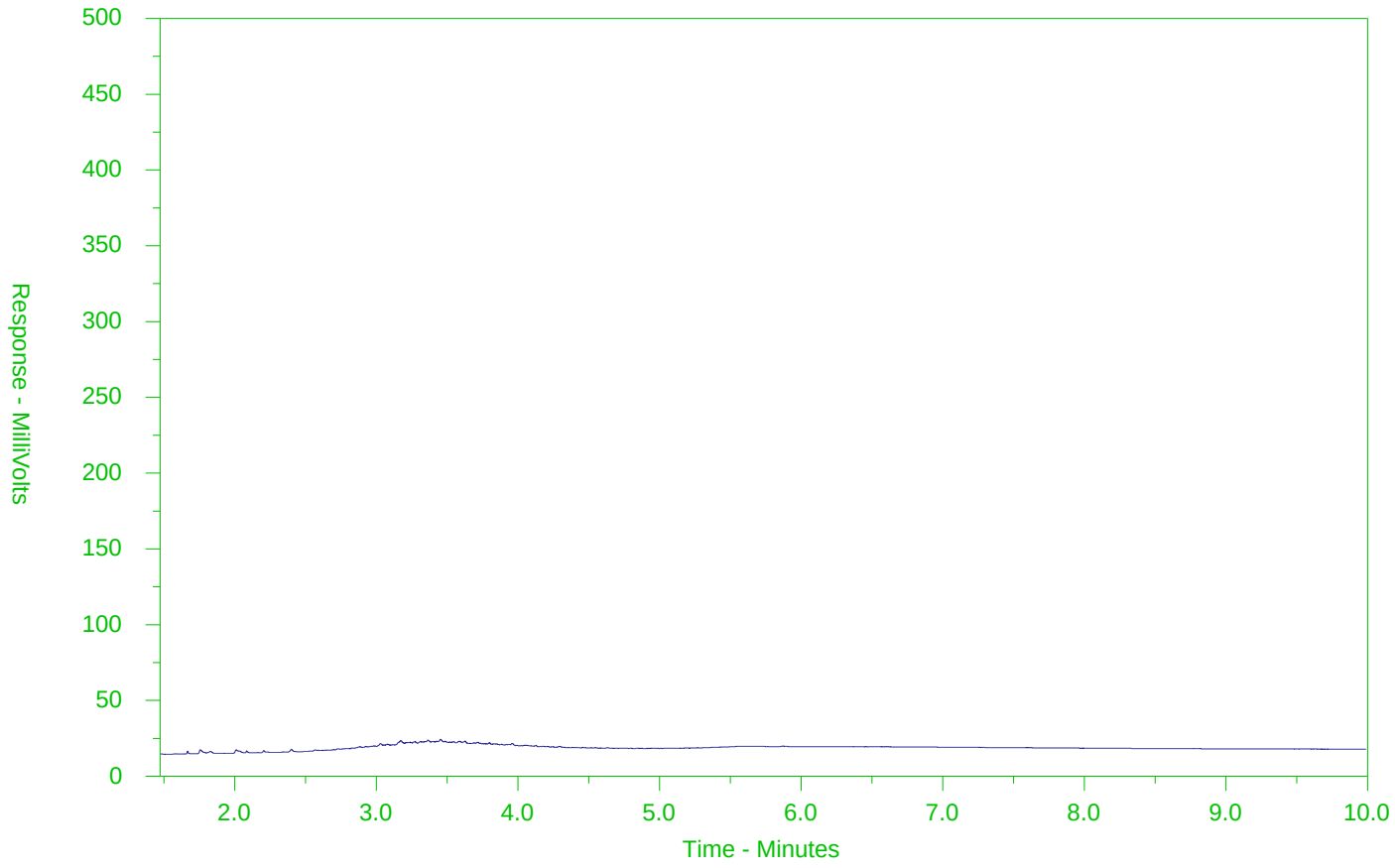
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-003-E601.SG
Client Sample ID: GW-12598913-230306-JB-UA2



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

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

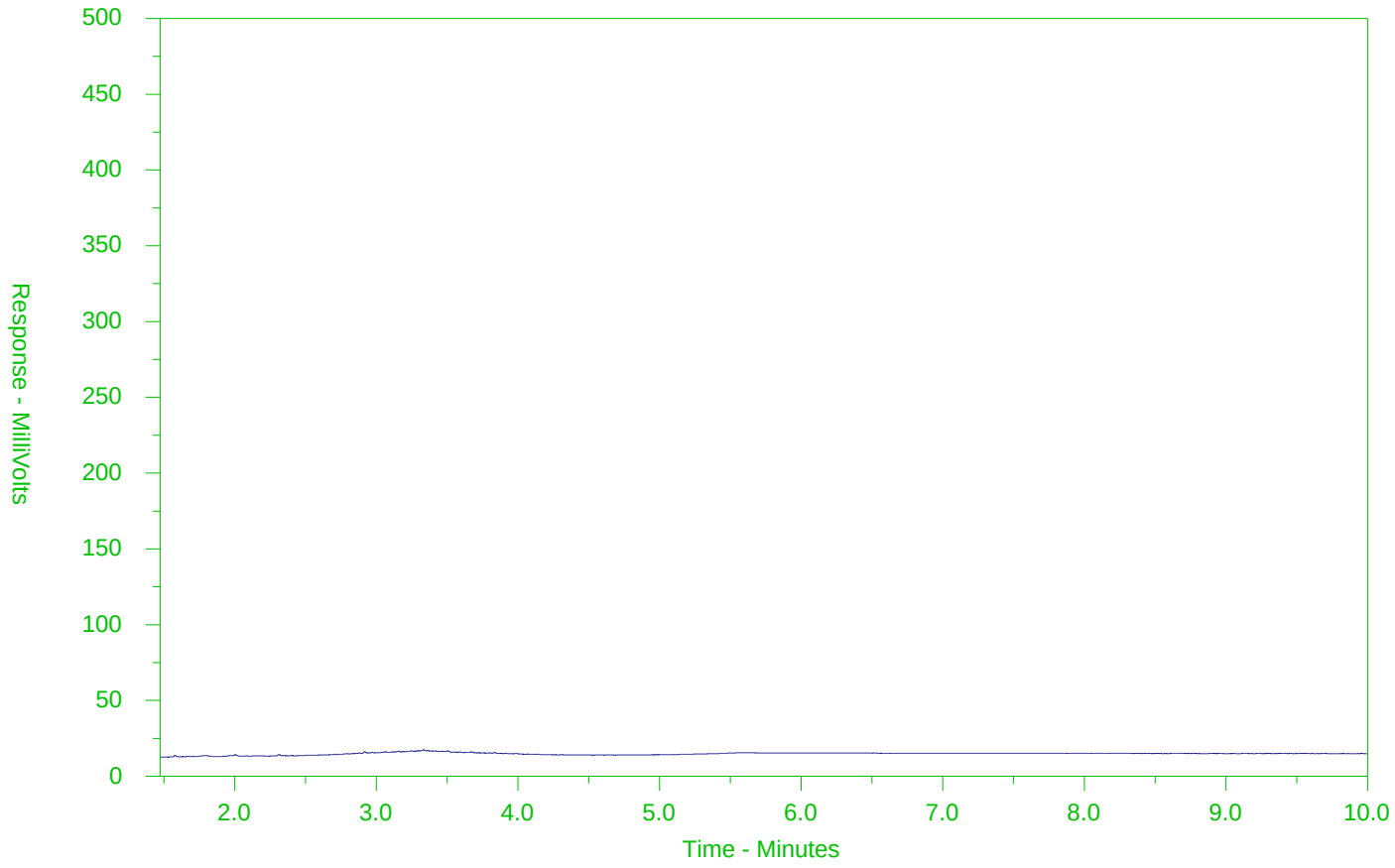
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-004-E601.SG
Client Sample ID: GW-12598913-230306-JB-UA3



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

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

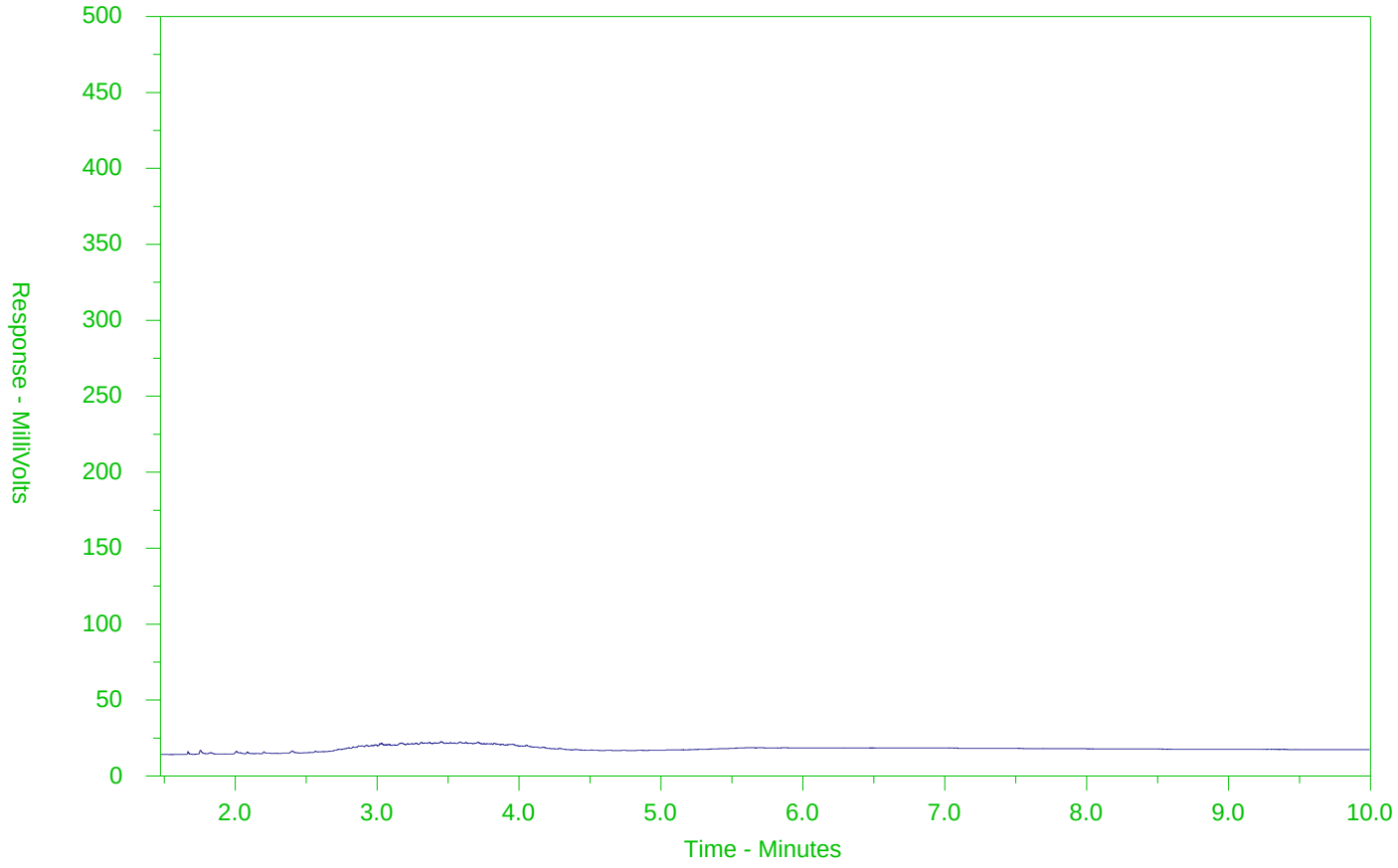
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-005-E601.SG
Client Sample ID: GW-12598913-230306-JB-UA4



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

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

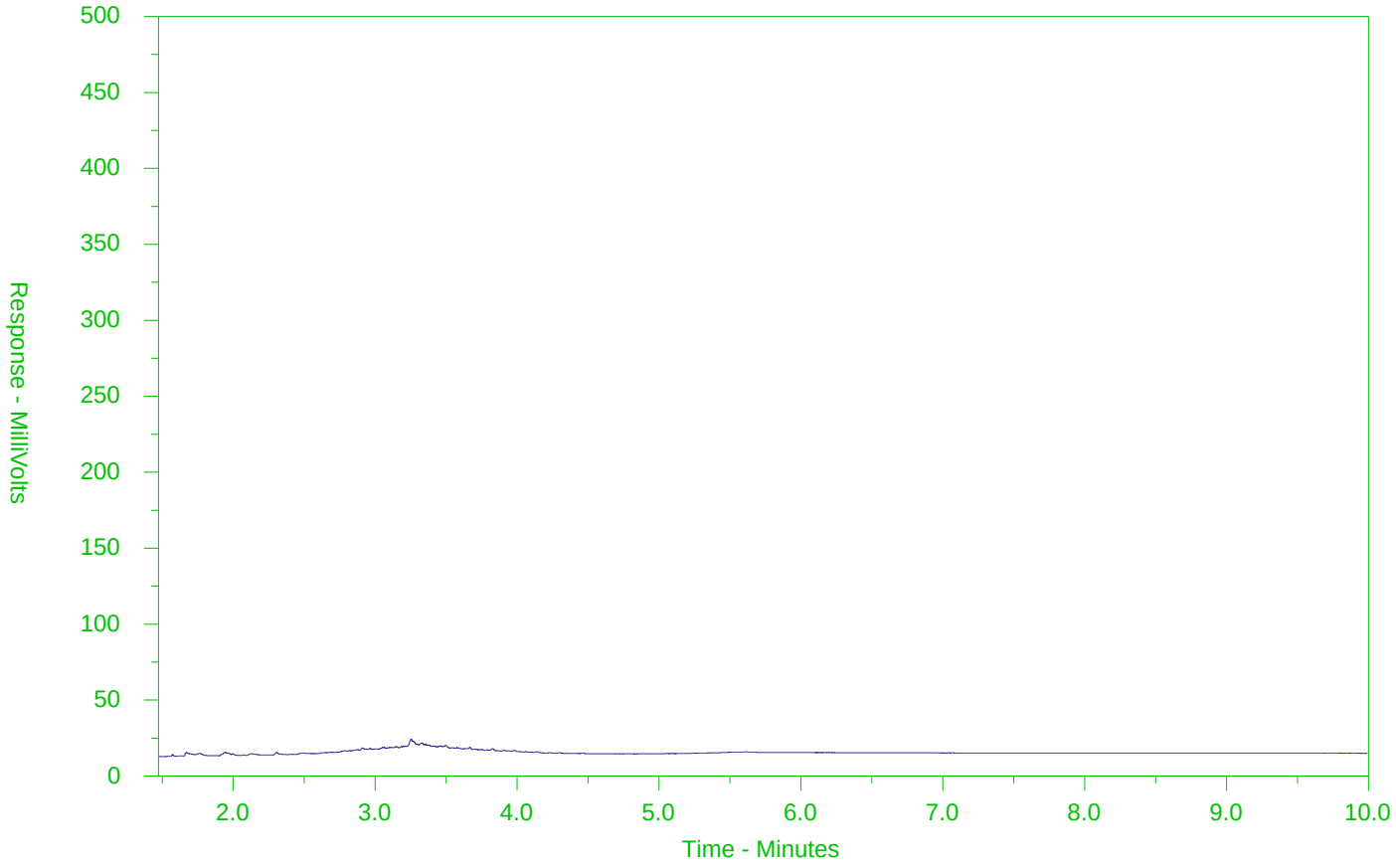
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2305360-006-E601.SG
Client Sample ID: GW-12598913-230306-JB-DUP01



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 2(

Page

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo

Work Order Reference

WT2305360

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2

Invoice To		
	Same as Report To	☑ YES ☐ NO
	Copy of Invoice with Report	☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)	
Contact:		

Project Information	
ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

ALS Lab Work Order # (lab use only): WT2305360

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Jennifer.Balkwill@ghd.com

Email 2: See SSOW/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayableCDN@ghd.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Contact: Rick H **Sampler:** JBISSON

Turnaround Time (TAT) Requested

- ☐ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minii
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge min
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge min
- ☑ 1 day [E] if received by 3pm M-F - 100% rush surcharge min
- ☐ Same day [E2] if received by 10am M-S - 200% rush surchar

fees may apply to rush resuests on weekends, statutory holida routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the TAT requested, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	VOCs F1	F2-F4	BTEX No PAH	Trip Blank_VOCs/PHC F1	NDMA – trace analysis	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GW-12598913-230306-JB-UA1	06-MAR-23	1030	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-UA1(S)		1900	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-UA2		1145	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-UA3		1230	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-UA4		1345	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-DUP01		1230	WATER	9	✓	✓	✓						
	GW-12598913-230306-JB-TRIP BLANK		1400	WATER	2					✓				
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										
	GW-12598913-			WATER										

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

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				5.1			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
JBISSON	2023-MR-06	1445

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
AP	6-MAR-23	1440

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VW-140 OR-349 MM-696 SC-240 GC-489 ON-583

CERTIFICATE OF ANALYSIS

Work Order	: **WT2305801**	Page	: 1 of 5
Amendment	: **1**		
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 09-Mar-2023 15:55
PO	: 735-005299-1	Date Analysis Commenced	: 09-Mar-2023
C-O-C number	: ----	Issue Date	: 17-Mar-2023 09:50
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

>: greater than.
<: 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.

Workorder Comments

17-Mar-2023. ID updated on ALS sample #3. All analysis results are as per the previous report.

Analytical Results

WT2305801-001

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

Client sample ID: S-12598913-030823-CH-009

Client sampling date / time: 08-Mar-2023 08:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.115	0.00500	mS/cm	E100-L	15-Mar-2023	15-Mar-2023	863064
Moisture	----	16.0	0.25	%	E144	-	14-Mar-2023	863352
pH (1:2 soil:CaCl2-aq)	----	7.70	0.10	pH units	E108A	15-Mar-2023	15-Mar-2023	863349
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	09-Mar-2023	10-Mar-2023	858346
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	10.3	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Magnesium, soluble ion content	7439-95-4	1.14	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium, soluble ion content	17341-25-2	2.46	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium adsorption ratio [SAR]	----	0.19	0.10	-	E484	15-Mar-2023	15-Mar-2023	863063
Metals								
Antimony	7440-36-0	0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Arsenic	7440-38-2	3.02	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Barium	7440-39-3	37.5	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Beryllium	7440-41-7	0.33	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron	7440-42-8	7.5	5.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron, hot water soluble	7440-42-8	<0.10	0.10	mg/kg	E487	15-Mar-2023	15-Mar-2023	863065
Cadmium	7440-43-9	0.120	0.020	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Chromium	7440-47-3	12.3	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Cobalt	7440-48-4	4.82	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Copper	7440-50-8	10.7	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Lead	7439-92-1	8.09	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Mercury	7439-97-6	0.0097	0.0050	mg/kg	E510	15-Mar-2023	15-Mar-2023	863061
Molybdenum	7439-98-7	0.25	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Nickel	7440-02-0	10.1	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Thallium	7440-28-0	0.071	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Uranium	7440-61-1	0.470	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Vanadium	7440-62-2	22.6	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Zinc	7440-66-6	40.2	2.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	15-Mar-2023	16-Mar-2023	863348

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

Analytical Results

WT2305801-002

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

Client sample ID: S-12598913-030823-CH-010

Client sampling date / time: 08-Mar-2023 14:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.126	0.00500	mS/cm	E100-L	15-Mar-2023	15-Mar-2023	863064
Moisture	----	15.0	0.25	%	E144	-	14-Mar-2023	863352

Analytical Results

WT2305801-002

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

Client sample ID: S-12598913-030823-CH-010

Client sampling date / time: 08-Mar-2023 14:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
pH (1:2 soil:CaCl2-aq)	----	7.62	0.10	pH units	E108A	15-Mar-2023	15-Mar-2023	863349
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	09-Mar-2023	10-Mar-2023	858346
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	11.5	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Magnesium, soluble ion content	7439-95-4	2.08	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium, soluble ion content	17341-25-2	3.03	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium adsorption ratio [SAR]	----	0.22	0.10	-	E484	15-Mar-2023	15-Mar-2023	863063
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Arsenic	7440-38-2	3.09	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Barium	7440-39-3	41.4	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Beryllium	7440-41-7	0.36	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron	7440-42-8	7.2	5.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron, hot water soluble	7440-42-8	<0.10	0.10	mg/kg	E487	15-Mar-2023	15-Mar-2023	863065
Cadmium	7440-43-9	0.140	0.020	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Chromium	7440-47-3	13.4	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Cobalt	7440-48-4	4.93	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Copper	7440-50-8	11.1	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Lead	7439-92-1	8.88	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Mercury	7439-97-6	0.0121	0.0050	mg/kg	E510	15-Mar-2023	15-Mar-2023	863061
Molybdenum	7439-98-7	0.24	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Nickel	7440-02-0	10.4	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Thallium	7440-28-0	0.080	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Uranium	7440-61-1	0.470	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Vanadium	7440-62-2	24.8	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Zinc	7440-66-6	43.6	2.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.13	0.10	mg/kg	E532	14-Mar-2023	15-Mar-2023	863261

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

Analytical Results

WT2305801-003

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

Client sample ID: S-12598913-030923-CH-011

Client sampling date / time: 09-Mar-2023 10:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.103	0.00500	mS/cm	E100-L	15-Mar-2023	15-Mar-2023	863064
Moisture	----	7.50	0.25	%	E144	-	14-Mar-2023	863352
pH (1:2 soil:CaCl2-aq)	----	7.84	0.10	pH units	E108A	15-Mar-2023	15-Mar-2023	863349
Cyanides								

Analytical Results

WT2305801-003

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

Client sample ID: S-12598913-030923-CH-011
Client sampling date / time: 09-Mar-2023 10:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	15-Mar-2023	15-Mar-2023	863347
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	6.32	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Magnesium, soluble ion content	7439-95-4	1.44	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium, soluble ion content	17341-25-2	2.93	0.50	mg/L	E484	15-Mar-2023	15-Mar-2023	863063
Sodium adsorption ratio [SAR]	----	0.27	0.10	-	E484	15-Mar-2023	15-Mar-2023	863063
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Arsenic	7440-38-2	2.88	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Barium	7440-39-3	45.4	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Beryllium	7440-41-7	0.29	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron	7440-42-8	8.0	5.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Boron, hot water soluble	7440-42-8	<0.10	0.10	mg/kg	E487	15-Mar-2023	15-Mar-2023	863065
Cadmium	7440-43-9	0.078	0.020	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Chromium	7440-47-3	13.1	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Cobalt	7440-48-4	5.21	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Copper	7440-50-8	13.0	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Lead	7439-92-1	6.80	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Mercury	7439-97-6	0.0064	0.0050	mg/kg	E510	15-Mar-2023	15-Mar-2023	863061
Molybdenum	7439-98-7	0.31	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Nickel	7440-02-0	10.5	0.50	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Thallium	7440-28-0	0.112	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Uranium	7440-61-1	0.497	0.050	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Vanadium	7440-62-2	24.3	0.20	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Zinc	7440-66-6	42.0	2.0	mg/kg	E440	15-Mar-2023	15-Mar-2023	863062
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	14-Mar-2023	15-Mar-2023	863261

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2305801**	Page	: 1 of 9
Amendment	: **1**		
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 09-Mar-2023 15:55
PO	: 735-005299-1	Issue Date	: 17-Mar-2023 09:50
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030823-CH-009	E336A	08-Mar-2023	09-Mar-2023	14 days	1 days	✓	10-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030823-CH-010	E336A	08-Mar-2023	09-Mar-2023	14 days	1 days	✓	10-Mar-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030923-CH-011	E336A	09-Mar-2023	15-Mar-2023	14 days	6 days	✓	15-Mar-2023	14 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030923-CH-011	E484	09-Mar-2023	15-Mar-2023	180 days	6 days	✓	15-Mar-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030823-CH-009	E484	08-Mar-2023	15-Mar-2023	180 days	7 days	✓	15-Mar-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030823-CH-010	E484	08-Mar-2023	15-Mar-2023	180 days	7 days	✓	15-Mar-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-030923-CH-011	E487	09-Mar-2023	15-Mar-2023	180 days	6 days	✓	15-Mar-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E487	08-Mar-2023	15-Mar-2023	180 days	7 days	✓	15-Mar-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E487	08-Mar-2023	15-Mar-2023	180 days	7 days	✓	15-Mar-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E510	09-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E510	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	28 days	7 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E510	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	28 days	7 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E440	09-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	180 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E440	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	180 days	7 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E440	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	180 days	7 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E100-L	09-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	6 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E100-L	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	7 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E100-L	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	7 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E144	08-Mar-2023	----	----	----		14-Mar-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E144	08-Mar-2023	----	----	----		14-Mar-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E144	09-Mar-2023	----	----	----		14-Mar-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E108A	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E108A	09-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	6 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E108A	08-Mar-2023	15-Mar-2023	----	----		15-Mar-2023	30 days	7 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030923-CH-011	E532	09-Mar-2023	14-Mar-2023	30 days	5 days	✓	15-Mar-2023	7 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-010	E532	08-Mar-2023	14-Mar-2023	30 days	6 days	✓	15-Mar-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-030823-CH-009	E532	08-Mar-2023	15-Mar-2023	30 days	7 days	✓	16-Mar-2023	7 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	863065	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	863064	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	863348	2	40	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	863061	1	20	5.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	863062	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	863352	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	863349	1	17	5.8	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	863063	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	858346	2	38	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	863065	2	20	10.0	10.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	863064	2	20	10.0	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	863348	4	40	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	863061	2	20	10.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	863062	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	863352	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	863349	1	17	5.8	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	863063	2	20	10.0	10.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	858346	2	38	5.2	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	863065	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	863064	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	863348	2	40	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	863061	1	20	5.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	863062	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	863352	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	863063	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	858346	2	38	5.2	5.0	✓
Matrix Spikes (MS)							
WAD Cyanide (0.01M NaOH Extraction)	E336A	858346	2	38	5.2	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Waterloo - Environmental	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 : 0.01$CaCl_2$ - As Received for pH	EP108A Waterloo - Environmental	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 Waterloo - Environmental	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	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.

QUALITY CONTROL REPORT

Work Order	: **WT2305801**	Page	: 1 of 10
Amendment	: **1**		
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 09-Mar-2023 15:55
PO	: 735-005299-1	Date Analysis Commenced	: 09-Mar-2023
C-O-C number	: ----	Issue Date	: 17-Mar-2023 09:50
Sampler	: ---- 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Greg Pokocky	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 863064)											
WT2305730-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	1.58 mS/cm	1630	3.12%	20%	----
Physical Tests (QC Lot: 863349)											
WT2305745-002	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	8.01	7.94	0.878%	5%	----
Physical Tests (QC Lot: 863352)											
WT2305745-002	Anonymous	Moisture	----	E144	0.25	%	15.3	15.0	1.71%	20%	----
Cyanides (QC Lot: 858346)											
WT2305470-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 863347)											
WT2305730-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 863061)											
WT2305730-001	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0081	0.0078	0.0004	Diff <2x LOR	----
Metals (QC Lot: 863062)											
WT2305730-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	1.86	1.92	3.28%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	62.6	67.8	7.87%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.34	0.34	0.0008	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	8.2	8.0	0.1	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.066	0.073	0.007	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	13.7	15.0	8.66%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	4.36	4.56	4.57%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	8.87	8.88	0.0759%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	6.14	6.23	1.35%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.32	0.33	0.01	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	9.45	9.76	3.23%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.093	0.098	0.005	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.640	0.661	3.14%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	23.5	24.7	4.93%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	29.5	30.8	4.37%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 863063)											
WT2305730-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	4.14	4.66	11.8%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	<0.50	0.52	0.02	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	311	318	2.22%	30%	----
Metals (QC Lot: 863065)											
WT2305730-002	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.14	0.13	0.01	Diff <2x LOR	----
Speciated Metals (QC Lot: 863261)											
WT2305712-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.44	0.37	0.07	Diff <2x LOR	----
Speciated Metals (QC Lot: 863348)											
VA23A3718-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 863064)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 863352)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 858346)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 863347)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 863061)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 863062)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 863063)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 863065)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 863261)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 863348)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----

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: 863064)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	97.9	90.0	110	----
Physical Tests (QCLot: 863349)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 863352)									
Moisture	----	E144	0.25	%	50 %	100.0	90.0	110	----
Cyanides (QCLot: 858346)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	96.3	80.0	120	----
Cyanides (QCLot: 863347)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	101	80.0	120	----
Metals (QCLot: 863061)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	----
Metals (QCLot: 863062)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	99.5	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	96.2	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	93.6	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	97.7	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	96.4	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	96.7	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.1	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	97.8	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	95.2	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	99.0	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	86.1	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	98.0	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	98.6	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	98.2	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	94.2	80.0	120	----
Metals (QCLot: 863063)									

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 863063) - continued									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	107	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	106	80.0	120	----
Metals (QCLot: 863065)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	96.3	70.0	130	----
Speciated Metals (QCLot: 863261)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	83.4	80.0	120	----
Speciated Metals (QCLot: 863348)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	99.6	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 858346)										
WT2305470-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.26 mg/kg	2.5 mg/kg	101	70.0	130	----
Cyanides (QCLot: 863347)										
WT2305730-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.27 mg/kg	2.5 mg/kg	103	70.0	130	----

Reference Material (RM) Report

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

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 863064)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	99.0	70.0	130	----
Metals (QCLot: 863061)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	113	70.0	130	----
Metals (QCLot: 863062)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	106	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	113	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	124	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	122	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	129	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	111	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	117	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	116	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	115	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	117	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	120	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	115	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	121	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	120	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	117	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	109	70.0	130	----
Metals (QCLot: 863063)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	103	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	104	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	102	70.0	130	----
Metals (QCLot: 863065)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	88.2	60.0	140	----
Speciated Metals (QCLot: 863261)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	90.7	70.0	130	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Speciated Metals (QCLot: 863348)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	94.5	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number:

Pag

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2305801

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Project Information	
ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	
ALS Lab Work Order # (lab use only):	WT2305801

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

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountspayableCDN@ghd.com
Email 2	

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

Turnaround Time (TAT) Requested

- ☒ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge mi
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge m
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge m
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge m
- ☐ Same day [E2] if received by 10am M-S - 200% rush surch
- ☐ fees may apply to rush resuests on weekends, statutory holid
- routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	PAHs	VOCs,F1	F2-F4	Trip Blank _ VOCs/ F1	TCLP VOCs	TCLP Metals/Inorganics	TCLP B(a)p	Ignitability	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	S-12598913-030823-CH-009	08-MAR-23	0810	SOIL	2	X											
	S-12598913-↓ L-010	↓	1455	SOIL	2	X											
	S-12598913-030923-CH-011	9-MAR-23	1010	SOIL	2	X											
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													
	S-12598913-			SOIL													

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				8.2			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: CHRIS HEIJ	Date: 03/09/23	Time: 1550	Received by:	Date:	Time:	Received by:	Date: 9-MAR-23	Time: 15:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

SOL-030

CERTIFICATE OF ANALYSIS

Work Order	: **WT2306573**	Page	: 1 of 4
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Mar-2023 12:45
PO	: 735-005299-1	Date Analysis Commenced	: 21-Mar-2023
C-O-C number	: ----	Issue Date	: 22-Mar-2023 12:56
Sampler	: J Bisson		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Sarah Birch	VOC Section Supervisor	Organics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
µg/L	micrograms per litre

>: greater than.
<: less than.

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.

Analytical Results

WT2306573-001

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

Client sample ID: GW-12598913-230317-JB-MU1

Client sampling date / time: 17-Mar-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	101	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	97.8	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

Analytical Results

WT2306573-002

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

Client sample ID: GW-12598913-230317-JB-ML1

Client sampling date / time: 17-Mar-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	99.4	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	102	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

Analytical Results

WT2306573-003

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

Client sample ID: GW-12598913-230317-JB-MU9

Client sampling date / time: 17-Mar-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	98.6	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	96.9	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

Analytical Results

WT2306573-004

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

Client sample ID: GW-12598913-230317-JB-ML9

Client sampling date / time: 17-Mar-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	96.1	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	97.4	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

Analytical Results

WT2306573-005

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

Client sample ID: GW-12598913-230317-JB-DUP-01

Client sampling date / time: 17-Mar-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	97.7	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	97.3	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

Analytical Results

WT2306573-006

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

Client sample ID: GW-12598913-230317-TRIP BLANK

Client sampling date / time: 17-Mar-2023 12:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Bromodichloromethane	75-27-4	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Bromoform	75-25-2	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Chloroform	67-66-3	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Dibromochloromethane	124-48-1	<0.50	0.50	µg/L	E611D	21-Mar-2023	21-Mar-2023	870160
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	96.7	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160
Difluorobenzene, 1,4-	540-36-3	96.7	1.0	%	E611D	21-Mar-2023	21-Mar-2023	870160

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

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2306573**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Mar-2023 12:45
PO	: 735-005299-1	Issue Date	: 22-Mar-2023 12:57
C-O-C number	: ----		
Sampler	: J Bisson		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-JB-DUP-01	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-JB-ML1	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-JB-ML9	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-JB-MU1	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-JB-MU9	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-230317-TRIP BLANK	E611D	17-Mar-2023	21-Mar-2023	----	----		21-Mar-2023	14 days	4 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	870160	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	870160	1	20	5.0	5.0	✓
Method Blanks (MB)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	870160	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	870160	1	20	5.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

QUALITY CONTROL REPORT

Work Order	: **WT2306573**	Page	: 1 of 4
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Mar-2023 12:45
PO	: 735-005299-1	Date Analysis Commenced	: 21-Mar-2023
C-O-C number	: ----	Issue Date	: 22-Mar-2023 12:57
Sampler	: J Bisson 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Sarah Birch	VOC Section Supervisor	Waterloo Organics, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 870160)											
WT2306813-001	Anonymous	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	----
		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	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 870160)						
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	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	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 870160)									
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	99.3	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 870160)										
WT2306813-001	Anonymous	Bromodichloromethane	75-27-4	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		Bromoform	75-25-2	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		Chloroform	67-66-3	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	104 µg/L	100 µg/L	104	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page

Environmental Division
Waterloo
Work Order Reference
WT2306573

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

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

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountspayableCDN@ghd.com
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimu
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimu
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimu
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. A fees may apply to rush resuests on weekends, statutory holidays an routine tests
Date and Time Required for all E&P TATs:
For tests that can not be performed according to the T

Project Information	
ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

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

ALS Lab Work Order # (lab use only): WT2306573

ALS Contact: Rick H

Sampler: JBISSON

Analysis Requested

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: O.Reg 153 metals/inorganics	VOCs,F1	F2-F4	PAHs	Trip Blank _ VOCs/~~PAHs~~		NDMA – trace analysis	Bromodichloromethane	Bromoform	Chloroform	Dibromochloro-methane				SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GW-12598913- 230317-JB-MW1	17-MAR-23	1000	WATER	2							✓	✓	✓	✓	✓						
	GW-12598913- 230317-JB-MW1		1030	WATER	2							✓	✓	✓	✓	✓						
	GW-12598913- 230317-JB-MW9		1100	WATER	2							✓	✓	✓	✓	✓						
	GW-12598913- 230317-JB-MW9		1130	WATER	2							✓	✓	✓	✓	✓						
	GW-12598913- 230317-JB-DUP-01		1130	WATER	2							✓	✓	✓	✓	✓						
	GW-12598913- TRIP BLANK		1200	WATER	2					✓			✓	✓	✓	✓						
	GW-12598913-			WATER																		
	GW-12598913-			WATER																		
	GW-12598913-			WATER																		
	GW-12598913-			WATER																		
	GW-12598913-			WATER																		
	GW-12598913-			WATER																		

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
				4.2				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
JBISSON	2023-MR-17	1245				MDJ	MAR 17 2023	12:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VW-177

CERTIFICATE OF ANALYSIS

Work Order	: **WT2306784**	Page	: 1 of 4
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 20-Mar-2023 16:20
PO	: 735-005299-1	Date Analysis Commenced	: 23-Mar-2023
C-O-C number	: ----	Issue Date	: 24-Mar-2023 10:50
Sampler	: J.BISSON		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
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*
Katrina Zwambag	Business Manager - Environmental	LCMS, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
µg/L	micrograms per litre

>: greater than.
<: less than.

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.

Analytical Results

WT2306784-001

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

Client sample ID: GW-12598913-230320-JB-MU-1

Client sampling date / time: 20-Mar-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Semi-Volatile Organics								
Nitrosodimethylamine, N- [NDMA]	62-75-9	0.0113	0.00090	µg/L	E725-T	23-Mar-2023	23-Mar-2023	871673
Nitrosamines Surrogates								
Nitrosodimethylamine-d6, N-	17829-05-9	96.6	0.00090	%	E725-T	23-Mar-2023	23-Mar-2023	871673

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

Analytical Results

WT2306784-002

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

Client sample ID: GW-12598913-230320-JB-ML-1

Client sampling date / time: 20-Mar-2023 10:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Semi-Volatile Organics								
Nitrosodimethylamine, N- [NDMA]	62-75-9	0.00791	0.00090	µg/L	E725-T	23-Mar-2023	23-Mar-2023	871673
Nitrosamines Surrogates								
Nitrosodimethylamine-d6, N-	17829-05-9	103	0.00090	%	E725-T	23-Mar-2023	23-Mar-2023	871673

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

Analytical Results

WT2306784-003

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

Client sample ID: GW-12598913-230320-JB-MU-9

Client sampling date / time: 20-Mar-2023 11:20

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Semi-Volatile Organics								
Nitrosodimethylamine, N- [NDMA]	62-75-9	<0.00090	0.00090	µg/L	E725-T	23-Mar-2023	23-Mar-2023	871673
Nitrosamines Surrogates								
Nitrosodimethylamine-d6, N-	17829-05-9	93.3	0.00090	%	E725-T	23-Mar-2023	23-Mar-2023	871673

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

Analytical Results

WT2306784-004

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

Client sample ID: GW-12598913-230320-JB-ML-9

Client sampling date / time: 20-Mar-2023 11:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Semi-Volatile Organics								
Nitrosodimethylamine, N- [NDMA]	62-75-9	<0.00090	0.00090	µg/L	E725-T	23-Mar-2023	23-Mar-2023	871673
Nitrosamines Surrogates								
Nitrosodimethylamine-d6, N-	17829-05-9	93.7	0.00090	%	E725-T	23-Mar-2023	23-Mar-2023	871673

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

Analytical Results

WT2306784-005

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

Client sample ID: GW-12598913-230320-JB-DUP-01
Client sampling date / time: 20-Mar-2023 11:35

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method*	*Prep Date*	*Analysis Date*	*QCLot*
Semi-Volatile Organics								
Nitrosodimethylamine, N- [NDMA]	62-75-9	<0.00090	0.00090	µg/L	E725-T	23-Mar-2023	23-Mar-2023	871673
Nitrosamines Surrogates								
Nitrosodimethylamine-d6, N-	17829-05-9	91.0	0.00090	%	E725-T	23-Mar-2023	23-Mar-2023	871673

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

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2306784**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 20-Mar-2023 16:20
PO	: 735-005299-1	Issue Date	: 24-Mar-2023 10:50
C-O-C number	: ----		
Sampler	: J.BISSON		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Semi-Volatile Organics : N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)										
Amber glass/Teflon lined cap										
GW-12598913-230320-JB-DUP-01	E725-T	20-Mar-2023	23-Mar-2023	28 days	3 days	✓	23-Mar-2023	28 days	0 days	✓
Semi-Volatile Organics : N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)										
Amber glass/Teflon lined cap										
GW-12598913-230320-JB-ML-1	E725-T	20-Mar-2023	23-Mar-2023	28 days	3 days	✓	23-Mar-2023	28 days	0 days	✓
Semi-Volatile Organics : N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)										
Amber glass/Teflon lined cap										
GW-12598913-230320-JB-ML-9	E725-T	20-Mar-2023	23-Mar-2023	28 days	3 days	✓	23-Mar-2023	28 days	0 days	✓
Semi-Volatile Organics : N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)										
Amber glass/Teflon lined cap										
GW-12598913-230320-JB-MU-1	E725-T	20-Mar-2023	23-Mar-2023	28 days	3 days	✓	23-Mar-2023	28 days	0 days	✓
Semi-Volatile Organics : N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)										
Amber glass/Teflon lined cap										
GW-12598913-230320-JB-MU-9	E725-T	20-Mar-2023	23-Mar-2023	28 days	3 days	✓	23-Mar-2023	28 days	0 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)	E725-T	871673	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)	E725-T	871673	1	16	6.2	5.0	✓
Method Blanks (MB)							
N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)	E725-T	871673	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)	E725-T	871673	1	16	6.2	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
N-Nitrosodimethylamine (NDMA) by LC-MS-MS (Trace Level)	E725-T Waterloo - Environmental	Water	EPA/600/r-05/054. Method 521	Nitrosamines analytes are analyzed via LC/MS/MS in Positive APCI mode.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrosamines SPE Extraction	EP725 Waterloo - Environmental	Water	EPA/600/r-05/054. Method 521	Nitrosamines analytes are extracted from water samples using SPE (solid phase extraction). The analytes are eluted and evaporated for solvent exchange and then analyzed via LC/MS/MS in Positive APCI mode.

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QUALITY CONTROL REPORT

Work Order	: **WT2306784**	Page	: 1 of 3
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 20-Mar-2023 16:20
PO	: 735-005299-1	Date Analysis Commenced	: 23-Mar-2023
C-O-C number	: ----	Issue Date	: 24-Mar-2023 10:50
Sampler	: J.BISSON 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-1		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Katrina Zwambag	Business Manager - Environmental	Waterloo LCMS, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Nitrosamines (QC Lot: 871673)											
EO2302081-002	Anonymous	Nitrosodimethylamine, N- [NDMA]	62-75-9	E725-T	0.00090	µg/L	<0.00090	<0.00090	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Nitrosamines (QCLot: 871673)						
Nitrosodimethylamine, N- [NDMA]	62-75-9	E725-T	0.0009	µg/L	<0.00090	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Nitrosamines (QCLot: 871673)									
Nitrosodimethylamine, N- [NDMA]	62-75-9	E725-T	0.0009	µg/L	0.005 µg/L	117	50.0	150	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Nitrosamines (QCLot: 871673)										
EO2302081-004	Anonymous	Nitrosodimethylamine, N- [NDMA]	62-75-9	E725-T	0.00543 µg/L	0.005 µg/L	106	50.0	150	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page

Environmental Division
Waterloo
Work Order Reference
WT2306784

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minin
☐ 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 surcharg
☐ fees may apply to rush resuests on weekends, statutory holiday routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the TAT requ

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-1
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2306784 RJ

ALS Contact: Rick H

Sampler: JBISSON

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	NDMA – trace analysis	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GW-12598913-230320-JB-MW-1	20-MAR-23	10:30	WATER	2	✓			
	GW-12598913-230320-JB-MW-1		10:45	WATER	2	✓			
	GW-12598913-230320-JB-MW-9		11:20	WATER	2	✓			
	GW-12598913-230320-JB-MW-9		11:35	WATER	2	✓			
	GW-12598913-230320-JB-DUP-01	✓	11:35	WATER	2	✓			
	GW-12598913-			WATER					
	GW-12598913-			WATER					
	GW-12598913-			WATER					
	GW-12598913-			WATER					
	GW-12598913-			WATER					
	GW-12598913-			WATER					
	GW-12598913-			WATER					

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

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							8.7

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
JBISSON	23-MAR-20	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
RJ	03/20/23	16:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

L-431

CERTIFICATE OF ANALYSIS

Work Order	: **WT2311679**	Page	: 1 of 22
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 03-May-2023 17:30
PO	: 735-005299-2	Date Analysis Commenced	: 03-May-2023
C-O-C number	: ----	Issue Date	: 05-May-2023 16:33
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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:

- 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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, 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

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.

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.

Analytical Results

WT2311679-001

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

Client sample ID: S-1259813-050323-ZCV-001
Client sampling date / time: 03-May-2023 12:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	25.4	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								

Analytical Results

WT2311679-001

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-001

Client sampling date / time: 03-May-2023 12:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	71.2	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	80.2	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	79.0	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	84.1	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-002

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-002

Client sampling date / time: 03-May-2023 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	24.2	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324

Analytical Results

WT2311679-002

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

Client sample ID: S-1259813-050323-ZCV-002
Client sampling date / time: 03-May-2023 12:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	72.6	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	84.4	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	79.1	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	85.2	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-003

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

Client sample ID: S-1259813-050323-ZCV-003
Client sampling date / time: 03-May-2023 12:55

Analytical Results

WT2311679-003

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-003

Client sampling date / time: 03-May-2023 12:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	21.2	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								

Analytical Results

WT2311679-003

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-003

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 12:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	59	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	64	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	123	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	75.3	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	79.5	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	80.1	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	86.6	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-004

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-004

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 13:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	15.8	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324

Analytical Results

WT2311679-004

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

Client sample ID: S-1259813-050323-ZCV-004
Client sampling date / time: 03-May-2023 13:25

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	75.2	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	87.3	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	87.1	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	94.6	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-005

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

Client sample ID: S-1259813-050323-ZCV-005
Client sampling date / time: 03-May-2023 13:37

Analytical Results

WT2311679-005

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-005

Client sampling date / time: 03-May-2023 13:37

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	15.0	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								

Analytical Results

WT2311679-005

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-005

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 13:37

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	73.4	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	80.8	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	83.0	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	91.1	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-006

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-006

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 13:53

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	11.1	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324

Analytical Results

WT2311679-006

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

Client sample ID: S-1259813-050323-ZCV-006
Client sampling date / time: 03-May-2023 13:53

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	74.2	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	83.6	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	90.4	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	98.2	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-007

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

Client sample ID: S-1259813-050323-ZCV-007
Client sampling date / time: 03-May-2023 13:53

Analytical Results

WT2311679-007

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-007

Client sampling date / time: 03-May-2023 13:53

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	12.4	0.25	%	E144	-	03-May-2023	921230
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	03-May-2023	04-May-2023	921324
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	03-May-2023	04-May-2023	921324
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	03-May-2023	04-May-2023	921324
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	03-May-2023	04-May-2023	921324
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	03-May-2023	04-May-2023	921324
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	03-May-2023	04-May-2023	921324
BTEX, total	----	<0.10	0.1	mg/kg	E611D	03-May-2023	04-May-2023	921324
Hydrocarbons								

Analytical Results

WT2311679-007

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-007

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 13:53

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	03-May-2023	04-May-2023	921325
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	03-May-2023	04-May-2023	921075
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	04-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	03-May-2023	04-May-2023	921075
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	75.6	1.0	%	E601.SG-L	03-May-2023	04-May-2023	921075
Dichlorotoluene, 3,4-	95-75-0	83.1	1.0	%	E581.F1	03-May-2023	04-May-2023	921325
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	80.7	0.10	%	E611D	03-May-2023	04-May-2023	921324
Difluorobenzene, 1,4-	540-36-3	87.5	0.10	%	E611D	03-May-2023	04-May-2023	921324

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

Analytical Results

WT2311679-008

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-008

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 14:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.431	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	21.7	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	6.15	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	48.1	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	11.9	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	6.27	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	0.21	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.13	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	5.25	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	68.0	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.54	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	<5.0	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.56	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.241	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	21.1	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	7.15	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	13.1	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	12.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097

Analytical Results

WT2311679-008

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

Client sample ID: S-1259813-050323-ZCV-008
Client sampling date / time: 03-May-2023 14:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Mercury	7439-97-6	0.0380	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.45	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	14.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	0.25	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.101	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.614	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	36.3	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	76.1	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.33	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-009

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

Client sample ID: S-1259813-050323-ZCV-009
Client sampling date / time: 03-May-2023 14:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.557	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	19.7	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	6.50	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	70.9	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	14.3	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	4.93	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	0.14	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.20	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	6.16	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	179	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	1.15	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	13.0	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.21	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.140	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	37.0	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	14.8	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	28.0	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	16.3	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0335	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.41	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097

Analytical Results

WT2311679-009

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-009

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 14:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Nickel	7440-02-0	31.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.223	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.639	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	54.8	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	89.6	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.40	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-010

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-010

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.274	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	16.8	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	6.45	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	19.6	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	6.23	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	13.3	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	0.67	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	6.57	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	60.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	5.8	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.43	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.233	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	23.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	7.81	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	15.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	14.0	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0329	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.48	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	16.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	0.24	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097

Analytical Results

WT2311679-010

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-010

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.115	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.639	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	47.8	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	79.4	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.54	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-011

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-012

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.341	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	19.0	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	7.31	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	32.0	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	9.02	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	8.83	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	0.36	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.16	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	7.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	65.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.61	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	8.4	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.21	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.242	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	23.9	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	8.39	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	22.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	13.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0254	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.50	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	19.3	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.135	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097

Analytical Results

WT2311679-011

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-012

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Uranium	7440-61-1	0.614	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	49.4	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	77.7	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.18	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-012

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-013

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0820	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	24.1	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	6.07	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	6.04	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	3.29	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	0.97	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.17	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	6.08	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	58.3	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.50	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	5.9	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	1.30	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.398	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	17.7	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	6.54	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	17.8	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	14.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0442	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.61	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	12.7	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	0.36	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.099	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.719	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	31.9	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097

Analytical Results

WT2311679-012

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-013

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Zinc	7440-66-6	88.1	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.20	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-013

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-014

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0865	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	20.5	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	6.45	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	6.14	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	4.36	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	1.05	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.19	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	6.98	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	66.6	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.56	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	7.5	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	1.23	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.474	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	20.5	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	7.32	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	20.7	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	17.4	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0397	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.72	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	15.3	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	0.40	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.123	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.941	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	38.0	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	103	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								

Analytical Results

WT2311679-013

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-014

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.12	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-014

Sub-Matrix:**Soil/Solid** *Client sample ID:* S-1259813-050323-ZCV-015

(Matrix: **Soil/Solid**) *Client sampling date / time:* 03-May-2023 15:44

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.168	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	19.6	0.25	%	E144	-	03-May-2023	921223
pH (1:2 soil:CaCl2-aq)	----	7.45	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	14.5	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	2.83	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	2.43	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	0.15	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	5.32	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	64.8	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.48	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	6.8	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.43	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.308	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	19.4	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	6.69	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	16.5	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	13.4	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0443	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.44	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	13.5	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	0.31	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.100	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.601	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	33.9	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	78.2	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-015

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

Client sample ID: S-1259813-050323-ZCV-016
Client sampling date / time: 03-May-2023 15:55

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0644	0.00500	mS/cm	E100-L	05-May-2023	05-May-2023	923336
Moisture	----	16.0	0.25	%	E144	-	04-May-2023	922035
pH (1:2 soil:CaCl2-aq)	----	6.80	0.10	pH units	E108A	04-May-2023	05-May-2023	923097
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	05-May-2023	923093
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	4.22	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Magnesium, soluble ion content	7439-95-4	3.79	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Sodium, soluble ion content	17341-25-2	0.62	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	05-May-2023	05-May-2023	923335
Metals								
Antimony	7440-36-0	<0.10	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Arsenic	7440-38-2	3.76	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Barium	7440-39-3	36.2	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Beryllium	7440-41-7	0.39	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Boron	7440-42-8	5.7	5.0	mg/kg	E440	05-May-2023	05-May-2023	923333
Boron, hot water soluble	7440-42-8	0.46	0.10	mg/kg	E487	05-May-2023	05-May-2023	922017
Cadmium	7440-43-9	0.213	0.020	mg/kg	E440	05-May-2023	05-May-2023	923333
Chromium	7440-47-3	14.5	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Cobalt	7440-48-4	4.47	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Copper	7440-50-8	10.6	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Lead	7439-92-1	9.94	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Mercury	7439-97-6	0.0279	0.0050	mg/kg	E510	05-May-2023	05-May-2023	923334
Molybdenum	7439-98-7	0.30	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Nickel	7440-02-0	10.4	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	05-May-2023	05-May-2023	923333
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Thallium	7440-28-0	0.075	0.050	mg/kg	E440	05-May-2023	05-May-2023	923333
Uranium	7440-61-1	0.508	0.050	mg/kg	E440	05-May-2023	05-May-2023	923333
Vanadium	7440-62-2	28.8	0.20	mg/kg	E440	05-May-2023	05-May-2023	923333
Zinc	7440-66-6	62.0	2.0	mg/kg	E440	05-May-2023	05-May-2023	923333
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.26	0.10	mg/kg	E532	04-May-2023	05-May-2023	923123

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

Analytical Results

WT2311679-016

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

Client sample ID: S-1259813-050323-ZCV-017
Client sampling date / time: 03-May-2023 16:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0517	0.00500	mS/cm	E100-L	04-May-2023	04-May-2023	921099
Moisture	----	16.8	0.25	%	E144	-	03-May-2023	921223

Analytical Results

WT2311679-016

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

Client sample ID: S-1259813-050323-ZCV-017
Client sampling date / time: 03-May-2023 16:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
pH (1:2 soil:CaCl2-aq)	----	6.70	0.10	pH units	E108A	04-May-2023	04-May-2023	921219
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	04-May-2023	921217
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	9.23	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Magnesium, soluble ion content	7439-95-4	14.5	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium, soluble ion content	17341-25-2	0.81	0.50	mg/L	E484	04-May-2023	04-May-2023	921098
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	04-May-2023	04-May-2023	921098
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Arsenic	7440-38-2	6.78	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Barium	7440-39-3	61.4	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Beryllium	7440-41-7	0.63	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron	7440-42-8	6.2	5.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Boron, hot water soluble	7440-42-8	0.41	0.10	mg/kg	E487	04-May-2023	04-May-2023	921100
Cadmium	7440-43-9	0.219	0.020	mg/kg	E440	04-May-2023	04-May-2023	921097
Chromium	7440-47-3	22.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Cobalt	7440-48-4	7.11	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Copper	7440-50-8	17.3	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Lead	7439-92-1	14.2	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Mercury	7439-97-6	0.0386	0.0050	mg/kg	E510	04-May-2023	04-May-2023	921096
Molybdenum	7439-98-7	0.48	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Nickel	7440-02-0	16.7	0.50	mg/kg	E440	04-May-2023	04-May-2023	921097
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	04-May-2023	04-May-2023	921097
Thallium	7440-28-0	0.123	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Uranium	7440-61-1	0.668	0.050	mg/kg	E440	04-May-2023	04-May-2023	921097
Vanadium	7440-62-2	41.6	0.20	mg/kg	E440	04-May-2023	04-May-2023	921097
Zinc	7440-66-6	75.7	2.0	mg/kg	E440	04-May-2023	04-May-2023	921097
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.40	0.10	mg/kg	E532	04-May-2023	04-May-2023	921218

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

Analytical Results

WT2311679-017

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

Client sample ID: S-1259813-050323-ZCV-011 -
Client sampling date / time: 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.246	0.00500	mS/cm	E100-L	05-May-2023	05-May-2023	923336
Moisture	----	15.7	0.25	%	E144	-	04-May-2023	922035
pH (1:2 soil:CaCl2-aq)	----	6.45	0.10	pH units	E108A	04-May-2023	05-May-2023	923097
Cyanides								

Analytical Results

WT2311679-017

Sub-Matrix:**Soil/Solid**

(Matrix: **Soil/Solid**)

Client sample ID: S-1259813-050323-ZCV-011 -

Client sampling date / time: 03-May-2023 15:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	05-May-2023	923093
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	17.9	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Magnesium, soluble ion content	7439-95-4	7.45	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Sodium, soluble ion content	17341-25-2	12.9	0.50	mg/L	E484	05-May-2023	05-May-2023	923335
Sodium adsorption ratio [SAR]	----	0.65	0.10	-	E484	05-May-2023	05-May-2023	923335
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Arsenic	7440-38-2	4.83	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Barium	7440-39-3	46.9	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Beryllium	7440-41-7	0.54	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Boron	7440-42-8	5.9	5.0	mg/kg	E440	05-May-2023	05-May-2023	923333
Boron, hot water soluble	7440-42-8	0.44	0.10	mg/kg	E487	05-May-2023	05-May-2023	922017
Cadmium	7440-43-9	0.170	0.020	mg/kg	E440	05-May-2023	05-May-2023	923333
Chromium	7440-47-3	19.0	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Cobalt	7440-48-4	6.19	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Copper	7440-50-8	12.0	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Lead	7439-92-1	11.8	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Mercury	7439-97-6	0.0394	0.0050	mg/kg	E510	05-May-2023	05-May-2023	923334
Molybdenum	7439-98-7	0.40	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Nickel	7440-02-0	12.7	0.50	mg/kg	E440	05-May-2023	05-May-2023	923333
Selenium	7782-49-2	0.20	0.20	mg/kg	E440	05-May-2023	05-May-2023	923333
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	05-May-2023	05-May-2023	923333
Thallium	7440-28-0	0.097	0.050	mg/kg	E440	05-May-2023	05-May-2023	923333
Uranium	7440-61-1	0.542	0.050	mg/kg	E440	05-May-2023	05-May-2023	923333
Vanadium	7440-62-2	37.3	0.20	mg/kg	E440	05-May-2023	05-May-2023	923333
Zinc	7440-66-6	62.4	2.0	mg/kg	E440	05-May-2023	05-May-2023	923333
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.43	0.10	mg/kg	E532	04-May-2023	05-May-2023	923123

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2311679**	Page	: 1 of 21
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 03-May-2023 17:30
PO	: 735-005299-2	Issue Date	: 05-May-2023 16:34
C-O-C number	: ----		
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-008	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-009	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-010	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-012	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-013	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-014	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-015	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E336A	03-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E336A	03-May-2023	04-May-2023	14 days	1 days	✓	05-May-2023	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E336A	03-May-2023	04-May-2023	14 days	1 days	✓	05-May-2023	14 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E484	03-May-2023	05-May-2023	180 days	1 days	✓	05-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E484	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E484	03-May-2023	05-May-2023	180 days	2 days	✓	05-May-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-001	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-002	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-003	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-004	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-005	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-006	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-007	E581.F1	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-001	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-002	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-003	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-004	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-005	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-006	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-007	E601.SG-L	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E487	03-May-2023	05-May-2023	180 days	1 days	✓	05-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E487	03-May-2023	04-May-2023	180 days	1 days	✓	04-May-2023	180 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E487	03-May-2023	05-May-2023	180 days	2 days	✓	05-May-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E510	03-May-2023	05-May-2023	----	----		05-May-2023	28 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E510	03-May-2023	04-May-2023	----	----		04-May-2023	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E510	03-May-2023	05-May-2023	----	----		05-May-2023	28 days	2 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-016	E440	03-May-2023	05-May-2023	----	----		05-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-017	E440	03-May-2023	04-May-2023	----	----		04-May-2023	180 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-011	E440	03-May-2023	05-May-2023	----	----		05-May-2023	180 days	2 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-008	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-009	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-010	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-012	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-013	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-014	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E100-L	03-May-2023	05-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E100-L	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E100-L	03-May-2023	05-May-2023	----	----		05-May-2023	30 days	2 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-001	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-002	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-003	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-004	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-005	E144	03-May-2023	----	----	----		03-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-006	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-007	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E144	03-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E144	03-May-2023	----	----	----		03-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E144	03-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E144	03-May-2023	----	----	----		03-May-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-014	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-015	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-017	E108A	03-May-2023	04-May-2023	----	----		04-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-011	E108A	03-May-2023	04-May-2023	----	----		05-May-2023	30 days	2 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-016	E108A	03-May-2023	04-May-2023	----	----		05-May-2023	30 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-008	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-009	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-010	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-012	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-1259813-050323-ZCV-013	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-014	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-015	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-017	E532	03-May-2023	04-May-2023	30 days	0 days	✓	04-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-011	E532	03-May-2023	04-May-2023	30 days	1 days	✓	05-May-2023	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-1259813-050323-ZCV-016	E532	03-May-2023	04-May-2023	30 days	1 days	✓	05-May-2023	7 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-001	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-002	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-003	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] S-1259813-050323-ZCV-004	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-005	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-006	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-1259813-050323-ZCV-007	E611D	03-May-2023	03-May-2023	14 days	0 days	✓	04-May-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	921100	2	22	9.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	921325	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	921075	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	921099	2	31	6.4	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921218	2	22	9.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	921096	2	22	9.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	921097	2	30	6.6	5.0	✓
Moisture Content by Gravimetry	E144	921223	3	51	5.8	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	921219	2	32	6.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	921098	2	31	6.4	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	921324	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	921217	2	29	6.9	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	921100	4	22	18.1	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	921325	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	921075	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	921099	4	31	12.9	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921218	4	22	18.1	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	921096	4	22	18.1	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	921097	4	30	13.3	10.0	✓
Moisture Content by Gravimetry	E144	921223	3	51	5.8	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	921219	2	32	6.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	921098	4	31	12.9	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	921324	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	921217	2	29	6.9	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	921100	2	22	9.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	921325	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	921075	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	921099	2	31	6.4	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	921218	2	22	9.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	921096	2	22	9.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	921097	2	30	6.6	5.0	✓
Moisture Content by Gravimetry	E144	921223	3	51	5.8	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	921098	2	31	6.4	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	921324	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	921217	2	29	6.9	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	921325	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	921075	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	921324	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	921217	2	29	6.9	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - 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 the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	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 Waterloo - Environmental	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 : 0.01$CaCl_2$ - As Received for pH	EP108A Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Metals and Mercury	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2311679**	Page	: 1 of 19
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 03-May-2023 17:30
PO	: 735-005299-2	Date Analysis Commenced	: 03-May-2023
C-O-C number	: ----	Issue Date	: 05-May-2023 16:33
Sampler	: ZCV 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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 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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
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Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 921099)											
WT2311679-008	S-1259813-050323-ZCV-008	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.431 mS/cm	435	0.924%	20%	----
Physical Tests (QC Lot: 921219)											
WT2311593-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	8.25	8.38	1.56%	5%	----
Physical Tests (QC Lot: 921223)											
WT2311593-001	Anonymous	Moisture	----	E144	0.25	%	13.8	13.8	0.272%	20%	----
Physical Tests (QC Lot: 921230)											
WT2311688-001	Anonymous	Moisture	----	E144	0.25	%	17.0	17.5	2.85%	20%	----
Physical Tests (QC Lot: 922035)											
WT2311679-015	S-1259813-050323-ZCV-016	Moisture	----	E144	0.25	%	16.0	16.2	1.50%	20%	----
Physical Tests (QC Lot: 923097)											
WT2311679-015	S-1259813-050323-ZCV-016	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	6.80	6.84	0.586%	5%	----
Physical Tests (QC Lot: 923336)											
WT2311312-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	1.03 mS/cm	1020	0.779%	20%	----
Cyanides (QC Lot: 921217)											
WT2311593-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 923093)											
WT2311679-017	S-1259813-050323-ZCV-011	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 921096)											
WT2311679-008	S-1259813-050323-ZCV-008	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0380	0.0405	6.34%	40%	----
Metals (QC Lot: 921097)											
WT2311679-008	S-1259813-050323-ZCV-008	Antimony	7440-36-0	E440	0.10	mg/kg	0.13	0.11	0.02	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	5.25	4.30	19.9%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	68.0	53.6	23.6%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.54	0.43	0.10	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.241	0.200	18.7%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	21.1	19.7	6.77%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 921097) - continued											
WT2311679-008	S-1259813-050323-ZCV-008	Cobalt	7440-48-4	E440	0.10	mg/kg	7.15	5.78	21.3%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	13.1	10.6	21.2%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	12.6	10.7	16.0%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.45	0.43	0.02	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	14.6	13.3	9.09%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.25	0.21	0.04	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.101	0.091	0.011	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.614	0.510	18.5%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	36.3	30.3	17.8%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	76.1	60.9	22.1%	30%	----
Metals (QC Lot: 921098)											
WT2311679-008	S-1259813-050323-ZCV-008	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	48.1	48.9	1.65%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	11.9	12.0	0.837%	30%	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	6.27	6.15	1.93%	30%	----
Metals (QC Lot: 921100)											
WT2311593-002	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Metals (QC Lot: 922017)											
WT2311679-015	S-1259813-050323-ZCV-016	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.46	0.45	0.008	Diff <2x LOR	----
Metals (QC Lot: 923333)											
WT2311312-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	0.14	0.14	0.0006	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	2.15	2.38	10.0%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	16.7	18.0	7.22%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.15	0.16	0.007	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	6.7	6.6	0.1	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.107	0.134	0.027	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	11.6	12.4	7.00%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	2.82	3.07	8.57%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	12.7	11.5	9.83%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	13.7	15.6	13.2%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	1.14	1.16	2.08%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	7.81	8.36	6.81%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 923333) - continued											
WT2311312-001	Anonymous	Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.058	0.060	0.002	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.778	0.878	12.0%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	17.5	18.6	6.38%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	35.9	37.3	3.73%	30%	----
Metals (QC Lot: 923334)											
WT2311679-015	S-1259813-050323-ZCV-016	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0279	0.0300	7.04%	40%	----
Metals (QC Lot: 923335)											
WT2311312-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	5.71	6.82	17.7%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	1.07	1.52	0.45	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	204	202	0.985%	30%	----
Speciated Metals (QC Lot: 921218)											
WT2311593-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 923123)											
WT2311679-015	S-1259813-050323-ZCV-016	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.26	0.26	0.002	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 921324)											
WT2311679-007	S-1259813-050323-ZCV-007	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 921324) - continued											
WT2311679-007	S-1259813-050323-ZCV-007	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: 921075)											
WT2311653-009	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 921325)											
WT2311679-007	S-1259813-050323-ZCV-007	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 921099)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 921223)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 921230)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 922035)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 923336)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Cyanides (QCLot: 921217)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 923093)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 921096)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 921097)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 921097) - continued						
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 921098)						
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: 921100)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 922017)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 923333)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 923334)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 923335)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 921218)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 923123)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 921324)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 921324) - continued						
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 921075)						
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: 921325)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 921099)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 921219)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 921223)									
Moisture	----	E144	0.25	%	50 %	99.3	90.0	110	----
Physical Tests (QCLot: 921230)									
Moisture	----	E144	0.25	%	50 %	99.2	90.0	110	----
Physical Tests (QCLot: 922035)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 923097)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 923336)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	102	90.0	110	----
Cyanides (QCLot: 921217)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	96.2	80.0	120	----
Cyanides (QCLot: 923093)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	90.4	80.0	120	----
Metals (QCLot: 921096)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	----
Metals (QCLot: 921097)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	116	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	114	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	110	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	100	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	98.6	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	107	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	108	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	107	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	108	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	108	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 921097) - continued									
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	113	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	108	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	115	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	110	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	110	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	106	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	112	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	104	80.0	120	----
Metals (QCLot: 921098)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	106	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	102	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	103	80.0	120	----
Metals (QCLot: 921100)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	111	70.0	130	----
Metals (QCLot: 922017)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	100	70.0	130	----
Metals (QCLot: 923333)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	108	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	100.0	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	97.5	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	99.1	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	98.5	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	97.3	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	99.3	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	97.8	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	100	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	92.1	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	103	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	94.2	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	101	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	96.9	80.0	120	----
Metals (QCLot: 923334)									

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 923334) - continued									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	118	80.0	120	----
Metals (QCLot: 923335)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	105	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Speciated Metals (QCLot: 921218)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	96.6	80.0	120	----
Speciated Metals (QCLot: 923123)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	100	80.0	120	----
Volatile Organic Compounds (QCLot: 921324)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	97.3	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	98.1	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	102	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	93.8	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	117	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	100	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	102	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	100	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	98.8	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	103	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	96.1	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	99.2	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	68.8	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	100	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	99.6	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	100.0	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	101	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	101	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	96.7	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	95.2	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	93.2	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	104	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 921324) - continued									
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	110	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	97.1	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	92.9	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	102	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	98.4	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	101	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	110	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	100	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	100	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	98.1	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	110	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	101	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	91.9	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	107	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	104	70.0	130	----
Hydrocarbons (QCLot: 921075)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	80.2	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	79.9	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	91.2	70.0	130	----
Hydrocarbons (QCLot: 921325)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	105	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 921217)										
WT2311593-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.23 mg/kg	2.5 mg/kg	98.9	70.0	130	----
Cyanides (QCLot: 923093)										
WT2311679-017	S-1259813-050323-ZCV-011	Cyanide, weak acid dissociable	----	E336A	1.13 mg/kg	2.5 mg/kg	90.8	70.0	130	----
Volatile Organic Compounds (QCLot: 921324)										
WT2311679-007	S-1259813-050323-ZCV-007	Acetone	67-64-1	E611D	2.50 mg/kg	3.125 mg/kg	121	50.0	140	----
		Benzene	71-43-2	E611D	2.20 mg/kg	3.125 mg/kg	107	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.08 mg/kg	3.125 mg/kg	101	50.0	140	----
		Bromoform	75-25-2	E611D	1.90 mg/kg	3.125 mg/kg	92.3	50.0	140	----
		Bromomethane	74-83-9	E611D	2.49 mg/kg	3.125 mg/kg	121	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	2.29 mg/kg	3.125 mg/kg	111	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.05 mg/kg	3.125 mg/kg	99.6	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	2.10 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.06 mg/kg	3.125 mg/kg	100	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.09 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.07 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.10 mg/kg	3.125 mg/kg	102	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.43 mg/kg	3.125 mg/kg	118	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	2.28 mg/kg	3.125 mg/kg	111	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	2.06 mg/kg	3.125 mg/kg	100	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.22 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.22 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.22 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.24 mg/kg	3.125 mg/kg	109	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.21 mg/kg	3.125 mg/kg	108	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	1.92 mg/kg	3.125 mg/kg	93.4	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	1.91 mg/kg	3.125 mg/kg	92.8	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.20 mg/kg	3.125 mg/kg	107	50.0	140	----
		Hexane, n-	110-54-3	E611D	2.62 mg/kg	3.125 mg/kg	127	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.05 mg/kg	3.125 mg/kg	99.6	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.14 mg/kg	3.125 mg/kg	104	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 921324) - continued										
WT2311679-007	S-1259813-050323-ZCV-007	Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.07 mg/kg	3.125 mg/kg	101	50.0	140	----
		Styrene	100-42-5	E611D	2.08 mg/kg	3.125 mg/kg	101	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.03 mg/kg	3.125 mg/kg	99.0	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.30 mg/kg	3.125 mg/kg	112	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.09 mg/kg	3.125 mg/kg	102	50.0	140	----
		Toluene	108-88-3	E611D	2.20 mg/kg	3.125 mg/kg	107	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.96 mg/kg	3.125 mg/kg	95.2	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.13 mg/kg	3.125 mg/kg	104	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.12 mg/kg	3.125 mg/kg	103	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	2.15 mg/kg	3.125 mg/kg	105	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.48 mg/kg	3.125 mg/kg	121	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	4.47 mg/kg	6.25 mg/kg	109	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.16 mg/kg	3.125 mg/kg	105	50.0	140	----
Hydrocarbons (QCLot: 921075)										
WT2311653-009	Anonymous	F2 (C10-C16)	----	E601.SG-L	543 mg/kg	821.775 mg/kg	89.9	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	766 mg/kg	1151.486 mg/kg	90.4	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	546 mg/kg	719.6893 mg/kg	103	60.0	140	----
Hydrocarbons (QCLot: 921325)										
WT2311679-007	S-1259813-050323-ZCV-007	F1 (C6-C10)	----	E581.F1	38.5 mg/kg	62.5 mg/kg	93.6	60.0	140	----

Reference Material (RM) Report

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

Sub-Matrix:

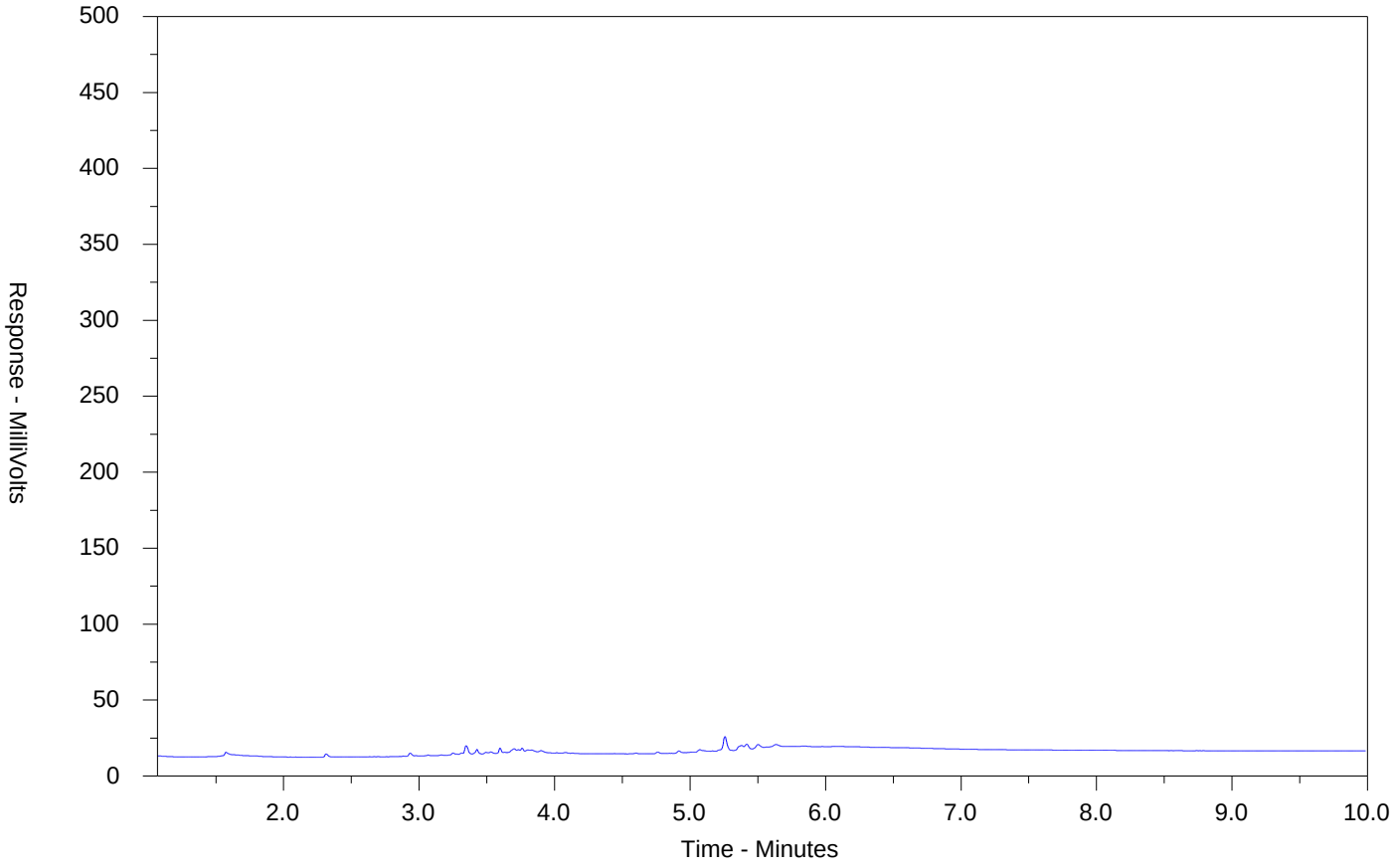
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 921099)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	99.7	70.0	130	----
Physical Tests (QCLot: 923336)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	101	70.0	130	----
Metals (QCLot: 921096)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	106	70.0	130	----
Metals (QCLot: 921097)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	95.0	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	98.3	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	101	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	96.2	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	94.5	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	94.1	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	92.5	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	96.2	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	103	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	100	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	109	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	97.9	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	88.9	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	89.4	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	88.6	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	95.4	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	93.7	70.0	130	----
Metals (QCLot: 921098)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	110	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	111	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	107	70.0	130	----
Metals (QCLot: 921100)									

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 921100) - continued									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	107	60.0	140	----
Metals (QCLot: 922017)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	112	60.0	140	----
Metals (QCLot: 923333)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	100	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	96.7	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	106	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	106	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	114	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	94.0	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	99.9	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	100	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	102	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	103	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	111	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	101	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	102	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	93.9	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	93.9	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	101	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	97.3	70.0	130	----
Metals (QCLot: 923334)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	114	70.0	130	----
Metals (QCLot: 923335)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	104	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	106	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	104	70.0	130	----
Speciated Metals (QCLot: 921218)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	96.0	70.0	130	----
Speciated Metals (QCLot: 923123)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	95.1	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-001-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-001



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

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

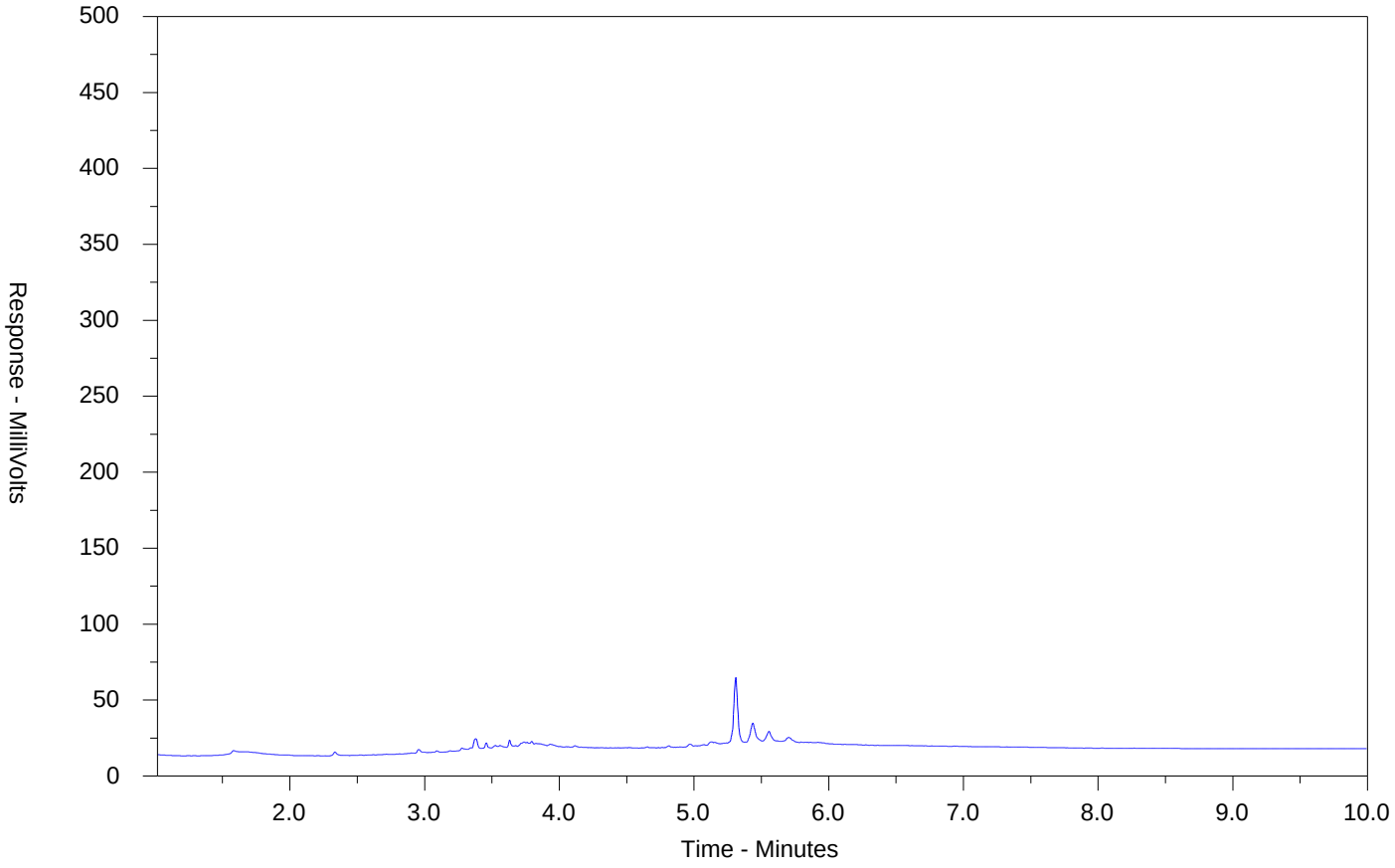
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-002-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-002



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

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

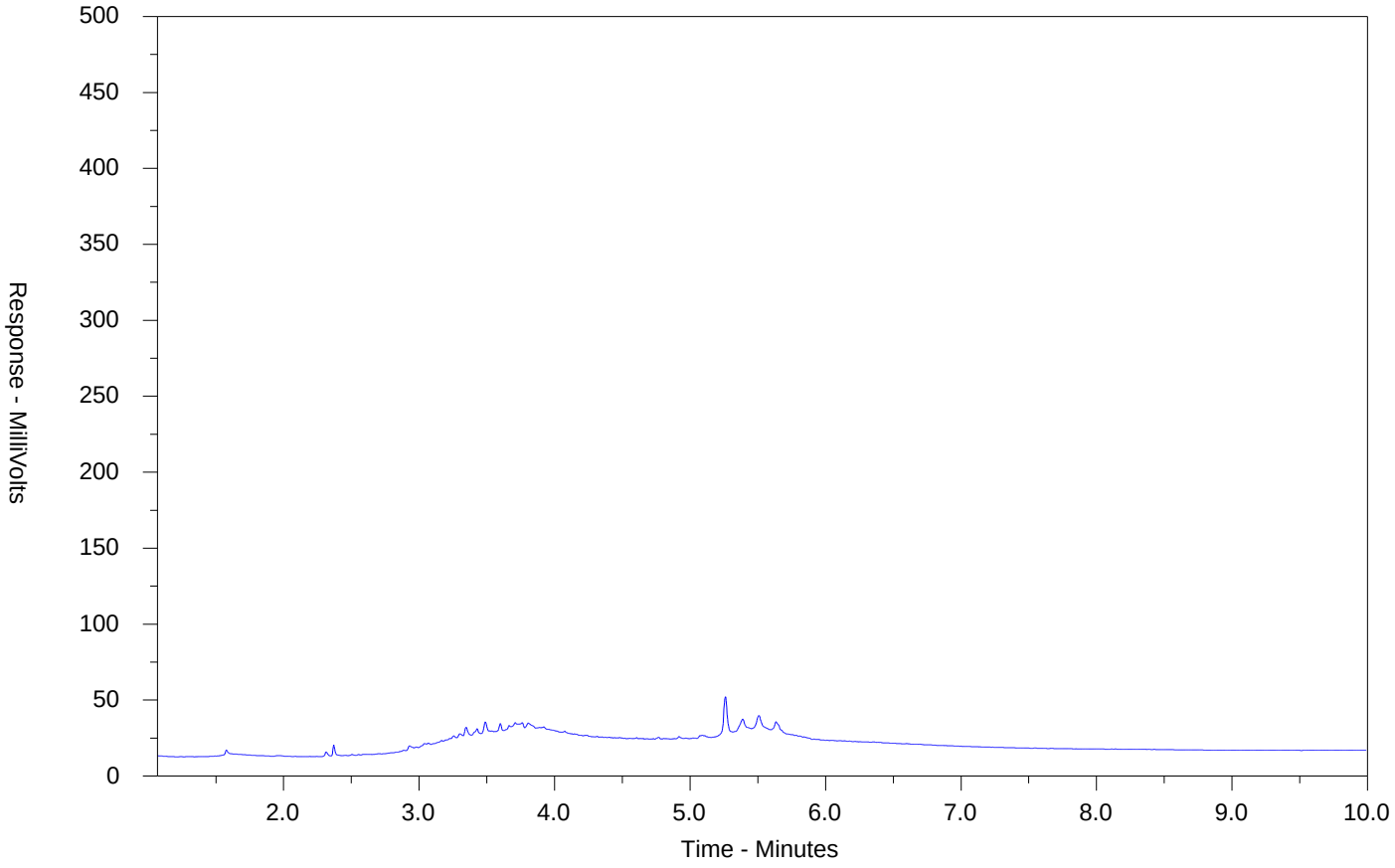
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-003-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-003



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

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

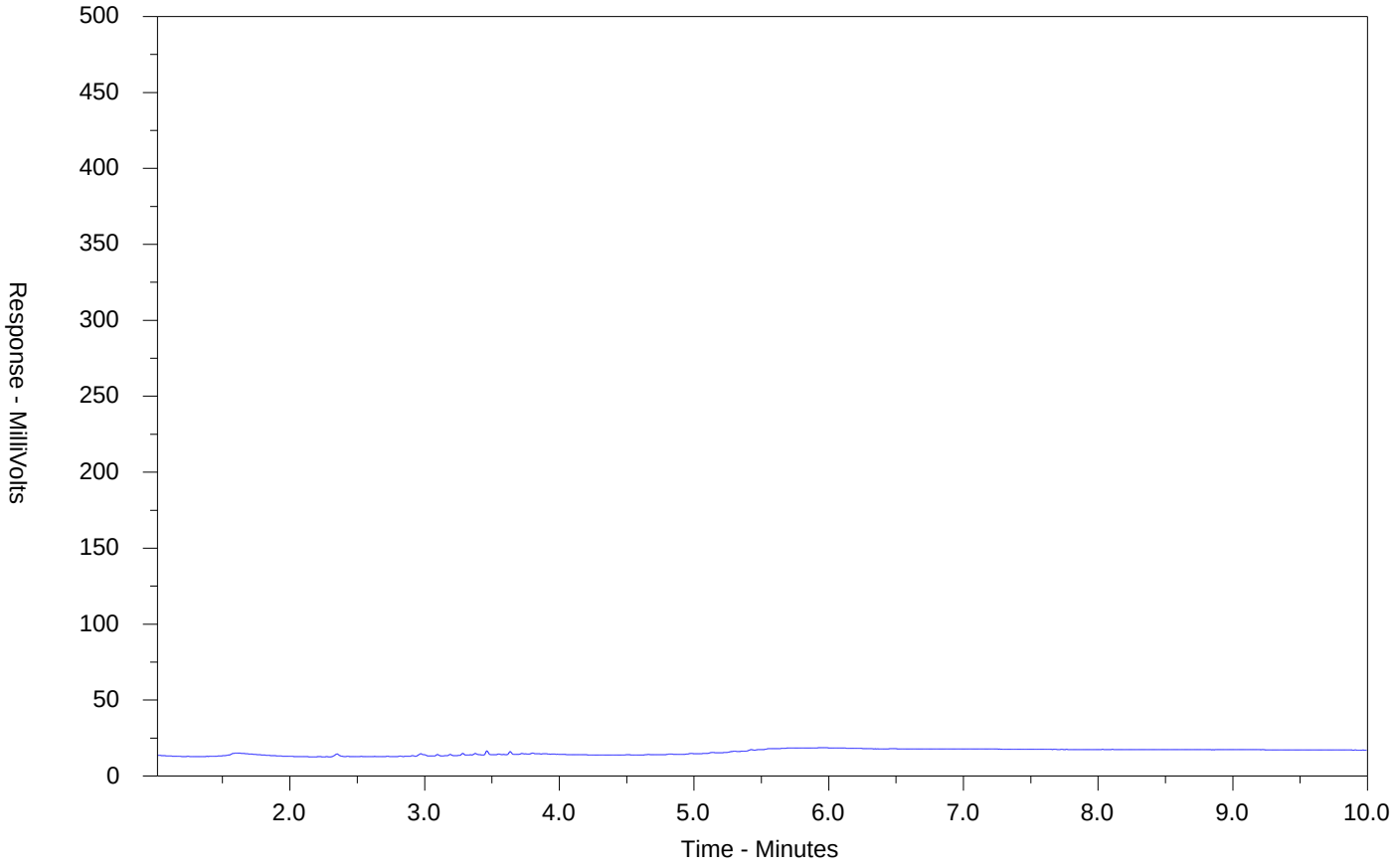
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-004-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-004



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

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

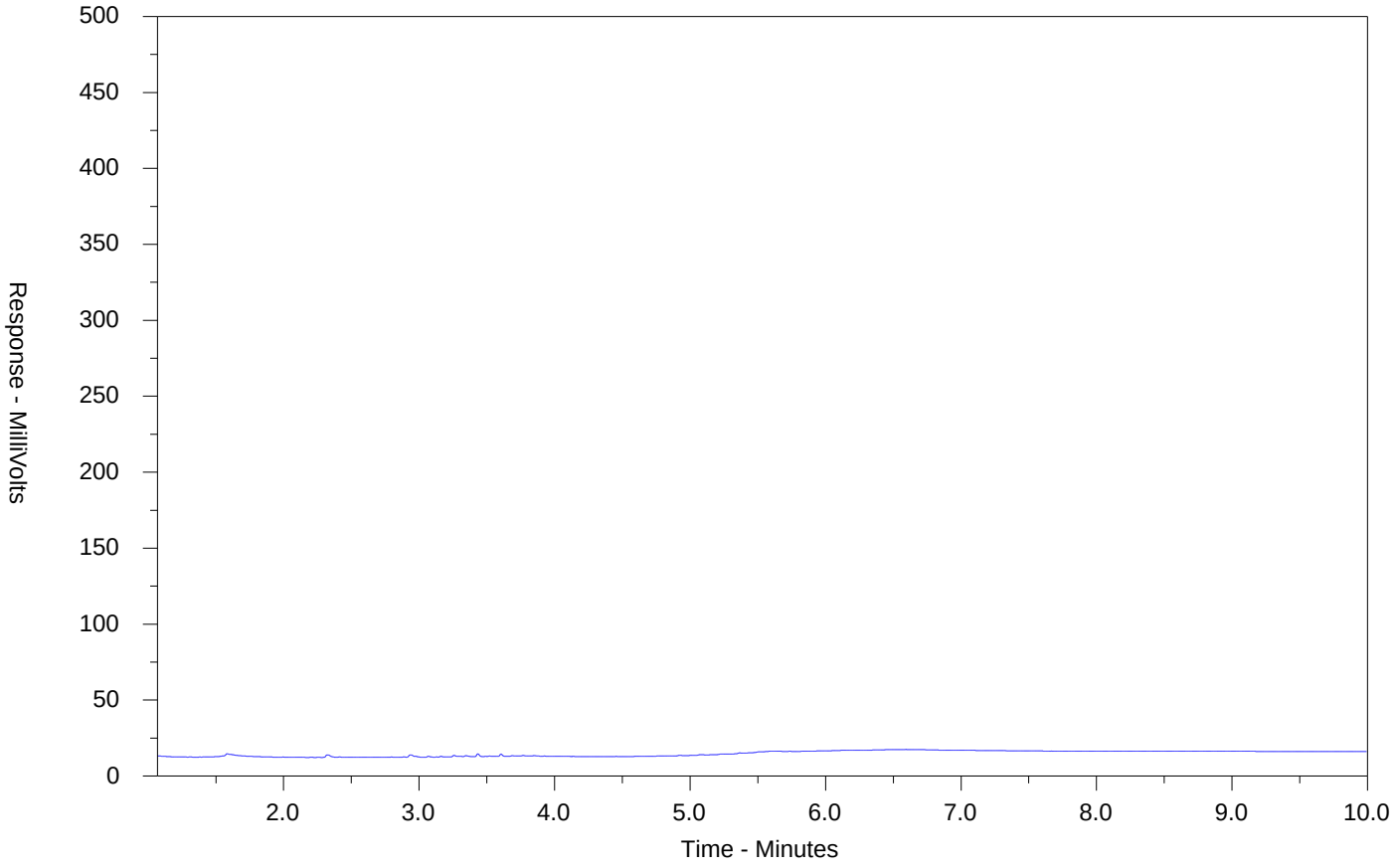
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-005-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-005



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

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

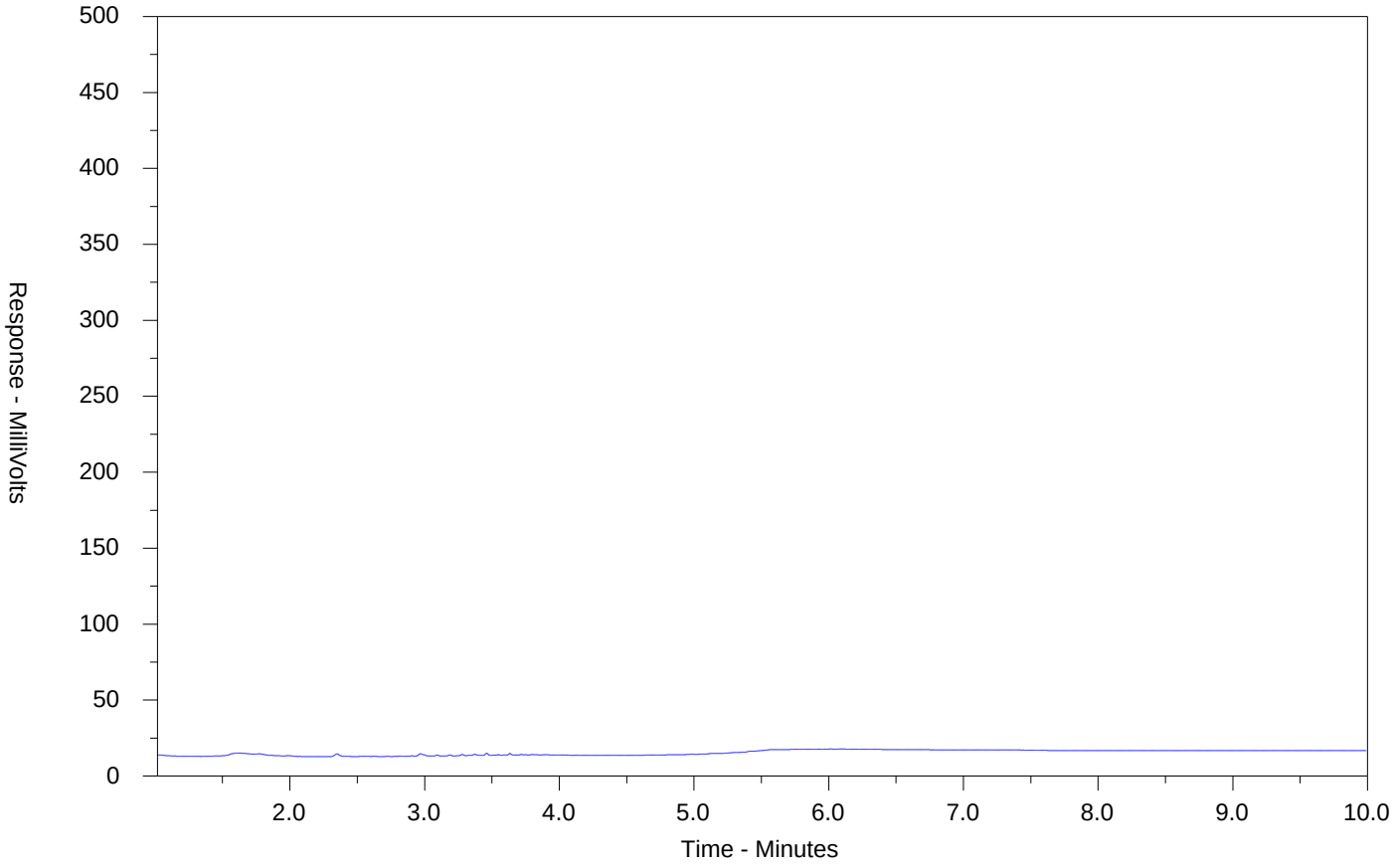
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-006-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-006



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

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

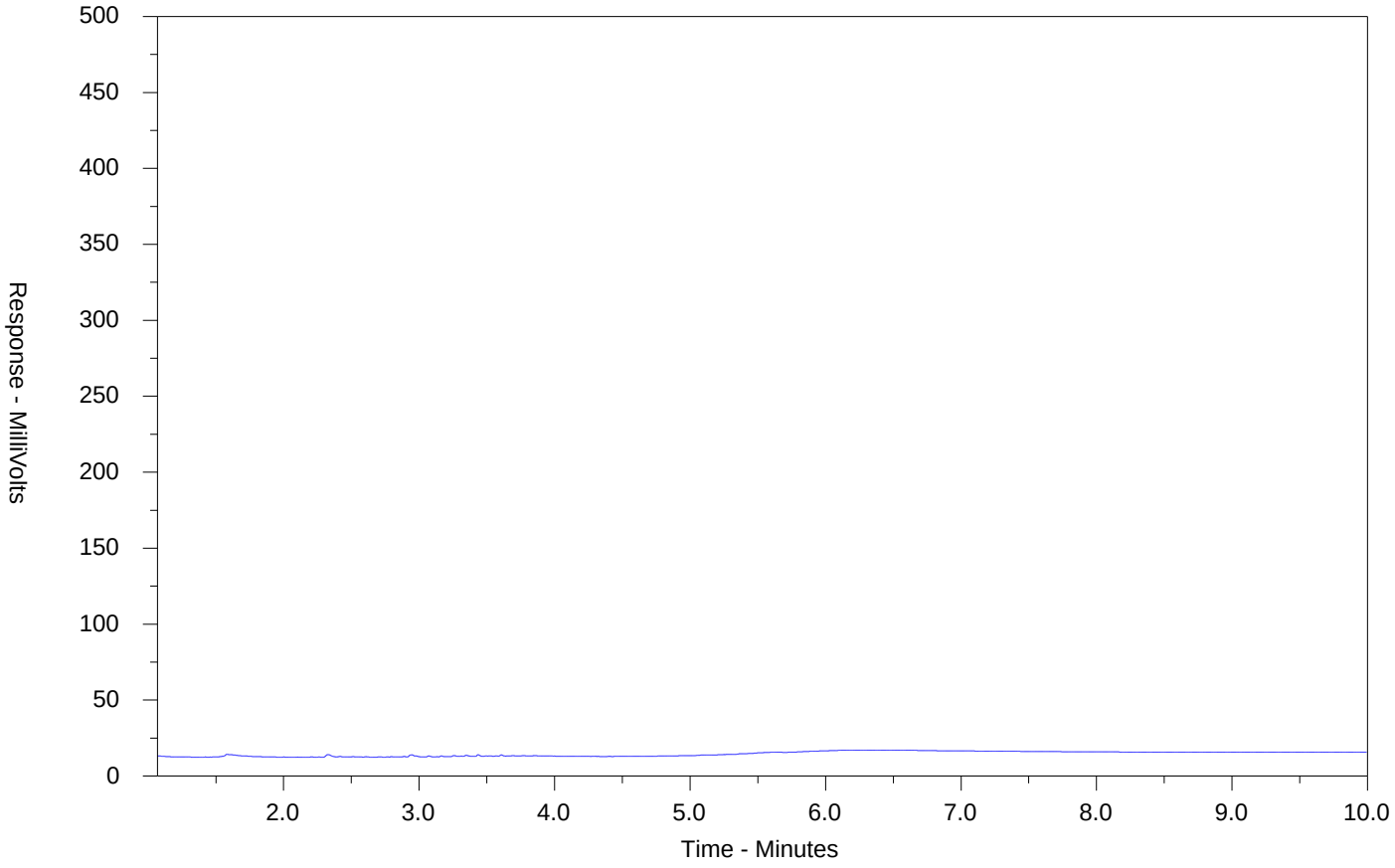
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311679-007-E601.SG-L
Client Sample ID: S-1259813-050323-ZCV-007



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Waterloo

Work Order Reference WT2311679

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Jennifer.Balkwill@ghd.com

Email 2: See SSOW/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayableCDN@ghd.com

Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minim

☒ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minim

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minim

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge

☐ fees may apply to rush resuests on weekends, statutory holidays

routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to t

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-2
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2311679 TS

ALS Contact: Rick H

Sampler: ZCV

Analysis Re

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	VOCs,F1	F2-F4	(OC) pesticides	Trip Blank _ VOCs/ F1	SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see
1	S-12598913-050323-ZCV-001	03-May 23	12:35	SOIL	3	–	X	X					
2	S-12598913-002		12:45	SOIL	3	–	X	X					
3	S-12598913-003		12:55	SOIL	3	–	X	X					
4	S-12598913-004		13:25	SOIL	3	–	X	X					
5	S-12598913-005		13:37	SOIL	3	–	X	X					
6	S-12598913-006		13:53	SOIL	3	–	X	X					
7	S-12598913-007		13:53	SOIL	3	–	X	X					
8	S-12598913-008		14:30	SOIL	1	X							
9	S-12598913-009		14:38	SOIL	1	X							
10	S-12598913-010		15:00	SOIL	1	X							
11	S-12598913-012		15:00	SOIL	1	X							
12	S-12598913-050323-ZCV-013		15:10	SOIL	1	X							

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4.3			

SHIPMENT RELEASE (client use)

Released by: Zack Clinton-Vosburgh Date: May 3, 2023 Time: 17:12

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by: TS Date: May 3/23 Time: 5:30 pm

VS-158

SOL-048

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2022 FRONT

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page 2 of 2

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Jennifer.Balkwill@ghd.com

Email 2: See SSOW/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayableCDN@ghd.com

Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

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☒ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For tests that can not be performed according to the TAT requested, you will be contacted.

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-2
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2311679

ALS Contact: Rick H

Sampler: ZCV

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	VOCs,F1	F2-F4	(OC) pesticides	Trip Blank _ VOCs/ F1	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	S-12598913-050323-ZCV-014	03-May-23	15:35	SOIL	1	X							
14	S-12598913-015		15:40	SOIL	1	X							
15	S-12598913-016		15:55	SOIL	1	X							
16	S-12598913-050323-ZCV-017		16:05	SOIL	1	X							
	S-12598913-			SOIL									
	S-12598913-			SOIL									
	S-12598913-			SOIL									
	S-12598913-			SOIL									
	S-12598913-			SOIL									
	S-12598913-			SOIL									
	~~S-12598913-~~			SOIL									
	S-12598913-			SOIL									
	S-12598913-			SOIL									

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

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SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4.3			

SHIPMENT RELEASE (client use)

Released by: Zach Vanderkooy Date: May 3, 2023 Time: 17:12

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: May 3/23 Time: 5:30pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **WT2311844**	Page	: 1 of 38
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 15:58
PO	: 735-005299-2	Date Analysis Commenced	: 04-May-2023
C-O-C number	: ----	Issue Date	: 09-May-2023 14:51
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 24		
No. of samples analysed	: 24		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.

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*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
SHMI	*Surrogate recovery was outside ALS DQO (High) due to Matrix Interference*

Analytical Results

WT2311844-001

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

Client sample ID: S-12598913-050423-ZCV-001
Client sampling date / time: 04-May-2023 08:12

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.182	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.0	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.18	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	21.1	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.51	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.78	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.54	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	68.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.61	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	8.4	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.51	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.298	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	20.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	6.83	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	15.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0393	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.37	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	13.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.33	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.130	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.639	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	36.2	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	73.0	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00036	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00090 DLM	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00090 DLM	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-001

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-001

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 08:12

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00127	0.00127	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	112	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	96.8	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-002

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-002

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 08:22

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.121	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	19.1	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.06	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	10.9	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.48	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.41	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.13	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.77	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	61.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.53	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	7.1	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.59	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.296	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	19.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-002

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

Client sample ID: S-12598913-050423-ZCV-002
Client sampling date / time: 04-May-2023 08:22

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.46	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	13.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	15.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0357	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.38	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.32	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.125	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.616	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	35.9	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	69.2	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.12	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00060	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	0.00060	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00312	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00312	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00090 DLM,	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00090 DLM,	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00127	0.00127	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00150 DLM,	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	114	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	89.7	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-003

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

Client sample ID: S-12598913-050423-ZCV-003
Client sampling date / time: 04-May-2023 08:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0887	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	17.9	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.95	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.52	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.40	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.38	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.11	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.83	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	62.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.57	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	6.9	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.71	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.304	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	19.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	6.34	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	12.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0435	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.41	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.32	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.117	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.638	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	35.6	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	67.4	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00054	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00054	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00090 DLM	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00090 DLM	0.00090	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-003

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-003

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 08:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00127	0.00127	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	95.9	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	89.4	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-004

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-004

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.180	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	15.1	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.33	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	19.8	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	3.27	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	2.99	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.16	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	3.78	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	44.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.40	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	5.3	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.35	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.203	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	14.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-004

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

Client sample ID: S-12598913-050423-ZCV-004
Client sampling date / time: 04-May-2023 09:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	4.83	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	9.59	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	11.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0281	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.32	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	8.64	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.24	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.097	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.484	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	27.0	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	51.6	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00170	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00170	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	102	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	93.1	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-005

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

Client sample ID: S-12598913-050423-ZCV-005
Client sampling date / time: 04-May-2023 08:58

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.183	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	16.4	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.25	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	22.3	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.08	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.72	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.12	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.21	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	63.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.53	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	6.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.40	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.249	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	6.08	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	11.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0459	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.36	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	11.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.29	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.124	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.579	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	34.1	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	63.0	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00033	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-005

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-005

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 08:58

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	97.0	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	98.8	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-006

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-006

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 09:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.207	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	16.3	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.98	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	23.2	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.34	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	4.24	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.21	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.38	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	69.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.59	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	8.4	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.44	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.241	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	19.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-006

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

Client sample ID: S-12598913-050423-ZCV-006
Client sampling date / time: 04-May-2023 09:38

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.67	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	14.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0380	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.34	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	13.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.26	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.119	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.604	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	34.4	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	64.1	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00194	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00194	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	107	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	83.6	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-007

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

Client sample ID: S-12598913-050423-ZCV-007
Client sampling date / time: 04-May-2023 09:49

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.201	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.6	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.84	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	21.6	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.67	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	3.80	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.19	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.12	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.47	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	62.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.52	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	6.8	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.49	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.267	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	5.93	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	13.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	12.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0378	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.36	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.30	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.104	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.639	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	33.8	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	66.2	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00070	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	0.00070	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00970	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00970	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-007

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-007

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 09:49

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	98.0	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	100	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-008

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-008

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.183	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	16.4	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.15	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	20.5	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.11	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	3.89	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.20	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	5.02	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	72.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.56	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	8.6	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.42	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.292	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	20.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-008

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

Client sample ID: S-12598913-050423-ZCV-008
Client sampling date / time: 04-May-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.51	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	17.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0438	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.34	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	13.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.30	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.122	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.657	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	37.3	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	71.3	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.11	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00071	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	0.00071	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00313	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00313	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	109	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	83.4	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-009

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

Client sample ID: S-12598913-050423-ZCV-009
Client sampling date / time: 04-May-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.186	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	16.4	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.19	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	20.7	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	4.15	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	3.88	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.20	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	5.33	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	76.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	8.5	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.49	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.315	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	21.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	6.80	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	15.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	15.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0451	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.36	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	14.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.35	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.127	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.695	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	38.1	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	74.2	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00039	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00171	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00171	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-009

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-009

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	98.0	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	81.6	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-010

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-010

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 10:14

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.338	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	17.3	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.22	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	44.4	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	8.95	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	7.49	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.27	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.82	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	69.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.57	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	8.2	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.46	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.300	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	20.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-010

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

Client sample ID: S-12598913-050423-ZCV-010
Client sampling date / time: 04-May-2023 10:14

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.74	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	16.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0424	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.35	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	13.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.38	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.126	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.680	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	35.1	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	74.8	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00042	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00613	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00613	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00150 DLM	0.00150	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00212	0.00212	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00250 DLM	0.00250	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	138	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	95.1	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-011

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

Client sample ID: S-12598913-050423-ZCV-011
Client sampling date / time: 04-May-2023 10:24

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.218	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.2	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.34	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	27.5	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	3.98	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	2.52	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.12	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.68	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	86.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.66	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	10.8	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.30	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.254	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	23.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	7.93	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	16.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0344	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.33	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	16.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.23	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.144	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.574	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	38.7	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	72.3	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.19	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00058	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00058	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-011

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

Client sample ID: S-12598913-050423-ZCV-011

Client sampling date / time: 04-May-2023 10:24

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	109	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	107	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-012

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

Client sample ID: S-12598913-050423-ZCV-012

Client sampling date / time: 04-May-2023 10:48

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0943	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.6	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.06	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.22	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.17	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.10	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.80	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	56.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.52	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	7.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.54	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.288	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	19.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-012

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

Client sample ID: S-12598913-050423-ZCV-012
Client sampling date / time: 04-May-2023 10:48

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	5.80	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	14.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0539	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.32	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.28	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.123	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.717	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	33.9	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	73.1	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.14	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	134	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	103	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-013

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

Client sample ID: S-12598913-050423-ZCV-013
Client sampling date / time: 04-May-2023 10:58

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.101	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	19.9	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.18	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	9.04	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.14	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.49	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.12	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	3.75	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	46.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.46	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	5.4	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.37	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.199	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	16.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	5.45	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	13.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	10.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0438	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.31	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	11.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.24	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.094	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.570	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	29.6	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	52.6	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.33	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-013

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-013

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 10:58

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	116	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	109	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-014

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-014

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 11:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0901	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	22.6	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.97	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	6.48	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.47	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.61	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.14	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.12	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.52	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	67.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	6.7	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.60	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.440	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	21.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-014

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

Client sample ID: S-12598913-050423-ZCV-014
Client sampling date / time: 04-May-2023 11:10

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.60	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	15.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0745	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.40	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	14.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.33	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.120	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.699	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	36.1	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	83.4	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00026	0.00026	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00026	0.00026	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00026	0.00026	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00026	0.00026	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00026	0.00026	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	166 SHMI.	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	114	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-015

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

Client sample ID: S-12598913-050423-ZCV-015
Client sampling date / time: 04-May-2023 11:26

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.172	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	17.4	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.40	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	17.2	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.31	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	2.76	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.16	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	5.04	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	104	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.80	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	11.6	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.17	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.220	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	26.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	9.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	20.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	12.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0285	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.33	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	20.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.170	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.637	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	41.7	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	71.8	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.42	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-015

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

Client sample ID: S-12598913-050423-ZCV-015

Client sampling date / time: 04-May-2023 11:26

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	141	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	98.1	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-016

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

Client sample ID: S-12598913-050423-ZCV-016

Client sampling date / time: 04-May-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0785	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	21.0	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.94	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.35	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.79	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	2.10	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.17	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.46	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	60.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.59	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	5.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.37	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.256	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	19.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-016

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

Client sample ID: S-12598913-050423-ZCV-016
Client sampling date / time: 04-May-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.41	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	12.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	14.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0758	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.37	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.26	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.126	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.608	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	34.8	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	78.6	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.37	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	153 SHMI.	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	101	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-017

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

Client sample ID: S-12598913-050423-ZCV-017
Client sampling date / time: 04-May-2023 11:39

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0686	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	17.9	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.06	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	5.86	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	3.56	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.26	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.03	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	55.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.55	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	5.5	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.42	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.206	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	5.94	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	11.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0418	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.30	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.28	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.107	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.549	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	32.0	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	62.6	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.34	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-017

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-017

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 11:39

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00025	0.00025	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	123	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	103	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-018

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-018

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 11:49

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0655	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.5	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.08	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	5.26	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.97	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.16	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.09	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	58.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.55	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	<5.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.39	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.217	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-018

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

Client sample ID: S-12598913-050423-ZCV-018
Client sampling date / time: 04-May-2023 11:49

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.18	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	11.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0387	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.30	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.3	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.25	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.112	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.546	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	32.7	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	63.3	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.47	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00060 DLM	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00060 DLM	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00085	0.00085	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00100 DLM	0.00100	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	100	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	108	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-019

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

Client sample ID: S-12598913-050423-ZCV-019
Client sampling date / time: 04-May-2023 12:15

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0805	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	18.1	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	6.94	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	8.14	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	2.40	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	0.98	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	4.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	47.0	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.48	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	5.6	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	1.06	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.198	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.8	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Cobalt	7440-48-4	6.59	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	10.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	13.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0310	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.36	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	12.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.29	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.108	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.537	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	36.2	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	61.2	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.37	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	0.00125	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	0.00125	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	0.00516	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	0.00516	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00060 DLM	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	0.00230 DLM	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675

Analytical Results

WT2311844-019

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-019

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 12:15

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	0.00230	0.00085	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00100 DLM	0.00100	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	106	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	116	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-020

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-020

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 11:56

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0765	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	922679
Moisture	----	17.5	0.25	%	E144	-	04-May-2023	922681
pH (1:2 soil:CaCl2-aq)	----	7.06	0.10	pH units	E108A	04-May-2023	05-May-2023	922677
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	08-May-2023	922674
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	6.06	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Magnesium, soluble ion content	7439-95-4	1.96	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium, soluble ion content	17341-25-2	1.08	0.50	mg/L	E484	08-May-2023	08-May-2023	922678
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	922678
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Arsenic	7440-38-2	3.88	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Barium	7440-39-3	49.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Beryllium	7440-41-7	0.48	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron	7440-42-8	<5.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Boron, hot water soluble	7440-42-8	0.36	0.10	mg/kg	E487	08-May-2023	08-May-2023	922680
Cadmium	7440-43-9	0.254	0.020	mg/kg	E440	08-May-2023	08-May-2023	922673
Chromium	7440-47-3	18.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673

Analytical Results

WT2311844-020

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

Client sample ID: S-12598913-050423-ZCV-020
Client sampling date / time: 04-May-2023 11:56

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	6.18	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Copper	7440-50-8	10.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Lead	7439-92-1	12.6	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Mercury	7439-97-6	0.0488	0.0050	mg/kg	E510	08-May-2023	08-May-2023	922672
Molybdenum	7439-98-7	0.34	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Nickel	7440-02-0	11.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	922673
Selenium	7782-49-2	0.22	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	922673
Thallium	7440-28-0	0.113	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Uranium	7440-61-1	0.620	0.050	mg/kg	E440	08-May-2023	08-May-2023	922673
Vanadium	7440-62-2	34.2	0.20	mg/kg	E440	08-May-2023	08-May-2023	922673
Zinc	7440-66-6	64.7	2.0	mg/kg	E440	08-May-2023	08-May-2023	922673
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.45	0.10	mg/kg	E532	04-May-2023	07-May-2023	922676
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 2,4'-	789-02-6	<0.00060 DLM,	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, 4,4'-	50-29-3	<0.00060 DLM,	0.00060	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
DDT, total	----	<0.00085	0.00085	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Methoxychlor	72-43-5	<0.00100 DLM,	0.00100	mg/kg	E660F-L	04-May-2023	08-May-2023	922675
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	111	0.1	%	E660F-L	04-May-2023	08-May-2023	922675
Tetrachloro-m-xylene	877-09-8	96.7	0.1	%	E660F-L	04-May-2023	08-May-2023	922675

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

Analytical Results

WT2311844-021

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

Client sample ID: S-12598913-050423-ZCV-021
Client sampling date / time: 04-May-2023 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0871	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	923402
Moisture	----	16.2	0.25	%	E144	-	04-May-2023	922720
pH (1:2 soil:CaCl2-aq)	----	6.42	0.10	pH units	E108A	04-May-2023	05-May-2023	923097
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	05-May-2023	923093
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	8.04	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Magnesium, soluble ion content	7439-95-4	3.78	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Sodium, soluble ion content	17341-25-2	1.18	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	923401
Metals								
Antimony	7440-36-0	0.15	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Arsenic	7440-38-2	5.68	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Barium	7440-39-3	57.7	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Boron	7440-42-8	9.0	5.0	mg/kg	E440	08-May-2023	08-May-2023	923400
Boron, hot water soluble	7440-42-8	1.56	0.10	mg/kg	E487	08-May-2023	08-May-2023	923403
Cadmium	7440-43-9	0.415	0.020	mg/kg	E440	08-May-2023	08-May-2023	923400
Chromium	7440-47-3	19.9	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Cobalt	7440-48-4	6.62	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Copper	7440-50-8	17.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Lead	7439-92-1	15.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Mercury	7439-97-6	0.0395	0.0050	mg/kg	E510	08-May-2023	08-May-2023	923399
Molybdenum	7439-98-7	0.50	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Nickel	7440-02-0	14.1	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Selenium	7782-49-2	0.31	0.20	mg/kg	E440	08-May-2023	08-May-2023	923400
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Thallium	7440-28-0	0.126	0.050	mg/kg	E440	08-May-2023	08-May-2023	923400
Uranium	7440-61-1	0.882	0.050	mg/kg	E440	08-May-2023	08-May-2023	923400
Vanadium	7440-62-2	36.8	0.20	mg/kg	E440	08-May-2023	08-May-2023	923400
Zinc	7440-66-6	79.6	2.0	mg/kg	E440	08-May-2023	08-May-2023	923400
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532	05-May-2023	07-May-2023	923222
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00024	0.00024	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, 4,4'-	72-54-8	0.00123	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, total	----	0.00123	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, 4,4'-	72-55-9	0.0259	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, total	----	0.0259	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDT, 2,4'-	789-02-6	0.00110 DLM	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDT, 4,4'-	50-29-3	0.0195 DLM	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226

Analytical Results

WT2311844-021

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-021

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 12:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Organochlorine Pesticides								
DDT, total	----	0.0206	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Dieldrin	60-57-1	<0.00024	0.00024	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Heptachlor	76-44-8	<0.00024	0.00024	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Heptachlor epoxide	1024-57-3	<0.00024	0.00024	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorocyclohexane, gamma-	58-89-9	<0.00024	0.00024	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Methoxychlor	72-43-5	<0.00050 DLM	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	106	0.1	%	E660F-L	05-May-2023	08-May-2023	923226
Tetrachloro-m-xylene	877-09-8	104	0.1	%	E660F-L	05-May-2023	08-May-2023	923226

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

Analytical Results

WT2311844-022

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-050423-ZCV-022

(Matrix: **Soil/Solid**) *Client sampling date / time:* 04-May-2023 12:08

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.0745	0.00500	mS/cm	E100-L	08-May-2023	08-May-2023	923402
Moisture	----	12.5	0.25	%	E144	-	04-May-2023	922720
pH (1:2 soil:CaCl2-aq)	----	6.73	0.10	pH units	E108A	04-May-2023	05-May-2023	923097
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A	04-May-2023	05-May-2023	923093
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	7.12	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Magnesium, soluble ion content	7439-95-4	4.75	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Sodium, soluble ion content	17341-25-2	0.74	0.50	mg/L	E484	08-May-2023	08-May-2023	923401
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484	08-May-2023	08-May-2023	923401
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Arsenic	7440-38-2	5.40	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Barium	7440-39-3	41.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Beryllium	7440-41-7	0.42	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Boron	7440-42-8	7.3	5.0	mg/kg	E440	08-May-2023	08-May-2023	923400
Boron, hot water soluble	7440-42-8	1.27	0.10	mg/kg	E487	08-May-2023	08-May-2023	923403
Cadmium	7440-43-9	0.299	0.020	mg/kg	E440	08-May-2023	08-May-2023	923400
Chromium	7440-47-3	15.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400

Analytical Results

WT2311844-022

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

Client sample ID: S-12598913-050423-ZCV-022
Client sampling date / time: 04-May-2023 12:08

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Metals								
Cobalt	7440-48-4	4.71	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Copper	7440-50-8	12.2	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Lead	7439-92-1	12.5	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Mercury	7439-97-6	0.0458	0.0050	mg/kg	E510	08-May-2023	08-May-2023	923399
Molybdenum	7439-98-7	0.40	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Nickel	7440-02-0	11.4	0.50	mg/kg	E440	08-May-2023	08-May-2023	923400
Selenium	7782-49-2	0.22	0.20	mg/kg	E440	08-May-2023	08-May-2023	923400
Silver	7440-22-4	<0.10	0.10	mg/kg	E440	08-May-2023	08-May-2023	923400
Thallium	7440-28-0	0.089	0.050	mg/kg	E440	08-May-2023	08-May-2023	923400
Uranium	7440-61-1	0.628	0.050	mg/kg	E440	08-May-2023	08-May-2023	923400
Vanadium	7440-62-2	26.6	0.20	mg/kg	E440	08-May-2023	08-May-2023	923400
Zinc	7440-66-6	68.5	2.0	mg/kg	E440	08-May-2023	08-May-2023	923400
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.33	0.10	mg/kg	E532	05-May-2023	07-May-2023	923222
Organochlorine Pesticides								
Aldrin	309-00-2	<0.00022	0.00022	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, cis- (alpha)	5103-71-9	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, total	57-74-9	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Chlordane, trans- (gamma)	5103-74-2	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, 2,4'-	53-19-0	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, 4,4'-	72-54-8	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDD, total	----	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, 2,4'-	3424-82-6	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, 4,4'-	72-55-9	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDE, total	----	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDT, 2,4'-	789-02-6	<0.00030 DLM,	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDT, 4,4'-	50-29-3	0.00037 DLM,	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
DDT, total	----	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Dieldrin	60-57-1	<0.00022	0.00022	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, alpha-	959-98-8	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, beta-	33213-65-9	<0.00030	0.00030	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endosulfan, total	----	<0.00042	0.00042	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Endrin	72-20-8	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Heptachlor	76-44-8	<0.00022	0.00022	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Heptachlor epoxide	1024-57-3	<0.00022	0.00022	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorobenzene	118-74-1	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorobutadiene	87-68-3	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachlorocyclohexane, gamma-	58-89-9	<0.00022	0.00022	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Hexachloroethane	67-72-1	<0.00050	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Methoxychlor	72-43-5	<0.00050 DLM,	0.00050	mg/kg	E660F-L	05-May-2023	08-May-2023	923226
Organochlorine Pesticides Surrogates								
Decachlorobiphenyl	2051-24-3	115	0.1	%	E660F-L	05-May-2023	08-May-2023	923226
Tetrachloro-m-xylene	877-09-8	90.3	0.1	%	E660F-L	05-May-2023	08-May-2023	923226

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

Analytical Results

WT2311844-023

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

Client sample ID: S-12598913-050423-ZCV-023
Client sampling date / time: 04-May-2023 13:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	14.0	0.25	%	E144	-	04-May-2023	922720
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	04-May-2023	04-May-2023	922944
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	04-May-2023	04-May-2023	922944
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	04-May-2023	04-May-2023	922944
BTEX, total	----	<0.10	0.1	mg/kg	E611D	04-May-2023	04-May-2023	922944
Hydrocarbons								

Analytical Results

WT2311844-023

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

Client sample ID: S-12598913-050423-ZCV-023
Client sampling date / time: 04-May-2023 13:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	04-May-2023	04-May-2023	922945
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L	05-May-2023	08-May-2023	923083
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L	05-May-2023	08-May-2023	923083
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L	05-May-2023	08-May-2023	923083
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581	-	05-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L	05-May-2023	08-May-2023	923083
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	87.0	1.0	%	E601.SG-L	05-May-2023	08-May-2023	923083
Dichlorotoluene, 3,4-	95-75-0	119	1.0	%	E581.F1	04-May-2023	04-May-2023	922945
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	137	0.10	%	E611D	04-May-2023	04-May-2023	922944
Difluorobenzene, 1,4-	540-36-3	103	0.10	%	E611D	04-May-2023	04-May-2023	922944

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

Analytical Results

WT2311844-024

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

Client sample ID: S-12598913-050423-ZCV-TRIP BLANK
Client sampling date / time: 04-May-2023 00:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	<0.25	0.25	%	E144	-	04-May-2023	922720
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D	04-May-2023	04-May-2023	922944

Analytical Results

WT2311844-024

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

Client sample ID: S-12598913-050423-ZCV-TRIP BLANK
Client sampling date / time: 04-May-2023 00:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D	04-May-2023	04-May-2023	922944
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D	04-May-2023	04-May-2023	922944
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D	04-May-2023	04-May-2023	922944
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D	04-May-2023	04-May-2023	922944
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D	04-May-2023	04-May-2023	922944
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D	04-May-2023	04-May-2023	922944
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D	04-May-2023	04-May-2023	922944
BTEX, total	----	<0.10	0.1	mg/kg	E611D	04-May-2023	04-May-2023	922944
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1	04-May-2023	04-May-2023	922945
F1-BTEX	----	<5.0	5	mg/kg	EC580	-	08-May-2023	-
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	83.0	1.0	%	E581.F1	04-May-2023	04-May-2023	922945
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	97.0	0.10	%	E611D	04-May-2023	04-May-2023	922944
Difluorobenzene, 1,4-	540-36-3	108	0.10	%	E611D	04-May-2023	04-May-2023	922944

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2311844**	Page	: 1 of 34
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 15:58
PO	: 735-005299-2	Issue Date	: 09-May-2023 14:51
C-O-C number	: ----		
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 24		
No. of samples analysed	: 24		

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 Laboratory Control Sample (LCS) outliers occur
- Duplicate 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.

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
Duplicate (DUP) RPDs								
Organochlorine Pesticides	WT2311844-021	S-12598913-050423-ZCV-021	DDD, 4,4'-	72-54-8	E660F-L	74.6 % DUP-H	50%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	Description
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Matrix Spike (MS) Recoveries								
Organochlorine Pesticides	WT2311844-001	S-12598913-050423-ZCV-001	DDT, 2,4'-	789-02-6	E660F-L	24.6 % K	50.0-150%	Recovery less than lower data quality objective
Organochlorine Pesticides	WT2311844-001	S-12598913-050423-ZCV-001	DDT, 4,4'-	50-29-3	E660F-L	13.2 % K	50.0-150%	Recovery less than lower data quality objective
Organochlorine Pesticides	WT2311844-001	S-12598913-050423-ZCV-001	Methoxychlor	72-43-5	E660F-L	12.3 % K	50.0-150%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*

Regular Sample Surrogates

Sub-Matrix: **Soil**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Organochlorine Pesticides Surrogates	WT2311844-014	S-12598913-050423-ZCV-014	Decachlorobiphenyl	2051-24-3	166 %	50.0-150 %	Recovery greater than upper data quality objective
Organochlorine Pesticides Surrogates	WT2311844-016	S-12598913-050423-ZCV-016	Decachlorobiphenyl	2051-24-3	153 %	50.0-150 %	Recovery greater than upper data quality objective

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-021	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	05-May-2023	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-022	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	05-May-2023	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-001	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-002	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-003	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-004	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-005	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-006	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-007	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-008	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-009	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-010	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-011	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-012	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-013	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-014	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-015	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-016	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-017	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-018	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-019	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-020	E336A	04-May-2023	04-May-2023	14 days	0 days	✓	08-May-2023	14 days	4 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-001	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-002	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-003	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E484	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
S-12598913-050423-ZCV-023	E581.F1	04-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [Trip Blank}										
S-12598913-050423-ZCV-TRIP BLANK	E581.F1	04-May-2023	04-May-2023	----	----		04-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-023	E601.SG-L	04-May-2023	05-May-2023	14 days	1 days	✓	08-May-2023	40 days	3 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E487	04-May-2023	08-May-2023	180 days	4 days	✓	08-May-2023	180 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E510	04-May-2023	08-May-2023	----	----		08-May-2023	28 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-007	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-008	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-009	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-010	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-011	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-012	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-013	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-014	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-015	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E440	04-May-2023	08-May-2023	----	----		08-May-2023	180 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E660F-L	04-May-2023	04-May-2023	60 days	0 days	✓	08-May-2023	40 days	4 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E660F-L	04-May-2023	05-May-2023	60 days	1 days	✓	08-May-2023	40 days	4 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E660F-L	04-May-2023	05-May-2023	60 days	1 days	✓	08-May-2023	40 days	4 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E100-L	04-May-2023	08-May-2023	----	----		08-May-2023	30 days	5 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E144	04-May-2023	----	----	----		04-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E144	04-May-2023	----	----	----		04-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E144	04-May-2023	----	----	----		04-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-023	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil methanol vial [Trip Blank}										
S-12598913-050423-ZCV-TRIP BLANK	E144	04-May-2023	----	----	----		04-May-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-003	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-004	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-005	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-006	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-007	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-008	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-009	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-010	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-011	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-012	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-013	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-014	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-015	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-016	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-017	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-018	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-019	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-020	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E108A	04-May-2023	04-May-2023	----	----		05-May-2023	30 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-001	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-002	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-003	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-004	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-005	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-006	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-007	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-008	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-009	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-010	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-011	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-012	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-013	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-014	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-015	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-016	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-017	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-018	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-019	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-050423-ZCV-020	E532	04-May-2023	04-May-2023	30 days	0 days	✓	07-May-2023	7 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-021	E532	04-May-2023	05-May-2023	30 days	1 days	✓	07-May-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-050423-ZCV-022	E532	04-May-2023	05-May-2023	30 days	1 days	✓	07-May-2023	7 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-050423-ZCV-023	E611D	04-May-2023	04-May-2023	14 days	0 days	✓	04-May-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [Trip Blank}										
S-12598913-050423-ZCV-TRIP BLANK	E611D	04-May-2023	04-May-2023	----	----		04-May-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	922680	2	27	7.4	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	922945	1	18	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	923083	1	10	10.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	922679	2	27	7.4	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	922676	2	37	5.4	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	922672	2	27	7.4	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	922673	2	27	7.4	5.0	✓
Moisture Content by Gravimetry	E144	922681	2	39	5.1	5.0	✓
OCPs by GC-MS-MS (Low Level)	E660F-L	922675	2	22	9.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	922677	2	32	6.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	922678	2	28	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	922944	1	19	5.2	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	922674	2	29	6.9	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	922680	4	27	14.8	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	922945	1	18	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	923083	1	10	10.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	922679	4	27	14.8	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	922676	4	37	10.8	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	922672	4	27	14.8	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	922673	4	27	14.8	10.0	✓
Moisture Content by Gravimetry	E144	922681	2	39	5.1	5.0	✓
OCPs by GC-MS-MS (Low Level)	E660F-L	922675	2	22	9.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	922677	2	32	6.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	922678	4	28	14.2	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	922944	1	19	5.2	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	922674	2	29	6.9	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	922680	2	27	7.4	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	922945	1	18	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	923083	1	10	10.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	922679	2	27	7.4	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	922676	2	37	5.4	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	922672	2	27	7.4	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	922673	2	27	7.4	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Moisture Content by Gravimetry	E144	922681	2	39	5.1	5.0	✓
OCPs by GC-MS-MS (Low Level)	E660F-L	922675	2	22	9.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	922678	2	28	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	922944	1	19	5.2	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	922674	2	29	6.9	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	922945	1	18	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	923083	1	10	10.0	5.0	✓
OCPs by GC-MS-MS (Low Level)	E660F-L	922675	2	22	9.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	922944	1	19	5.2	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	922674	2	29	6.9	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	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 Waterloo - Environmental	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).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - 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 the headspace in accordance with Henry's law.
OCPs by GC-MS-MS (Low Level)	E660F-L Waterloo - Environmental	Soil/Solid	EPA 8270E (mod)	OCPs are analyzed by GC-MS-MS.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	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 Waterloo - Environmental	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 : 0.01$CaCl_2$ - As Received for pH	EP108A Waterloo - Environmental	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Cyanide Extraction for CFA (0.01M NaOH)	EP333A Waterloo - Environmental	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	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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.
Pesticides, PCB, PAH, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 Waterloo - Environmental	Soil/Solid	EPA 3570 (mod)	A homogenized subsample is extracted with organic solvents using a mechanical shaker.

QUALITY CONTROL REPORT

Work Order	: **WT2311844**	Page	: 1 of 24
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 15:58
PO	: 735-005299-2	Date Analysis Commenced	: 04-May-2023
C-O-C number	: ----	Issue Date	: 09-May-2023 14:51
Sampler	: ZCV 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 24		
No. of samples analysed	: 24		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **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: 922677)											
WT2311844-001	S-12598913-050423-ZCV-001	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.18	7.18	0.00%	5%	----
Physical Tests (QC Lot: 922679)											
WT2311844-001	S-12598913-050423-ZCV-001	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.182 mS/cm	181	0.717%	20%	----
Physical Tests (QC Lot: 922681)											
WT2311844-001	S-12598913-050423-ZCV-001	Moisture	----	E144	0.25	%	18.0	18.7	3.72%	20%	----
Physical Tests (QC Lot: 922720)											
WT2311043-019	Anonymous	Moisture	----	E144	0.25	%	12.5	12.6	1.34%	20%	----
Physical Tests (QC Lot: 923097)											
WT2311679-015	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	6.80	6.84	0.586%	5%	----
Physical Tests (QC Lot: 923402)											
WT2311822-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	2.17 mS/cm	2080	4.24%	20%	----
Cyanides (QC Lot: 922674)											
WT2311844-001	S-12598913-050423-ZCV-001	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 923093)											
WT2311679-017	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 922672)											
WT2311844-001	S-12598913-050423-ZCV-001	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0393	0.0427	8.22%	40%	----
Metals (QC Lot: 922673)											
WT2311844-001	S-12598913-050423-ZCV-001	Antimony	7440-36-0	E440	0.10	mg/kg	0.14	0.14	0.003	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	4.54	4.60	1.13%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	68.9	68.8	0.269%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.61	0.60	0.005	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	8.4	8.6	0.2	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.298	0.287	3.74%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	20.5	20.4	0.709%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	6.83	6.87	0.554%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	15.5	15.5	0.0346%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 922673) - continued											
WT2311844-001	S-12598913-050423-ZCV-001	Lead	7439-92-1	E440	0.50	mg/kg	14.2	14.3	0.480%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.37	0.38	0.006	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	13.7	13.8	0.923%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.33	0.36	0.02	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.130	0.130	0.0005	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.639	0.660	3.14%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	36.2	36.0	0.426%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	73.0	73.8	1.03%	30%	----
Metals (QC Lot: 922678)											
WT2311844-001	S-12598913-050423-ZCV-001	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	21.1	21.0	0.475%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	4.51	4.54	0.663%	30%	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	1.78	1.75	0.03	Diff <2x LOR	----
Metals (QC Lot: 922680)											
WT2311844-001	S-12598913-050423-ZCV-001	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.51	0.56	8.78%	40%	----
Metals (QC Lot: 923399)											
WT2311822-001	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0071	0.0082	0.0011	Diff <2x LOR	----
Metals (QC Lot: 923400)											
WT2311822-001	Anonymous	Antimony	7440-36-0	E440	0.10	mg/kg	0.12	0.12	0.002	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	4.45	4.57	2.79%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	92.8	96.1	3.44%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.56	0.60	0.03	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	13.4	14.7	1.3	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.066	0.076	0.010	Diff <2x LOR	----
		Chromium	7440-47-3	E440	0.50	mg/kg	27.2	29.6	8.45%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	8.96	9.26	3.26%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	24.3	25.4	4.40%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	8.22	7.72	6.23%	40%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.47	0.51	0.04	Diff <2x LOR	----
		Nickel	7440-02-0	E440	0.50	mg/kg	19.4	20.1	3.50%	30%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440	0.050	mg/kg	0.117	0.119	0.002	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 923400) - continued											
WT2311822-001	Anonymous	Uranium	7440-61-1	E440	0.050	mg/kg	0.766	0.752	1.81%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	32.4	35.0	7.48%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	42.9	47.0	8.94%	30%	----
Metals (QC Lot: 923401)											
WT2311822-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	271	256	5.69%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	55.9	53.0	5.32%	30%	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	58.6	55.7	5.07%	30%	----
Metals (QC Lot: 923403)											
WT2311822-002	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.32	0.33	0.01	Diff <2x LOR	----
Speciated Metals (QC Lot: 922676)											
WT2311844-001	S-12598913-050423-ZCV-001	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 923222)											
WT2311068-022	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 922944)											
WT2311844-023	S-12598913-050423-ZCV-023	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 922944) - continued											
WT2311844-023	S-12598913-050423-ZCV-023	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: 922945)											
WT2311844-023	S-12598913-050423-ZCV-023	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 923083)											
WT2311822-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	10	0.2	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	92	85	7	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Organochlorine Pesticides (QC Lot: 922675)											
WT2311844-001	S-12598913-050423-ZCV-001	Aldrin	309-00-2	E660F-L	0.00024	mg/kg	<0.00024	<0.00024	0.00024	Diff <2x LOR	----
		Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDD, 2,4'-	53-19-0	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDD, 4,4'-	72-54-8	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Organochlorine Pesticides (QC Lot: 922675) - continued											
WT2311844-001	S-12598913-050423-ZCV-001	DDE, 2,4'-	3424-82-6	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDE, 4,4'-	72-55-9	E660F-L	0.00030	mg/kg	0.00036	0.00031	0.00005	Diff <2x LOR	----
		DDT, 2,4'-	789-02-6	E660F-L	0.00090	mg/kg	<0.00090	<0.00090	0	Diff <2x LOR	----
		DDT, 4,4'-	50-29-3	E660F-L	0.00090	mg/kg	<0.00090	<0.00090	0	Diff <2x LOR	----
		Dieldrin	60-57-1	E660F-L	0.00024	mg/kg	<0.00024	<0.00024	0.00024	Diff <2x LOR	----
		Endosulfan, alpha-	959-98-8	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Endosulfan, beta-	33213-65-9	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Endrin	72-20-8	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Heptachlor	76-44-8	E660F-L	0.00024	mg/kg	<0.00024	<0.00024	0.00024	Diff <2x LOR	----
		Heptachlor epoxide	1024-57-3	E660F-L	0.00024	mg/kg	<0.00024	<0.00024	0.00024	Diff <2x LOR	----
		Hexachlorobenzene	118-74-1	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Hexachlorobutadiene	87-68-3	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.00024	mg/kg	<0.00024	<0.00024	0.00024	Diff <2x LOR	----
		Hexachloroethane	67-72-1	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Methoxychlor	72-43-5	E660F-L	0.00150	mg/kg	<0.00150	<0.00150	0	Diff <2x LOR	----
Organochlorine Pesticides (QC Lot: 923226)											
WT2311844-021	S-12598913-050423-ZCV-021	Aldrin	309-00-2	E660F-L	0.00023	mg/kg	<0.00024	<0.00023	0.00023	Diff <2x LOR	----
		Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDD, 2,4'-	53-19-0	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDD, 4,4'-	72-54-8	E660F-L	0.00030	mg/kg	0.00123	0.00269	74.6%	50%	DUP-H
		DDE, 2,4'-	3424-82-6	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		DDE, 4,4'-	72-55-9	E660F-L	0.00030	mg/kg	0.0259	0.0284	9.54%	50%	----
		DDT, 2,4'-	789-02-6	E660F-L	0.00030	mg/kg	0.00110	0.00113	0.00003	Diff <2x LOR	----
		DDT, 4,4'-	50-29-3	E660F-L	0.00030	mg/kg	0.0195	0.0198	1.50%	50%	----
		Dieldrin	60-57-1	E660F-L	0.00023	mg/kg	<0.00024	<0.00023	0.00023	Diff <2x LOR	----
		Endosulfan, alpha-	959-98-8	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Endosulfan, beta-	33213-65-9	E660F-L	0.00030	mg/kg	<0.00030	<0.00030	0	Diff <2x LOR	----
		Endrin	72-20-8	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Heptachlor	76-44-8	E660F-L	0.00023	mg/kg	<0.00024	<0.00023	0.00023	Diff <2x LOR	----
		Heptachlor epoxide	1024-57-3	E660F-L	0.00023	mg/kg	<0.00024	<0.00023	0.00023	Diff <2x LOR	----
		Hexachlorobenzene	118-74-1	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Hexachlorobutadiene	87-68-3	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Organochlorine Pesticides (QC Lot: 923226) - continued											
WT2311844-021	S-12598913-050423-ZCV-021	Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.00023	mg/kg	<0.00024	<0.00023	0.00023	Diff <2x LOR	----
		Hexachloroethane	67-72-1	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----
		Methoxychlor	72-43-5	E660F-L	0.00050	mg/kg	<0.00050	<0.00050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

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: 922679)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 922681)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 922720)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 923402)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Cyanides (QCLot: 922674)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 923093)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 922672)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 922673)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 922678)						
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: 922680)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 923399)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 923400)						
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Metals (QCLot: 923401)						
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: 923403)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 922676)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 923222)						

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 923222) - continued						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 922944)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 922944) - 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: 922945)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 923083)						
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	----
Organochlorine Pesticides (QCLot: 922675)						
Aldrin	309-00-2	E660F-L	0.0002	mg/kg	<0.00020	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.0003	mg/kg	<0.00030	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.0003	mg/kg	<0.00030	----
DDD, 2,4'-	53-19-0	E660F-L	0.0003	mg/kg	<0.00030	----
DDD, 4,4'-	72-54-8	E660F-L	0.0003	mg/kg	<0.00030	----
DDE, 2,4'-	3424-82-6	E660F-L	0.0003	mg/kg	<0.00030	----
DDE, 4,4'-	72-55-9	E660F-L	0.0003	mg/kg	<0.00030	----
DDT, 2,4'-	789-02-6	E660F-L	0.0003	mg/kg	<0.00030	----
DDT, 4,4'-	50-29-3	E660F-L	0.0003	mg/kg	<0.00030	----
Dieldrin	60-57-1	E660F-L	0.0002	mg/kg	<0.00020	----
Endosulfan, alpha-	959-98-8	E660F-L	0.0003	mg/kg	<0.00030	----
Endosulfan, beta-	33213-65-9	E660F-L	0.0003	mg/kg	<0.00030	----
Endrin	72-20-8	E660F-L	0.0005	mg/kg	<0.00050	----
Heptachlor	76-44-8	E660F-L	0.0002	mg/kg	<0.00020	----
Heptachlor epoxide	1024-57-3	E660F-L	0.0002	mg/kg	<0.00020	----
Hexachlorobenzene	118-74-1	E660F-L	0.0005	mg/kg	<0.00050	----
Hexachlorobutadiene	87-68-3	E660F-L	0.0005	mg/kg	<0.00050	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.0002	mg/kg	<0.00020	----
Hexachloroethane	67-72-1	E660F-L	0.0005	mg/kg	<0.00050	----
Methoxychlor	72-43-5	E660F-L	0.0005	mg/kg	<0.00050	----
Organochlorine Pesticides (QCLot: 923226)						

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 923226) - continued						
Aldrin	309-00-2	E660F-L	0.0002	mg/kg	<0.00020	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.0003	mg/kg	<0.00030	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.0003	mg/kg	<0.00030	----
DDD, 2,4'-	53-19-0	E660F-L	0.0003	mg/kg	<0.00030	----
DDD, 4,4'-	72-54-8	E660F-L	0.0003	mg/kg	<0.00030	----
DDE, 2,4'-	3424-82-6	E660F-L	0.0003	mg/kg	<0.00030	----
DDE, 4,4'-	72-55-9	E660F-L	0.0003	mg/kg	<0.00030	----
DDT, 2,4'-	789-02-6	E660F-L	0.0003	mg/kg	<0.00030	----
DDT, 4,4'-	50-29-3	E660F-L	0.0003	mg/kg	<0.00030	----
Dieldrin	60-57-1	E660F-L	0.0002	mg/kg	<0.00020	----
Endosulfan, alpha-	959-98-8	E660F-L	0.0003	mg/kg	<0.00030	----
Endosulfan, beta-	33213-65-9	E660F-L	0.0003	mg/kg	<0.00030	----
Endrin	72-20-8	E660F-L	0.0005	mg/kg	<0.00050	----
Heptachlor	76-44-8	E660F-L	0.0002	mg/kg	<0.00020	----
Heptachlor epoxide	1024-57-3	E660F-L	0.0002	mg/kg	<0.00020	----
Hexachlorobenzene	118-74-1	E660F-L	0.0005	mg/kg	<0.00050	----
Hexachlorobutadiene	87-68-3	E660F-L	0.0005	mg/kg	<0.00050	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.0002	mg/kg	<0.00020	----
Hexachloroethane	67-72-1	E660F-L	0.0005	mg/kg	<0.00050	----
Methoxychlor	72-43-5	E660F-L	0.0005	mg/kg	<0.00050	----

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: 922677)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 922679)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	95.0	90.0	110	----
Physical Tests (QCLot: 922681)									
Moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 922720)									
Moisture	----	E144	0.25	%	50 %	99.6	90.0	110	----
Physical Tests (QCLot: 923097)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 923402)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	94.9	90.0	110	----
Cyanides (QCLot: 922674)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	92.7	80.0	120	----
Cyanides (QCLot: 923093)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	90.4	80.0	120	----
Metals (QCLot: 922672)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	102	80.0	120	----
Metals (QCLot: 922673)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	101	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	107	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	97.0	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	96.4	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	98.4	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	98.4	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	98.4	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	102	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 922673) - continued									
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	101	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	88.7	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	98.5	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	97.4	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	105	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	98.9	80.0	120	----
Metals (QCLot: 922678)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	105	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	101	80.0	120	----
Metals (QCLot: 922680)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	102	70.0	130	----
Metals (QCLot: 923399)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	93.5	80.0	120	----
Metals (QCLot: 923400)									
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	105	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	106	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	101	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	101	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	101	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	98.7	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	99.3	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	100	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	105	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	91.7	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	99.2	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	99.2	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	100	80.0	120	----
Metals (QCLot: 923401)									
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	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 923401) - continued									
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	100	80.0	120	----
Metals (QCLot: 923403)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	99.7	70.0	130	----
Speciated Metals (QCLot: 922676)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	97.8	80.0	120	----
Speciated Metals (QCLot: 923222)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	102	80.0	120	----
Volatile Organic Compounds (QCLot: 922944)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	109	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	104	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	105	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	105	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	108	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	107	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	99.1	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	99.5	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	107	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	67.8	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	110	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	107	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	112	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	105	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	102	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	99.0	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	109	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	102	60.0	140	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 922944) - continued									
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	88.3	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	109	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	103	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	106	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	109	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	106	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	109	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	107	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	103	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	99.1	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	112	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	109	70.0	130	----
Hydrocarbons (QCLot: 922945)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	115	80.0	120	----
Hydrocarbons (QCLot: 923083)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	100	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	96.2	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	96.1	70.0	130	----
Organochlorine Pesticides (QCLot: 922675)									
Aldrin	309-00-2	E660F-L	0.0002	mg/kg	0.005 mg/kg	76.5	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	91.9	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.0003	mg/kg	0.005 mg/kg	100	50.0	150	----
DDD, 2,4'-	53-19-0	E660F-L	0.0003	mg/kg	0.005 mg/kg	112	50.0	150	----
DDD, 4,4'-	72-54-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	103	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	104	50.0	150	----
DDE, 4,4'-	72-55-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	97.1	50.0	150	----
DDT, 2,4'-	789-02-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	66.8	50.0	150	----
DDT, 4,4'-	50-29-3	E660F-L	0.0003	mg/kg	0.005 mg/kg	54.9	50.0	150	----
Dieldrin	60-57-1	E660F-L	0.0002	mg/kg	0.005 mg/kg	108	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	133	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	125	50.0	150	----
Endrin	72-20-8	E660F-L	0.0005	mg/kg	0.005 mg/kg	119	50.0	150	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 922675) - continued									
Heptachlor	76-44-8	E660F-L	0.0002	mg/kg	0.005 mg/kg	79.4	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F-L	0.0002	mg/kg	0.005 mg/kg	101	50.0	150	----
Hexachlorobenzene	118-74-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	99.4	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F-L	0.0005	mg/kg	0.005 mg/kg	108	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.0002	mg/kg	0.005 mg/kg	108	50.0	150	----
Hexachloroethane	67-72-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	96.4	50.0	150	----
Methoxychlor	72-43-5	E660F-L	0.0005	mg/kg	0.005 mg/kg	52.6	50.0	150	----
Organochlorine Pesticides (QCLot: 923226)									
Aldrin	309-00-2	E660F-L	0.0002	mg/kg	0.005 mg/kg	89.0	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	86.9	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.0003	mg/kg	0.005 mg/kg	81.6	50.0	150	----
DDD, 2,4'-	53-19-0	E660F-L	0.0003	mg/kg	0.005 mg/kg	91.8	50.0	150	----
DDD, 4,4'-	72-54-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	98.8	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	98.2	50.0	150	----
DDE, 4,4'-	72-55-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	84.7	50.0	150	----
DDT, 2,4'-	789-02-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	59.7	50.0	150	----
DDT, 4,4'-	50-29-3	E660F-L	0.0003	mg/kg	0.005 mg/kg	53.1	50.0	150	----
Dieldrin	60-57-1	E660F-L	0.0002	mg/kg	0.005 mg/kg	91.5	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	111	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	83.8	50.0	150	----
Endrin	72-20-8	E660F-L	0.0005	mg/kg	0.005 mg/kg	79.0	50.0	150	----
Heptachlor	76-44-8	E660F-L	0.0002	mg/kg	0.005 mg/kg	92.7	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F-L	0.0002	mg/kg	0.005 mg/kg	95.3	50.0	150	----
Hexachlorobenzene	118-74-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	110	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F-L	0.0005	mg/kg	0.005 mg/kg	145	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.0002	mg/kg	0.005 mg/kg	112	50.0	150	----
Hexachloroethane	67-72-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	136	50.0	150	----
Methoxychlor	72-43-5	E660F-L	0.0005	mg/kg	0.005 mg/kg	58.8	50.0	150	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 922674)										
WT2311844-001	S-12598913-050423-ZCV-001	Cyanide, weak acid dissociable	----	E336A	1.20 mg/kg	2.5 mg/kg	97.3	70.0	130	----
Cyanides (QCLot: 923093)										
WT2311679-017	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.13 mg/kg	2.5 mg/kg	90.8	70.0	130	----
Volatile Organic Compounds (QCLot: 922944)										
WT2311844-023	S-12598913-050423-ZCV-023	Acetone	67-64-1	E611D	3.54 mg/kg	4.6875 mg/kg	130	50.0	140	----
		Benzene	71-43-2	E611D	3.05 mg/kg	4.6875 mg/kg	112	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.95 mg/kg	4.6875 mg/kg	109	50.0	140	----
		Bromoform	75-25-2	E611D	2.88 mg/kg	4.6875 mg/kg	106	50.0	140	----
		Bromomethane	74-83-9	E611D	3.28 mg/kg	4.6875 mg/kg	121	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	3.07 mg/kg	4.6875 mg/kg	113	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.94 mg/kg	4.6875 mg/kg	108	50.0	140	----
		Chloroform	67-66-3	E611D	3.06 mg/kg	4.6875 mg/kg	113	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.84 mg/kg	4.6875 mg/kg	105	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.85 mg/kg	4.6875 mg/kg	105	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.89 mg/kg	4.6875 mg/kg	106	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.92 mg/kg	4.6875 mg/kg	108	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.93 mg/kg	4.6875 mg/kg	108	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	3.48 mg/kg	4.6875 mg/kg	128	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	3.12 mg/kg	4.6875 mg/kg	115	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	3.02 mg/kg	4.6875 mg/kg	112	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.95 mg/kg	4.6875 mg/kg	109	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	3.01 mg/kg	4.6875 mg/kg	111	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	3.08 mg/kg	4.6875 mg/kg	114	50.0	140	----
		Dichloromethane	75-09-2	E611D	3.07 mg/kg	4.6875 mg/kg	113	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	3.01 mg/kg	4.6875 mg/kg	111	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.82 mg/kg	4.6875 mg/kg	104	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.70 mg/kg	4.6875 mg/kg	99.5	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.90 mg/kg	4.6875 mg/kg	107	50.0	140	----
		Hexane, n-	110-54-3	E611D	3.08 mg/kg	4.6875 mg/kg	114	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.56 mg/kg	4.6875 mg/kg	94.5	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 922944) - continued										
WT2311844-023	S-12598913-050423-ZCV-023	Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.64 mg/kg	4.6875 mg/kg	97.5	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.97 mg/kg	4.6875 mg/kg	110	50.0	140	----
		Styrene	100-42-5	E611D	2.82 mg/kg	4.6875 mg/kg	104	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.92 mg/kg	4.6875 mg/kg	108	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.90 mg/kg	4.6875 mg/kg	107	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.98 mg/kg	4.6875 mg/kg	110	50.0	140	----
		Toluene	108-88-3	E611D	2.91 mg/kg	4.6875 mg/kg	107	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	3.04 mg/kg	4.6875 mg/kg	112	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.91 mg/kg	4.6875 mg/kg	107	50.0	140	----
		Trichloroethylene	79-01-6	E611D	3.01 mg/kg	4.6875 mg/kg	111	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	3.11 mg/kg	4.6875 mg/kg	115	50.0	140	----
		Vinyl chloride	75-01-4	E611D	3.19 mg/kg	4.6875 mg/kg	118	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	6.02 mg/kg	9.375 mg/kg	111	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.94 mg/kg	4.6875 mg/kg	108	50.0	140	----
Hydrocarbons (QCLot: 922945)										
WT2311844-023	S-12598913-050423-ZCV-023	F1 (C6-C10)	----	E581.F1	54.0 mg/kg	93.75 mg/kg	99.5	60.0	140	----
Hydrocarbons (QCLot: 923083)										
WT2311822-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	634 mg/kg	821.775 mg/kg	99.1	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	898 mg/kg	1151.486 mg/kg	100	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	502 mg/kg	719.6893 mg/kg	89.5	60.0	140	----
Organochlorine Pesticides (QCLot: 922675)										
WT2311844-001	S-12598913-050423-ZCV-001	Aldrin	309-00-2	E660F-L	0.00902 mg/kg	0.005 mg/kg	89.8	50.0	150	----
		Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.00822 mg/kg	0.005 mg/kg	81.9	50.0	150	----
		Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.00863 mg/kg	0.005 mg/kg	85.9	50.0	150	----
		DDD, 2,4'-	53-19-0	E660F-L	0.00926 mg/kg	0.005 mg/kg	92.2	50.0	150	----
		DDD, 4,4'-	72-54-8	E660F-L	0.0113 mg/kg	0.005 mg/kg	113	50.0	150	----
		DDE, 2,4'-	3424-82-6	E660F-L	0.00704 mg/kg	0.005 mg/kg	70.1	50.0	150	----
		DDE, 4,4'-	72-55-9	E660F-L	0.00649 mg/kg	0.005 mg/kg	64.6	50.0	150	----
		DDT, 2,4'-	789-02-6	E660F-L	0.00247 mg/kg	0.005 mg/kg	24.6	50.0	150	K
		DDT, 4,4'-	50-29-3	E660F-L	0.00133 mg/kg	0.005 mg/kg	13.2	50.0	150	K
		Dieldrin	60-57-1	E660F-L	0.00589 mg/kg	0.005 mg/kg	58.6	50.0	150	----
		Endosulfan, alpha-	959-98-8	E660F-L	0.00722 mg/kg	0.005 mg/kg	71.9	50.0	150	----
		Endosulfan, beta-	33213-65-9	E660F-L	0.00642 mg/kg	0.005 mg/kg	63.9	50.0	150	----
		Endrin	72-20-8	E660F-L	0.00654 mg/kg	0.005 mg/kg	65.1	50.0	150	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 922675) - continued										
WT2311844-001	S-12598913-050423-ZCV-001	Heptachlor	76-44-8	E660F-L	0.00768 mg/kg	0.005 mg/kg	76.5	50.0	150	----
		Heptachlor epoxide	1024-57-3	E660F-L	0.00540 mg/kg	0.005 mg/kg	53.7	50.0	150	----
		Hexachlorobenzene	118-74-1	E660F-L	0.00928 mg/kg	0.005 mg/kg	92.4	50.0	150	----
		Hexachlorobutadiene	87-68-3	E660F-L	0.00962 mg/kg	0.005 mg/kg	95.8	50.0	150	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.00751 mg/kg	0.005 mg/kg	74.8	50.0	150	----
		Hexachloroethane	67-72-1	E660F-L	0.00862 mg/kg	0.005 mg/kg	85.8	50.0	150	----
		Methoxychlor	72-43-5	E660F-L	0.00124 mg/kg	0.005 mg/kg	12.3	50.0	150	K
Organochlorine Pesticides (QCLot: 923226)										
WT2311844-021	S-12598913-050423-ZCV-021	Aldrin	309-00-2	E660F-L	0.00937 mg/kg	0.005 mg/kg	93.2	50.0	150	----
		Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.00793 mg/kg	0.005 mg/kg	78.9	50.0	150	----
		Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.00922 mg/kg	0.005 mg/kg	91.7	50.0	150	----
		DDD, 2,4'-	53-19-0	E660F-L	0.0106 mg/kg	0.005 mg/kg	106	50.0	150	----
		DDD, 4,4'-	72-54-8	E660F-L	0.0112 mg/kg	0.005 mg/kg	112	50.0	150	----
		DDE, 2,4'-	3424-82-6	E660F-L	0.00793 mg/kg	0.005 mg/kg	78.9	50.0	150	----
		DDE, 4,4'-	72-55-9	E660F-L	ND mg/kg	0.005 mg/kg	ND	50.0	150	----
		DDT, 2,4'-	789-02-6	E660F-L	0.00567 mg/kg	0.005 mg/kg	56.4	50.0	150	K
		DDT, 4,4'-	50-29-3	E660F-L	ND mg/kg	0.005 mg/kg	ND	50.0	150	K
		Dieldrin	60-57-1	E660F-L	0.00765 mg/kg	0.005 mg/kg	76.1	50.0	150	----
		Endosulfan, alpha-	959-98-8	E660F-L	0.00988 mg/kg	0.005 mg/kg	98.3	50.0	150	----
		Endosulfan, beta-	33213-65-9	E660F-L	0.00731 mg/kg	0.005 mg/kg	72.7	50.0	150	----
		Endrin	72-20-8	E660F-L	0.00861 mg/kg	0.005 mg/kg	85.7	50.0	150	----
		Heptachlor	76-44-8	E660F-L	0.00742 mg/kg	0.005 mg/kg	73.9	50.0	150	----
		Heptachlor epoxide	1024-57-3	E660F-L	0.00832 mg/kg	0.005 mg/kg	82.8	50.0	150	----
		Hexachlorobenzene	118-74-1	E660F-L	0.00904 mg/kg	0.005 mg/kg	90.0	50.0	150	----
		Hexachlorobutadiene	87-68-3	E660F-L	0.00697 mg/kg	0.005 mg/kg	69.4	50.0	150	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.00843 mg/kg	0.005 mg/kg	83.9	50.0	150	----
		Hexachloroethane	67-72-1	E660F-L	0.00879 mg/kg	0.005 mg/kg	87.4	50.0	150	----
		Methoxychlor	72-43-5	E660F-L	0.00819 mg/kg	0.005 mg/kg	81.5	50.0	150	K

Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*

Reference Material (RM) Report

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

Sub-Matrix:

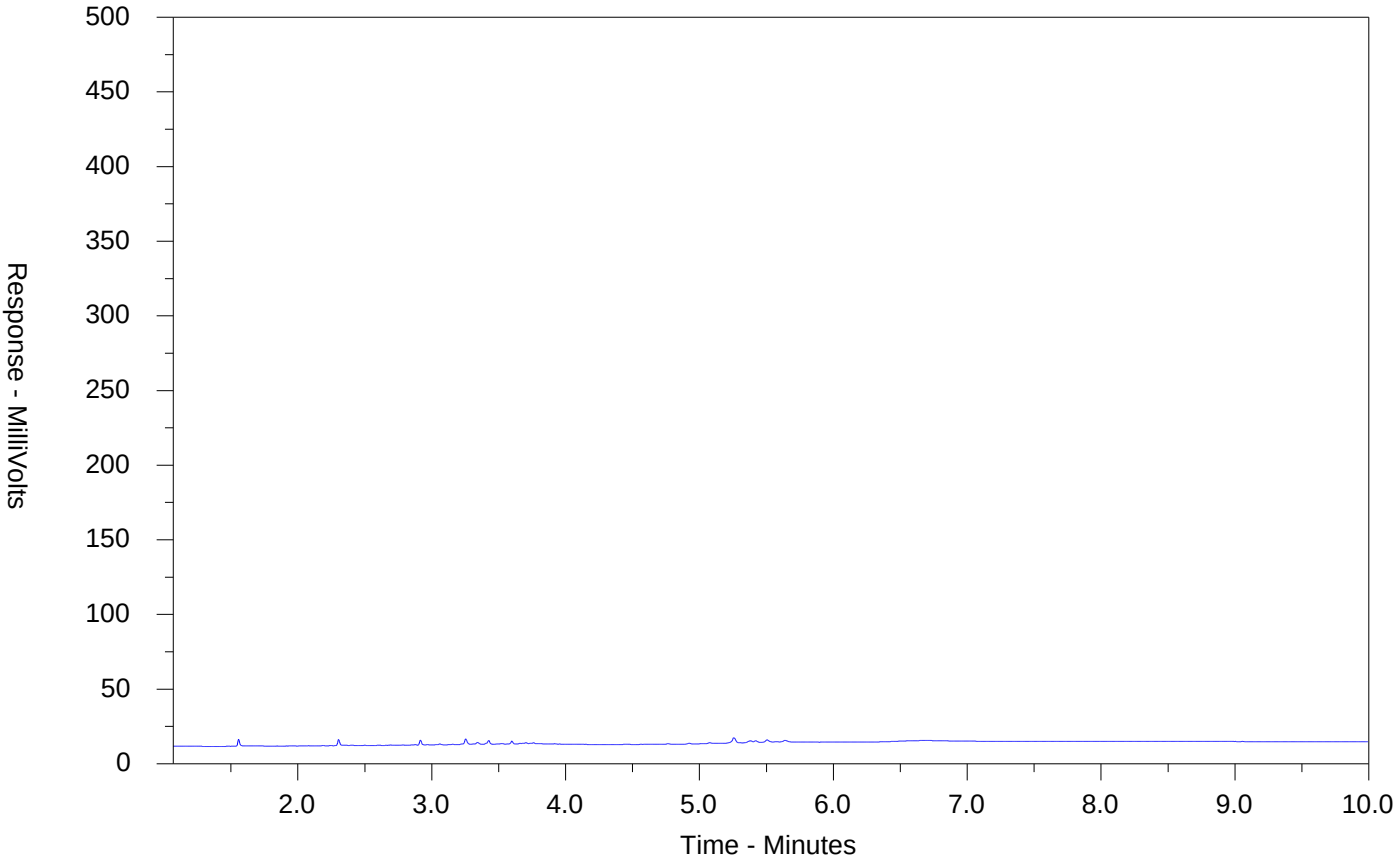
					Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%) Low	Recovery Limits (%) High	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method					Qualifier
Physical Tests (QCLot: 922679)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	98.6	70.0	130	----
Physical Tests (QCLot: 923402)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	105	70.0	130	----
Metals (QCLot: 922672)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	104	70.0	130	----
Metals (QCLot: 922673)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	112	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	110	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	116	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	116	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	131	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	118	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	122	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	113	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	112	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	105	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	114	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	116	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	105	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	112	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	106	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	118	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	106	70.0	130	----
Metals (QCLot: 922678)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	109	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	110	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	101	70.0	130	----
Metals (QCLot: 922680)									

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 922680) - continued									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	102	60.0	140	----
Metals (QCLot: 923399)									
	RM	Mercury	7439-97-6	E510	0.0585 mg/kg	116	70.0	130	----
Metals (QCLot: 923400)									
	RM	Antimony	7440-36-0	E440	3.99 mg/kg	117	70.0	130	----
	RM	Arsenic	7440-38-2	E440	3.73 mg/kg	115	70.0	130	----
	RM	Barium	7440-39-3	E440	105 mg/kg	121	70.0	130	----
	RM	Beryllium	7440-41-7	E440	0.349 mg/kg	117	70.0	130	----
	RM	Boron	7440-42-8	E440	8.5 mg/kg	136	40.0	160	----
	RM	Cadmium	7440-43-9	E440	0.91 mg/kg	110	70.0	130	----
	RM	Chromium	7440-47-3	E440	101 mg/kg	122	70.0	130	----
	RM	Cobalt	7440-48-4	E440	6.9 mg/kg	115	70.0	130	----
	RM	Copper	7440-50-8	E440	123 mg/kg	112	70.0	130	----
	RM	Lead	7439-92-1	E440	267 mg/kg	108	70.0	130	----
	RM	Molybdenum	7439-98-7	E440	1.03 mg/kg	122	70.0	130	----
	RM	Nickel	7440-02-0	E440	26.7 mg/kg	117	70.0	130	----
	RM	Silver	7440-22-4	E440	4.06 mg/kg	105	70.0	130	----
	RM	Thallium	7440-28-0	E440	0.0786 mg/kg	113	40.0	160	----
	RM	Uranium	7440-61-1	E440	0.52 mg/kg	114	70.0	130	----
	RM	Vanadium	7440-62-2	E440	32.7 mg/kg	118	70.0	130	----
	RM	Zinc	7440-66-6	E440	297 mg/kg	112	70.0	130	----
Metals (QCLot: 923401)									
	RM	Calcium, soluble ion content	7440-70-2	E484	59.13 mg/L	118	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	19.66 mg/L	120	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	87.34 mg/L	107	70.0	130	----
Metals (QCLot: 923403)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	102	60.0	140	----
Speciated Metals (QCLot: 922676)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	96.2	70.0	130	----
Speciated Metals (QCLot: 923222)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	105	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311844-023-E601.SG-L
Client Sample ID: S-12598913-050423-ZCV-023



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - FKA

Page

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo
Work Order Reference
WT2311844

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accountspayableCDN@ghd.com
Email 2:

Turnaround Time (TAT) Requested

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

Date and Time Required for all E&P TATs:

For tests that can not be performed according to

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-03
PO / AFE:	735-005299-2
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only): WT2311844
ALS Contact: Rick H
Sampler: ZCV

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 metals/inorganics	VOCs, F1	F2-F4	(OC) pesticides	Trip Blank _ VOCs/ F1	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	S-12598913-050423-ZCV-001	04-May-23	8:17	SOIL	2	X	—		X				
	S-12598913-002		8:22	SOIL	2	X	—		X				
	S-12598913-003		8:38	SOIL	2	X	—		X				
	S-12598913-004		9:05	SOIL	2	X	—		X				
	S-12598913-005		8:58	SOIL	2	X	—		X				
	S-12598913-006		9:38	SOIL	2	X	—		X				
	S-12598913-007		9:49	SOIL	2	X	—		X				
	S-12598913-008		10:06	SOIL	2	X	—		X				
	S-12598913-009		10:00	SOIL	2	X	—		X				
	S-12598913-010		10:14	SOIL	2	X	—		X				
	S-12598913-011		10:24	SOIL	2	X	—		X				
	S-12598913-050423-ZCV-012		10:49	SOIL	2	X	—		X				

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

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

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

Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4.9	2.9		

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Zack Clayton-Vine	May, 04, 2023	15:45

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
TL	May 4 2023	3:58

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

SO2-061, 062, 063
VS 161

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1049078

Canada Toll Free: 1 800 668 9878

Page 2 of 2

www.alsglobal.com

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	CMD GP	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☐ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Jennifer Bilkwill	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	587-884-0516	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	☒ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:		Email 1 or Fax	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Same as this COC	Email 2 Same as this COC	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests
Postal Code:		Email 3	

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

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

Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Recipients
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax
Contact:		Email 2

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:	Same as this COC	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: Rick H Sampler: ZW

Analysis Request

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

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ORES 153 metal/ion	VOCS1 F1	F2-PH (F)	BTEX (F)	TRPBm-VOCs/F1		SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	S-1259813-050423-ZW-013	04-May 23	10:58	~~SEO~~ SOIL	2	X	—	X						
	-014		11:10	SOIL	2	X	—	X						
	-015		11:26		2	X	—	X						
	-016		11:30		2	X	—	X						
	-017		11:39		2	X	—	X						
	-018		11:49		2	X	—	X						
	-019		12:15		2	X	—	X						
	-020		11:56		2	X	—	X						
	-021		12:05		2	X	—	X						
	-022		12:08		2	X	—	X						
	S-1259813-050423-ZW-023	04-May 23	13:05		4	—	X	X	—					
	S-1259813-050423-ZW-TRIP blank				1	—	—	—	—	X				

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

SAMPLE RECEIPT DETAILS (ALS use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4.9	2.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	May 04 2023	15:45					May 4 2023	3:58

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

CERTIFICATE OF ANALYSIS

Work Order	: **WT2311846**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 16:00
PO	: 735-005299-2	Date Analysis Commenced	: 04-May-2023
C-O-C number	: ----	Issue Date	: 05-May-2023 16:37
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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.

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

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

>: greater than.
<: less than.

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*
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.*

Analytical Results

WT2311846-001

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

Client sample ID: GW-12598913-050423-ZCV-001
Client sampling date / time: 04-May-2023 15:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Acetone	67-64-1	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Benzene	71-43-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromodichloromethane	75-27-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromoform	75-25-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromomethane	74-83-9	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Carbon tetrachloride	56-23-5	<0.20 OWP.	0.20	µg/L	E611D	04-May-2023	04-May-2023	923016
Chlorobenzene	108-90-7	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Chloroform	67-66-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dibromochloromethane	124-48-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dibromoethane, 1,2-	106-93-4	<0.20 OWP.	0.20	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,2-	95-50-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,3-	541-73-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,4-	106-46-7	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorodifluoromethane	75-71-8	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethane, 1,1-	75-34-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethane, 1,2-	107-06-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, 1,1-	75-35-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, cis-1,2-	156-59-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, trans-1,2-	156-60-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloromethane	75-09-2	<1.0 OWP.	1.0	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropane, 1,2-	78-87-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50 OWP.	0.5	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, cis-1,3-	10061-01-5	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, trans-1,3-	10061-02-6	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016
Ethylbenzene	100-41-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Hexane, n-	110-54-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl ethyl ketone [MEK]	78-93-3	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl isobutyl ketone [MIBK]	108-10-1	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Styrene	100-42-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethylene	127-18-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Toluene	108-88-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethane, 1,1,1-	71-55-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethane, 1,1,2-	79-00-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethylene	79-01-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichlorofluoromethane	75-69-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Vinyl chloride	75-01-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylene, m+p-	179601-23-1	<0.40 OWP.	0.40	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylene, o-	95-47-6	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
BTEX, total	----	<1.0	1.0	µg/L	E611D	04-May-2023	04-May-2023	923016
Hydrocarbons								
F1 (C6-C10)	----	<25 OWP.	25	µg/L	E581.F1-L	04-May-2023	04-May-2023	923017
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	04-May-2023	05-May-2023	922888

Analytical Results

WT2311846-001

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

Client sample ID: GW-12598913-050423-ZCV-001

Client sampling date / time: 04-May-2023 15:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F3 (C16-C34)	----	<250	250	µg/L	E601.SG	04-May-2023	05-May-2023	922888
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	04-May-2023	05-May-2023	922888
F1-BTEX	----	<25	25	µg/L	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	05-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	04-May-2023	05-May-2023	922888
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	78.6	1.0	%	E601.SG	04-May-2023	05-May-2023	922888
Dichlorotoluene, 3,4-	95-75-0	97.7	1.0	%	E581.F1-L	04-May-2023	04-May-2023	923017
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	96.3	1.0	%	E611D	04-May-2023	04-May-2023	923016
Difluorobenzene, 1,4-	540-36-3	99.3	1.0	%	E611D	04-May-2023	04-May-2023	923016

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

Analytical Results

WT2311846-002

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

Client sample ID: GW-12598913-050423-ZCV-002

Client sampling date / time: 04-May-2023 15:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Acetone	67-64-1	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Benzene	71-43-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromodichloromethane	75-27-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromoform	75-25-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Bromomethane	74-83-9	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Carbon tetrachloride	56-23-5	<0.20 OWP.	0.20	µg/L	E611D	04-May-2023	04-May-2023	923016
Chlorobenzene	108-90-7	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Chloroform	67-66-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dibromochloromethane	124-48-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dibromoethane, 1,2-	106-93-4	<0.20 OWP.	0.20	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,2-	95-50-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,3-	541-73-1	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorobenzene, 1,4-	106-46-7	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichlorodifluoromethane	75-71-8	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethane, 1,1-	75-34-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethane, 1,2-	107-06-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, 1,1-	75-35-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, cis-1,2-	156-59-2	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloroethylene, trans-1,2-	156-60-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloromethane	75-09-2	<1.0 OWP.	1.0	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropane, 1,2-	78-87-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.50	0.5	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, cis-1,3-	10061-01-5	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016
Dichloropropylene, trans-1,3-	10061-02-6	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016

Analytical Results

WT2311846-002

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

Client sample ID: GW-12598913-050423-ZCV-002

Client sampling date / time: 04-May-2023 15:05

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Ethylbenzene	100-41-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Hexane, n-	110-54-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl ethyl ketone [MEK]	78-93-3	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl isobutyl ketone [MIBK]	108-10-1	<20 OWP.	20	µg/L	E611D	04-May-2023	04-May-2023	923016
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Styrene	100-42-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Tetrachloroethylene	127-18-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Toluene	108-88-3	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethane, 1,1,1-	71-55-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethane, 1,1,2-	79-00-5	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichloroethylene	79-01-6	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Trichlorofluoromethane	75-69-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Vinyl chloride	75-01-4	<0.50 OWP.	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylene, m+p-	179601-23-1	<0.40 OWP.	0.40	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylene, o-	95-47-6	<0.30 OWP.	0.30	µg/L	E611D	04-May-2023	04-May-2023	923016
Xylenes, total	1330-20-7	<0.50	0.50	µg/L	E611D	04-May-2023	04-May-2023	923016
BTEX, total	----	<1.0	1.0	µg/L	E611D	04-May-2023	04-May-2023	923016
Hydrocarbons								
F1 (C6-C10)	----	<25 OWP.	25	µg/L	E581.F1-L	04-May-2023	04-May-2023	923017
F2 (C10-C16)	----	<100	100	µg/L	E601.SG	04-May-2023	05-May-2023	922888
F3 (C16-C34)	----	<250	250	µg/L	E601.SG	04-May-2023	05-May-2023	922888
F4 (C34-C50)	----	<250	250	µg/L	E601.SG	04-May-2023	05-May-2023	922888
F1-BTEX	----	<25	25	µg/L	EC580	-	05-May-2023	-
Hydrocarbons, total (C6-C50)	----	<370	370	µg/L	EC581SG	-	05-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG	04-May-2023	05-May-2023	922888
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	82.7	1.0	%	E601.SG	04-May-2023	05-May-2023	922888
Dichlorotoluene, 3,4-	95-75-0	98.7	1.0	%	E581.F1-L	04-May-2023	04-May-2023	923017
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	96.3	1.0	%	E611D	04-May-2023	04-May-2023	923016
Difluorobenzene, 1,4-	540-36-3	99.7	1.0	%	E611D	04-May-2023	04-May-2023	923016

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2311846**	Page	: 1 of 6
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 16:00
PO	: 735-005299-2	Issue Date	: 05-May-2023 16:37
C-O-C number	: ----		
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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.
- 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)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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) Recoveries								
Volatile Organic Compounds	QC-923016-002	----	Methyl isobutyl ketone [MIBK]	108-10-1	E611D	67.9 % LCS-L	70.0-130%	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.*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-050423-ZCV-001	E581.F1-L	04-May-2023	04-May-2023	----	----		04-May-2023	14 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) GW-12598913-050423-ZCV-002	E581.F1-L	04-May-2023	04-May-2023	----	----		04-May-2023	14 days	0 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] GW-12598913-050423-ZCV-001	E601.SG	04-May-2023	04-May-2023	40 days	0 days	✓	05-May-2023	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) [ON MECP] GW-12598913-050423-ZCV-002	E601.SG	04-May-2023	04-May-2023	40 days	0 days	✓	05-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-050423-ZCV-001	E611D	04-May-2023	04-May-2023	----	----		04-May-2023	14 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) GW-12598913-050423-ZCV-002	E611D	04-May-2023	04-May-2023	----	----		04-May-2023	14 days	0 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	923017	1	12	8.3	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	923016	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	923017	1	12	8.3	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	922888	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	923016	1	16	6.2	5.0	✓
Method Blanks (MB)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	923017	1	12	8.3	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	922888	1	5	20.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	923016	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	923017	1	12	8.3	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	923016	1	16	6.2	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG Waterloo - Environmental	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). Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4), as per the CCME Analytical Methods Guidance Manual (2016)
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG Waterloo - Environmental	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.

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

QUALITY CONTROL REPORT

Work Order	: **WT2311846**	Page	: 1 of 10
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 04-May-2023 16:00
PO	: 735-005299-2	Date Analysis Commenced	: 04-May-2023
C-O-C number	: ----	Issue Date	: 05-May-2023 16:37
Sampler	: ZCV 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
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 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
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 923016)											
WT2311710-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 923016) - continued											
WT2311710-001	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	----
Hydrocarbons (QC Lot: 923017)											
WT2311710-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 923016)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 923016) - continued						
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: 922888)						
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: 923017)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 923016)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	80.7	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	91.8	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	89.2	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	87.7	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	101	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	101	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	91.5	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	92.7	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	87.6	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	83.7	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	92.9	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	96.5	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	95.7	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	112	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	93.4	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	89.0	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	94.5	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	90.2	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	96.0	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	91.0	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	89.0	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	86.0	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	80.9	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	93.8	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	99.5	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	75.2	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	# 67.9	70.0	130	LCS-L
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	93.1	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	92.3	70.0	130	----
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	98.7	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	91.9	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 923016) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	97.6	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	85.6	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	95.9	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	102	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	98.2	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	94.7	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	93.6	70.0	130	----
Hydrocarbons (QCLot: 922888)									
F2 (C10-C16)	----	E601.SG	100	µg/L	4613.474 µg/L	94.4	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	6464.481 µg/L	97.6	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4040.361 µg/L	95.5	70.0	130	----
Hydrocarbons (QCLot: 923017)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	103	80.0	120	----

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) Report

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

Sub-Matrix: **Water**

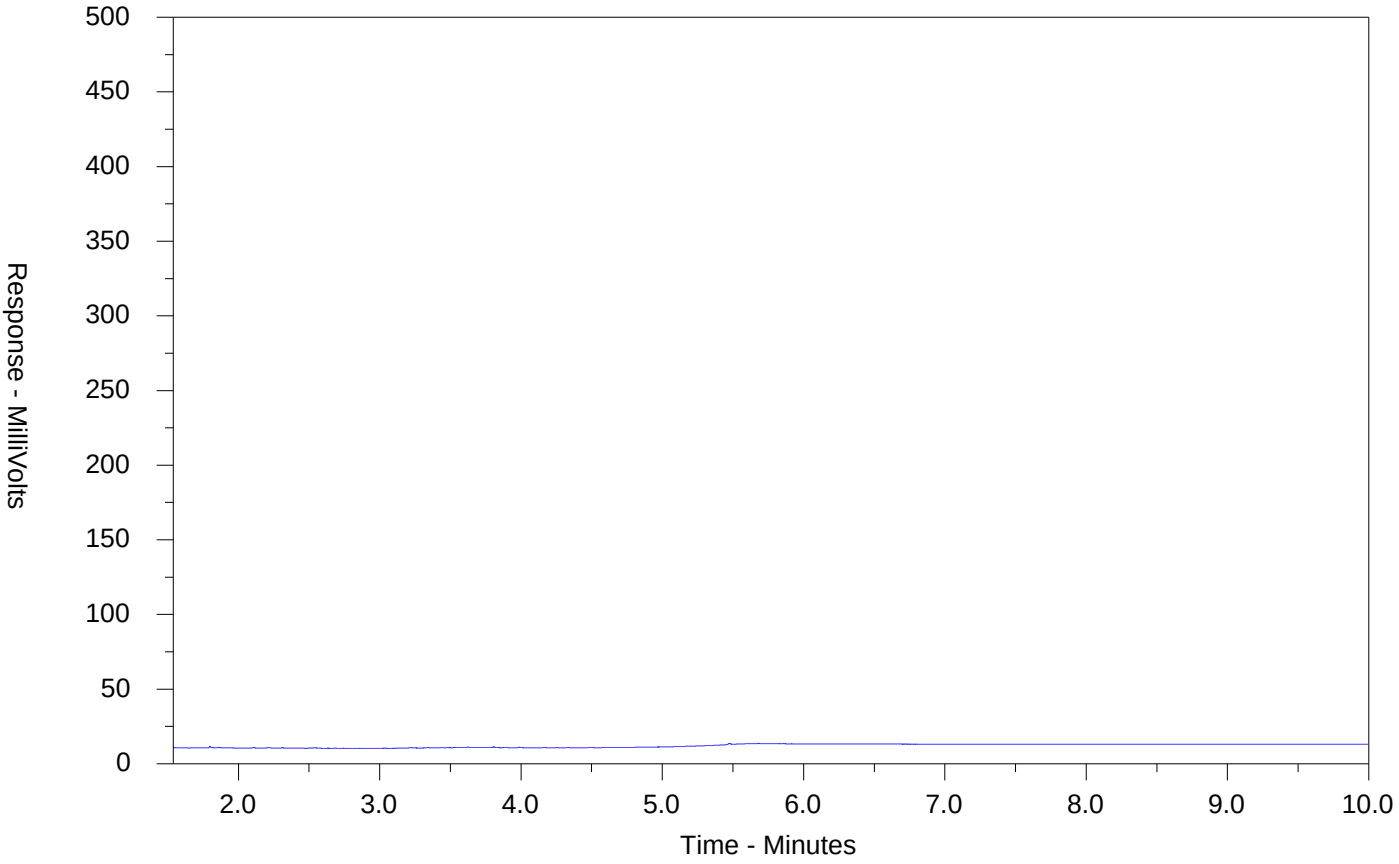
					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 923016)										
WT2311710-001	Anonymous	Acetone	67-64-1	E611D	83 µg/L	100 µg/L	83.4	60.0	140	----
		Benzene	71-43-2	E611D	89.3 µg/L	100 µg/L	89.3	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	88.5 µg/L	100 µg/L	88.5	60.0	140	----
		Bromoform	75-25-2	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Bromomethane	74-83-9	E611D	96.8 µg/L	100 µg/L	96.8	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	96.7 µg/L	100 µg/L	96.7	60.0	140	----
		Chlorobenzene	108-90-7	E611D	89.4 µg/L	100 µg/L	89.4	60.0	140	----
		Chloroform	67-66-3	E611D	90.5 µg/L	100 µg/L	90.5	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	84.2 µg/L	100 µg/L	84.2	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	91.0 µg/L	100 µg/L	91.0	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	99.7 µg/L	100 µg/L	99.7	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	90.1 µg/L	100 µg/L	90.1	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	89.9 µg/L	100 µg/L	89.9	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	88.2 µg/L	100 µg/L	88.2	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		Dichloromethane	75-09-2	E611D	88.8 µg/L	100 µg/L	88.8	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	85.7 µg/L	100 µg/L	85.7	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	84.4 µg/L	100 µg/L	84.4	60.0	140	----
		Ethylbenzene	100-41-4	E611D	90.1 µg/L	100 µg/L	90.1	60.0	140	----
		Hexane, n-	110-54-3	E611D	92.7 µg/L	100 µg/L	92.7	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	80 µg/L	100 µg/L	79.8	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	73 µg/L	100 µg/L	72.8	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	98.9 µg/L	100 µg/L	98.9	60.0	140	----
		Styrene	100-42-5	E611D	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	91.3 µg/L	100 µg/L	91.3	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	87.4 µg/L	100 µg/L	87.4	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 923016) - continued										
WT2311710-001	Anonymous	Tetrachloroethylene	127-18-4	E611D	93.7 µg/L	100 µg/L	93.7	60.0	140	----
		Toluene	108-88-3	E611D	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	86.0 µg/L	100 µg/L	86.0	60.0	140	----
		Trichloroethylene	79-01-6	E611D	92.8 µg/L	100 µg/L	92.8	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		Vinyl chloride	75-01-4	E611D	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	182 µg/L	200 µg/L	90.9	60.0	140	----
		Xylene, o-	95-47-6	E611D	91.0 µg/L	100 µg/L	91.0	60.0	140	----
Hydrocarbons (QCLot: 923017)										
WT2311710-001	Anonymous	F1 (C6-C10)	----	E581.F1-L	1820 µg/L	2000 µg/L	91.2	60.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311846-001-E601.SG
Client Sample ID: GW-12598913-050423-ZCV-001



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

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

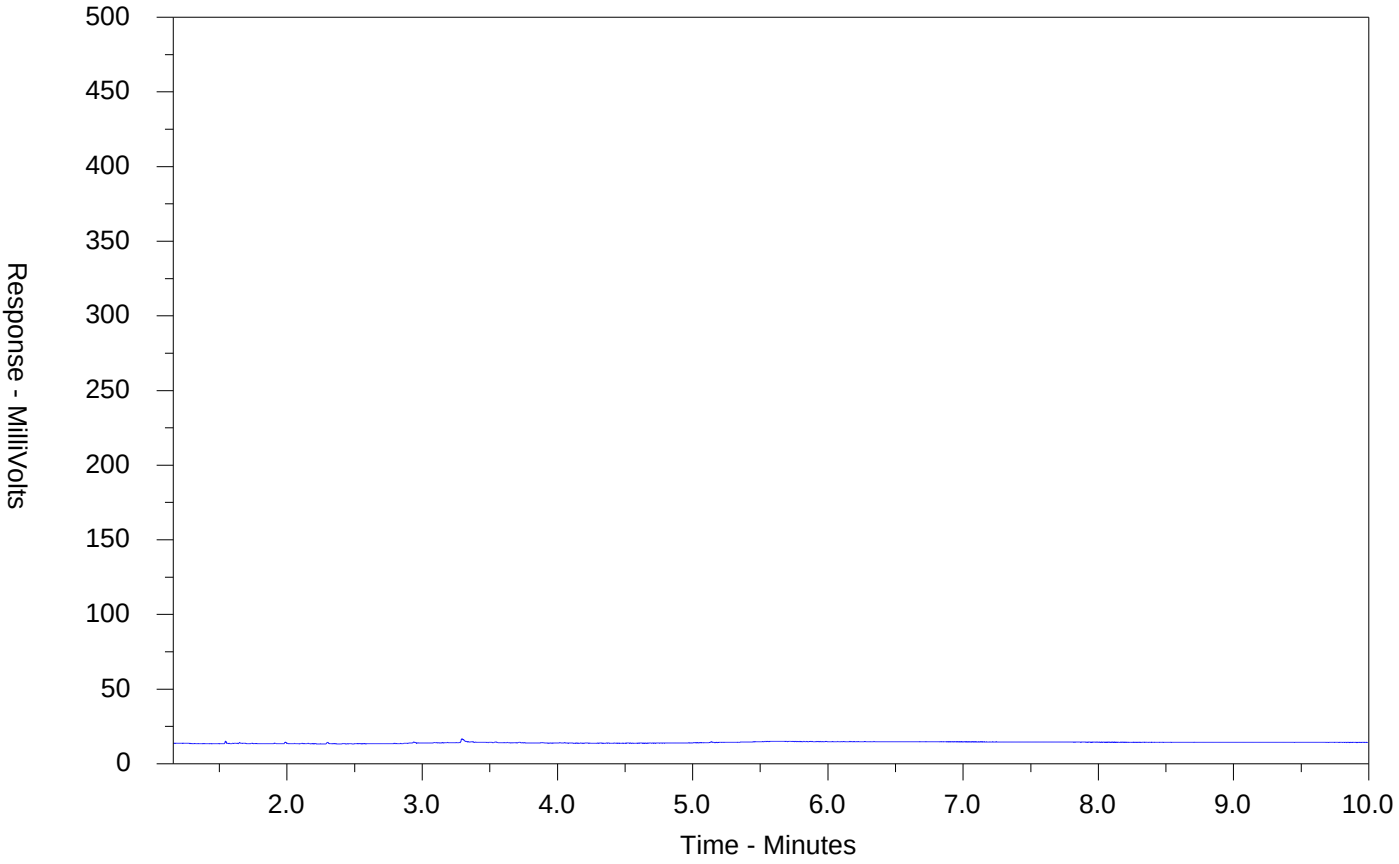
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2311846-002-E601.SG
Client Sample ID: GW-12598913-050423-ZCV-002



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2311846

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Request
Company:	GHD Ltd. (Acct GHDL100)	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☐ Routine [R] if received by 3pm M-F - no surcharges
Contact:	Jennifer Balkwill	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surch
Phone:	519-884-0510	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surc
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☒ 2 day [P2] if received by 3pm M-F - 50% rush surc
Street:	455 Phillip St.	Email 1 or Fax Jennifer.Balkwill@ghd.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surc
City/Province:	Waterloo, ON	Email 2 See SSOW/PO	☐ Same day [E2] if received by 10am M-S - 200% rus
Postal Code:	N2L 3X2	Email 3	☐ fees may apply to rush resuests on weekends, statut routine tests
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Recipients**	**Date and Time Required for all E&P TATs:**
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For tests that can not be performed ac
Company:	GHD Ltd. (GHDL100)	Email 1 or Fax accountspayableCDN@ghd.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	WT2022GHDL1000234	AFE/Cost Center:	PO#
Job #:	12598913-03	Major/Minor Code:	Routing Code:
PO / AFE:	735-005299-2	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): WT2311846 | ALS Contact: Rick H | Sampler: ZW

Analysis Request

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	VOCs F1	F2-F4	Trip Blank _ VOCs/PHC F1	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GW-12598913-050423-ZW-001	04-May-23	15:05	WATER	4	X	X				
	GW-12598913-050423-ZW-002	04-May-23	14:05	WATER	4	X	X				
	GW-12598913-			WATER							
	Trip blank same as Soil for 12598913										

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

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

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

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.7			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Zack Claxton-Vanden Bosch	Date: May 4, 2023	Time: 15:48	Received by:	Date:	Time:	Received by: FM	Date: 2023-05-04	Time: 16:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VW-039 OR-545

CERTIFICATE OF ANALYSIS

Work Order	: **WT2312825**	Page	: 1 of 7
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 12-May-2023 12:50
PO	: 735-005299-2	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 15-May-2023 17:49
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.

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.

Analytical Results

WT2312825-001

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

Client sample ID: S-12598913-051223-ZCV-001
Client sampling date / time: 12-May-2023 10:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.118	0.00500	mS/cm	E100-L/WT	15-May-2023	15-May-2023	937847
Moisture	----	17.2	0.25	%	E144/WT	-	12-May-2023	935787
pH (1:2 soil:CaCl2-aq)	----	6.59	0.10	pH units	E108A/WT	13-May-2023	15-May-2023	936226
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	12-May-2023	15-May-2023	936224
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	11.2	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Magnesium, soluble ion content	7439-95-4	3.38	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Sodium, soluble ion content	17341-25-2	1.79	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Sodium adsorption ratio [SAR]	----	0.12	0.10	-	E484/WT	15-May-2023	15-May-2023	937846
Metals								
Antimony	7440-36-0	0.13	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Arsenic	7440-38-2	4.66	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Barium	7440-39-3	49.4	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Beryllium	7440-41-7	0.51	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Boron	7440-42-8	6.0	5.0	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Boron, hot water soluble	7440-42-8	0.80	0.10	mg/kg	E487/WT	15-May-2023	15-May-2023	937848
Cadmium	7440-43-9	0.352	0.020	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Chromium	7440-47-3	16.4	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Cobalt	7440-48-4	5.91	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Copper	7440-50-8	14.2	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Lead	7439-92-1	14.3	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Mercury	7439-97-6	0.0526	0.0050	mg/kg	E510C/WT	14-May-2023	15-May-2023	937849
Molybdenum	7439-98-7	0.46	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Nickel	7440-02-0	12.0	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Selenium	7782-49-2	0.24	0.20	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Thallium	7440-28-0	0.109	0.050	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Uranium	7440-61-1	0.709	0.050	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Vanadium	7440-62-2	30.7	0.20	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Zinc	7440-66-6	72.4	2.0	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.32	0.10	mg/kg	E532/WT	12-May-2023	15-May-2023	936225

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.

Analytical Results

WT2312825-002

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

Client sample ID: S-12598913-051223-ZCV-002
Client sampling date / time: 12-May-2023 11:15

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.407	0.00500	mS/cm	E100-L/WT	15-May-2023	15-May-2023	937847

Analytical Results

WT2312825-002

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

Client sample ID: S-12598913-051223-ZCV-002
Client sampling date / time: 12-May-2023 11:15

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	12.3	0.25	%	E144/WT	-	12-May-2023	935787
pH (1:2 soil:CaCl2-aq)	----	7.51	0.10	pH units	E108A/WT	13-May-2023	15-May-2023	936226
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	12-May-2023	15-May-2023	936224
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	41.8	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Magnesium, soluble ion content	7439-95-4	5.96	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Sodium, soluble ion content	17341-25-2	25.0	0.50	mg/L	E484/WT	15-May-2023	15-May-2023	937846
Sodium adsorption ratio [SAR]	----	0.96	0.10	-	E484/WT	15-May-2023	15-May-2023	937846
Metals								
Antimony	7440-36-0	0.14	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Arsenic	7440-38-2	4.00	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Barium	7440-39-3	53.3	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Beryllium	7440-41-7	0.51	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Boron	7440-42-8	7.2	5.0	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Boron, hot water soluble	7440-42-8	0.27	0.10	mg/kg	E487/WT	15-May-2023	15-May-2023	937848
Cadmium	7440-43-9	0.283	0.020	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Chromium	7440-47-3	18.3	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Cobalt	7440-48-4	5.71	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Copper	7440-50-8	13.4	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Lead	7439-92-1	16.1	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Mercury	7439-97-6	0.0240	0.0050	mg/kg	E510C/WT	14-May-2023	15-May-2023	937849
Molybdenum	7439-98-7	0.38	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Nickel	7440-02-0	11.8	0.50	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Selenium	7782-49-2	0.22	0.20	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Thallium	7440-28-0	0.100	0.050	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Uranium	7440-61-1	0.590	0.050	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Vanadium	7440-62-2	32.0	0.20	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Zinc	7440-66-6	66.2	2.0	mg/kg	E440C/WT	14-May-2023	15-May-2023	937850
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.42	0.10	mg/kg	E532/WT	12-May-2023	15-May-2023	936225
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603

Analytical Results

WT2312825-002

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

Client sample ID: S-12598913-051223-ZCV-002
Client sampling date / time: 12-May-2023 11:15

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
BTEX, total	----	<0.10	0.1	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1/WT	12-May-2023	13-May-2023	935604
F2 (C10-C16)	----	<10	10	mg/kg	E601.SG-L/WT	12-May-2023	15-May-2023	936165
F3 (C16-C34)	----	<50	50	mg/kg	E601.SG-L/WT	12-May-2023	15-May-2023	936165
F4 (C34-C50)	----	<50	50	mg/kg	E601.SG-L/WT	12-May-2023	15-May-2023	936165
F1-BTEX	----	<5.0	5	mg/kg	EC580/WT	-	15-May-2023	-
Hydrocarbons, total (C6-C50)	----	<80	80	mg/kg	EC581/WT	-	15-May-2023	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG-L/WT	12-May-2023	15-May-2023	936165
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	92.1	1.0	%	E601.SG-L/WT	12-May-2023	15-May-2023	936165
Dichlorotoluene, 3,4-	95-75-0	76.0	1.0	%	E581.F1/WT	12-May-2023	13-May-2023	935604
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	86.4	0.10	%	E611D/WT	12-May-2023	13-May-2023	935603
Difluorobenzene, 1,4-	540-36-3	90.8	0.10	%	E611D/WT	12-May-2023	13-May-2023	935603

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.

Analytical Results

WT2312825-003

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

Client sample ID: S-12598913-TRIP BLANK-051223-ZCV -
Client sampling date / time: 12-May-2023 00:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	<0.25	0.25	%	E144/WT	-	12-May-2023	935787
Volatile Organic Compounds								
Acetone	67-64-1	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Benzene	71-43-2	<0.0050	0.0050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromodichloromethane	75-27-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromoform	75-25-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Bromomethane	74-83-9	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Carbon tetrachloride	56-23-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Chlorobenzene	108-90-7	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Chloroform	67-66-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dibromochloromethane	124-48-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dibromoethane, 1,2-	106-93-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorobenzene, 1,2-	95-50-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorobenzene, 1,3-	541-73-1	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorobenzene, 1,4-	106-46-7	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichlorodifluoromethane	75-71-8	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethane, 1,1-	75-34-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethane, 1,2-	107-06-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, 1,1-	75-35-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, cis-1,2-	156-59-2	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloroethylene, trans-1,2-	156-60-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloromethane	75-09-2	<0.045	0.045	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropane, 1,2-	78-87-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, cis+trans-1,3-	542-75-6	<0.050	0.05	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, cis-1,3-	10061-01-5	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Dichloropropylene, trans-1,3-	10061-02-6	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Ethylbenzene	100-41-4	<0.015	0.015	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Hexane, n-	110-54-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl ethyl ketone [MEK]	78-93-3	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl isobutyl ketone [MIBK]	108-10-1	<0.50	0.50	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Methyl-tert-butyl ether [MTBE]	1634-04-4	<0.040	0.040	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Styrene	100-42-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethane, 1,1,1,2-	630-20-6	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethane, 1,1,2,2-	79-34-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Tetrachloroethylene	127-18-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Toluene	108-88-3	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethane, 1,1,1-	71-55-6	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethane, 1,1,2-	79-00-5	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichloroethylene	79-01-6	<0.010	0.010	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Trichlorofluoromethane	75-69-4	<0.050	0.050	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Vinyl chloride	75-01-4	<0.020	0.020	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Xylene, m+p-	179601-23-1	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Xylene, o-	95-47-6	<0.030	0.030	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603

Analytical Results

WT2312825-003

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

Client sample ID: S-12598913-TRIP BLANK-051223-ZCV -
Client sampling date / time: 12-May-2023 00:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Volatile Organic Compounds								
Xylenes, total	1330-20-7	<0.050	0.05	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
BTEX, total	----	<0.10	0.1	mg/kg	E611D/WT	12-May-2023	13-May-2023	935603
Hydrocarbons								
F1 (C6-C10)	----	<5.0	5.0	mg/kg	E581.F1/WT	12-May-2023	13-May-2023	935604
F1-BTEX	----	<5.0	5	mg/kg	EC580/WT	-	15-May-2023	-
Hydrocarbons Surrogates								
Dichlorotoluene, 3,4-	95-75-0	77.0	1.0	%	E581.F1/WT	12-May-2023	13-May-2023	935604
Volatile Organic Compounds Surrogates								
Bromofluorobenzene, 4-	460-00-4	88.1	0.10	%	E611D/WT	12-May-2023	13-May-2023	935603
Difluorobenzene, 1,4-	540-36-3	94.3	0.10	%	E611D/WT	12-May-2023	13-May-2023	935603

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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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2312825**	Page	: 1 of 10
Client	: **GHD Limited**	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 12-May-2023 12:50
PO	: 735-005299-2	Issue Date	: 15-May-2023 17:46
C-O-C number	: ----		
Sampler	: ZCV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-051223-ZCV-002	E336A	12-May-2023	12-May-2023	14 days	0 days	✓	15-May-2023	14 days	2 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-051223-ZCV-001	E336A	12-May-2023	12-May-2023	14 days	1 days	✓	15-May-2023	14 days	2 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-051223-ZCV-001	E484	12-May-2023	15-May-2023	180 days	3 days	✓	15-May-2023	180 days	0 days	✓
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-051223-ZCV-002	E484	12-May-2023	15-May-2023	180 days	3 days	✓	15-May-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-051223-ZCV-002	E581.F1	12-May-2023	12-May-2023	14 days	0 days	✓	13-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] S-12598913-TRIP BLANK-051223-ZCV	E581.F1	12-May-2023	12-May-2023	14 days	1 days	✓	13-May-2023	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-051223-ZCV-002	E601.SG-L	12-May-2023	12-May-2023	14 days	0 days	✓	15-May-2023	40 days	3 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E487	12-May-2023	15-May-2023	180 days	3 days	✓	15-May-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E487	12-May-2023	15-May-2023	180 days	3 days	✓	15-May-2023	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E510C	12-May-2023	14-May-2023	----	----		15-May-2023	28 days	3 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E510C	12-May-2023	14-May-2023	----	----		15-May-2023	28 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E440C	12-May-2023	14-May-2023	----	----		15-May-2023	180 days	3 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E440C	12-May-2023	14-May-2023	----	----		15-May-2023	180 days	3 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E100-L	12-May-2023	15-May-2023	----	----		15-May-2023	30 days	4 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E100-L	12-May-2023	15-May-2023	----	----		15-May-2023	30 days	4 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E144	12-May-2023	----	----	----		12-May-2023	----	----	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E144	12-May-2023	----	----	----		12-May-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil methanol vial [ON MECP]										
S-12598913-TRIP BLANK-051223-ZCV	E144	12-May-2023	----	----	----		12-May-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E108A	12-May-2023	13-May-2023	----	----		15-May-2023	30 days	4 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E108A	12-May-2023	13-May-2023	----	----		15-May-2023	30 days	4 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-001	E532	12-May-2023	12-May-2023	30 days	1 days	✓	15-May-2023	7 days	2 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-051223-ZCV-002	E532	12-May-2023	12-May-2023	30 days	1 days	✓	15-May-2023	7 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-051223-ZCV-002	E611D	12-May-2023	12-May-2023	14 days	0 days	✓	13-May-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
S-12598913-TRIP BLANK-051223-ZCV	E611D	12-May-2023	12-May-2023	14 days	1 days	✓	13-May-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	937848	1	10	10.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	935604	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	936165	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	937847	1	14	7.1	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	936225	1	6	16.6	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	937849	1	10	10.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	937850	1	17	5.8	5.0	✓
Moisture Content by Gravimetry	E144	935787	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	936226	1	6	16.6	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	937846	1	14	7.1	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	935603	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	936224	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	937848	2	10	20.0	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	935604	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	936165	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	937847	2	14	14.2	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	936225	2	6	33.3	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	937849	2	10	20.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	937850	2	17	11.7	10.0	✓
Moisture Content by Gravimetry	E144	935787	1	20	5.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	936226	1	6	16.6	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	937846	2	14	14.2	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	935603	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	936224	1	6	16.6	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	937848	1	10	10.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	935604	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	936165	1	20	5.0	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	937847	1	14	7.1	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	936225	1	6	16.6	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	937849	1	10	10.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	937850	1	17	5.8	5.0	✓
Moisture Content by Gravimetry	E144	935787	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	937846	1	14	7.1	5.0	✓

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	935603	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	936224	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	935604	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	936165	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	935603	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	936224	1	6	16.6	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L Waterloo - 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 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 Waterloo - Environmental	Soil/Solid	MOEE E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 355 µm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 Waterloo - Environmental	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L Waterloo - 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).
VOCs (Eastern Canada List) by Headspace GC-MS	E611D Waterloo - 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 the headspace in accordance with Henry's law.
F1-BTEX	EC580 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Cyanide Extraction for CFA (0.01M NaOH)	EP333A Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	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 Waterloo - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2312825**	Page	: 1 of 15
Client	: GHD Limited	Laboratory	: Waterloo - Environmental
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 12-May-2023 12:50
PO	: 735-005299-2	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 15-May-2023 17:45
Sampler	: ZCV 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-2		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Waterloo Centralized Prep, Waterloo, Ontario
Andrea Armstrong	Department Manager - Air Quality and Volatiles	Waterloo VOC, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 935787)											
WT2312515-001	Anonymous	Moisture	----	E144	0.25	%	21.8	21.1	3.07%	20%	----
Physical Tests (QC Lot: 936226)											
WT2312780-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	9.26	9.26	0.00%	5%	----
Physical Tests (QC Lot: 937847)											
WT2312665-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.0953 mS/cm	96.1	0.836%	20%	----
Cyanides (QC Lot: 936224)											
WT2312780-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 937846)											
WT2312665-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	6.17	6.36	3.03%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	0.98	0.93	0.05	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	1.47	1.67	0.20	Diff <2x LOR	----
Metals (QC Lot: 937848)											
WT2312645-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0.0009	Diff <2x LOR	----
Metals (QC Lot: 937849)											
WT2312645-001	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0160	0.0171	0.0011	Diff <2x LOR	----
Metals (QC Lot: 937850)											
WT2312645-001	Anonymous	Antimony	7440-36-0	E440C	0.10	mg/kg	0.31	0.30	0.007	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	7.42	6.46	13.8%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	246	216	12.7%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	1.27	1.26	0.926%	30%	----
		Boron	7440-42-8	E440C	5.0	mg/kg	15.1	16.6	1.5	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.150	0.133	12.1%	30%	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	40.5	35.8	12.3%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	18.7	16.1	14.8%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	31.2	27.3	13.3%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	12.4	12.4	0.475%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.61	0.59	2.94%	40%	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	45.1	39.2	14.0%	30%	----
		Selenium	7782-49-2	E440C	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440C	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 937850) - continued											
WT2312645-001	Anonymous	Thallium	7440-28-0	E440C	0.050	mg/kg	0.231	0.239	0.008	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.664	0.663	0.133%	30%	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	54.9	49.2	10.9%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	90.4	77.1	15.9%	30%	----
Speciated Metals (QC Lot: 936225)											
WT2312780-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 935603)											
WT2312780-001	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	<0.0050	<0.0050	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	0.057	0.058	0.0006	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 935603) - continued											
WT2312780-001	Anonymous	Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 935604)											
WT2312780-001	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 936165)											
WT2312882-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	68	62	6	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 935787)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 937847)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Cyanides (QCLot: 936224)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 937846)						
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: 937848)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 937849)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 937850)						
Antimony	7440-36-0	E440C	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440C	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440C	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440C	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440C	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440C	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440C	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440C	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440C	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440C	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440C	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 936225)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 935603)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 935603) - 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: 935604)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 936165)						
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	----

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: 935787)									
Moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 936226)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 937847)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	96.3	90.0	110	----
Cyanides (QCLot: 936224)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	2.5 mg/kg	88.8	80.0	120	----
Metals (QCLot: 937846)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	107	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	102	80.0	120	----
Metals (QCLot: 937848)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	99.4	70.0	130	----
Metals (QCLot: 937849)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	89.0	80.0	120	----
Metals (QCLot: 937850)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	94.9	80.0	120	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	101	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	88.9	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	84.4	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	98.2	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	98.3	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	96.5	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	94.6	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	86.2	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	87.2	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	97.0	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	88.6	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	82.7	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	92.7	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 937850) - continued									
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	87.2	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	99.1	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	96.0	80.0	120	----
Speciated Metals (QCLot: 936225)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	97.0	80.0	120	----
Volatile Organic Compounds (QCLot: 935603)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	92.1	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	93.7	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	97.8	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	88.8	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	95.4	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	102	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	100	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	99.8	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	89.6	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	92.4	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	99.5	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	100.0	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	98.5	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	60.1	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	88.7	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	97.7	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	96.3	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	97.5	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	95.5	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	94.4	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	94.2	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	92.8	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	95.0	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	97.6	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	83.4	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	81.2	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	79.3	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	102	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 935603) - continued									
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	92.6	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	95.6	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	84.9	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	95.9	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	92.0	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	104	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	95.6	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	80.3	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	98.1	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	97.6	70.0	130	----
Hydrocarbons (QCLot: 935604)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	109	80.0	120	----
Hydrocarbons (QCLot: 936165)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	821.775 mg/kg	97.0	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1151.486 mg/kg	96.2	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	719.6893 mg/kg	93.4	70.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 936224)										
WT2312780-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.09 mg/kg	2.5 mg/kg	87.0	70.0	130	----
Volatile Organic Compounds (QCLot: 935603)										
WT2312780-001	Anonymous	Acetone	67-64-1	E611D	2.81 mg/kg	3.125 mg/kg	94.0	50.0	140	----
		Benzene	71-43-2	E611D	2.95 mg/kg	3.125 mg/kg	98.6	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.89 mg/kg	3.125 mg/kg	96.6	50.0	140	----
		Bromoform	75-25-2	E611D	2.54 mg/kg	3.125 mg/kg	84.8	50.0	140	----
		Bromomethane	74-83-9	E611D	3.11 mg/kg	3.125 mg/kg	104	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	3.21 mg/kg	3.125 mg/kg	107	50.0	140	----
		Chlorobenzene	108-90-7	E611D	3.03 mg/kg	3.125 mg/kg	101	50.0	140	----
		Chloroform	67-66-3	E611D	3.03 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.72 mg/kg	3.125 mg/kg	90.8	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.71 mg/kg	3.125 mg/kg	90.5	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.96 mg/kg	3.125 mg/kg	98.9	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.98 mg/kg	3.125 mg/kg	99.5	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.95 mg/kg	3.125 mg/kg	98.6	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.56 mg/kg	3.125 mg/kg	85.6	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	2.93 mg/kg	3.125 mg/kg	98.0	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	2.90 mg/kg	3.125 mg/kg	97.1	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	3.01 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.91 mg/kg	3.125 mg/kg	97.4	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.89 mg/kg	3.125 mg/kg	96.6	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.97 mg/kg	3.125 mg/kg	99.2	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.83 mg/kg	3.125 mg/kg	94.4	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.65 mg/kg	3.125 mg/kg	88.6	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.69 mg/kg	3.125 mg/kg	90.0	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.94 mg/kg	3.125 mg/kg	98.3	50.0	140	----
		Hexane, n-	110-54-3	E611D	2.84 mg/kg	3.125 mg/kg	94.8	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.31 mg/kg	3.125 mg/kg	77.3	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.25 mg/kg	3.125 mg/kg	75.2	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	3.08 mg/kg	3.125 mg/kg	103	50.0	140	----
		Styrene	100-42-5	E611D	2.86 mg/kg	3.125 mg/kg	95.6	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 935603) - continued										
WT2312780-001	Anonymous	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.89 mg/kg	3.125 mg/kg	96.5	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.56 mg/kg	3.125 mg/kg	85.6	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	3.09 mg/kg	3.125 mg/kg	103	50.0	140	----
		Toluene	108-88-3	E611D	2.96 mg/kg	3.125 mg/kg	98.7	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	3.18 mg/kg	3.125 mg/kg	106	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.78 mg/kg	3.125 mg/kg	92.7	50.0	140	----
		Trichloroethylene	79-01-6	E611D	3.14 mg/kg	3.125 mg/kg	105	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	3.27 mg/kg	3.125 mg/kg	109	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.80 mg/kg	3.125 mg/kg	93.6	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	5.91 mg/kg	6.25 mg/kg	98.8	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.92 mg/kg	3.125 mg/kg	97.6	50.0	140	----
Hydrocarbons (QCLot: 935604)										
WT2312780-001	Anonymous	F1 (C6-C10)	----	E581.F1	56.6 mg/kg	62.5 mg/kg	94.6	60.0	140	----
Hydrocarbons (QCLot: 936165)										
WT2312882-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	644 mg/kg	821.775 mg/kg	100	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	873 mg/kg	1151.486 mg/kg	97.2	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	562 mg/kg	719.6893 mg/kg	100	60.0	140	----

Reference Material (RM) Report

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

Sub-Matrix:

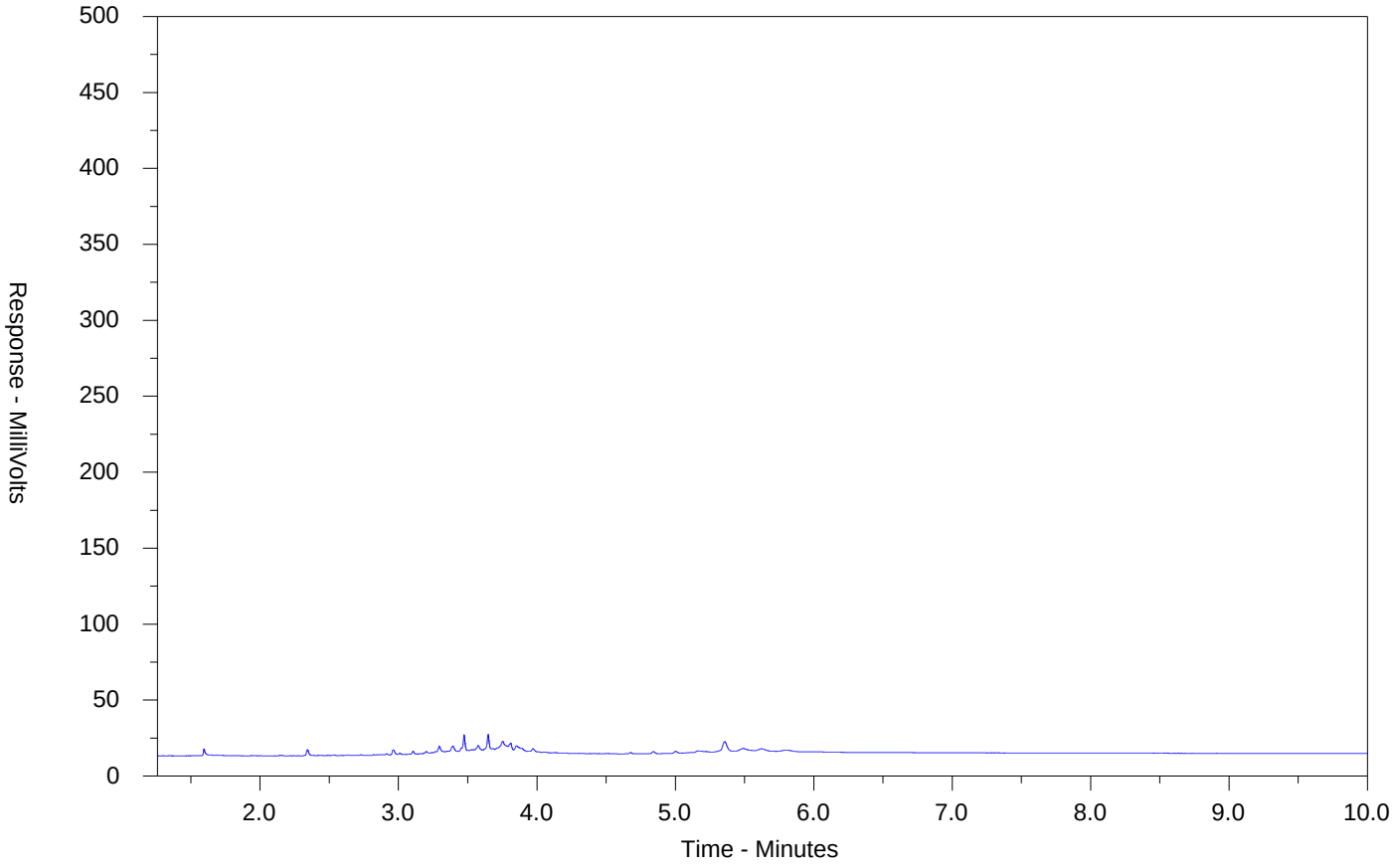
					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 937847)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1875.8 µS/cm	114	70.0	130	----
Metals (QCLot: 937846)									
	RM	Calcium, soluble ion content	7440-70-2	E484	83.87 mg/L	99.4	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	25.79 mg/L	100	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	103.41 mg/L	96.6	70.0	130	----
Metals (QCLot: 937848)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.84 mg/kg	89.3	60.0	140	----
Metals (QCLot: 937849)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	116	70.0	130	----
Metals (QCLot: 937850)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	106	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	96.4	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	103	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	109	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	112	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	108	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	101	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	99.9	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	101	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	100	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	99.1	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	103	70.0	130	----
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	103	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	97.7	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	99.8	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	102	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	100	70.0	130	----
Speciated Metals (QCLot: 936225)									

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals (QCLot: 936225) - continued									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	94.4	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2312825-002-E601.SG-L
Client Sample ID: S-12598913-051223-ZCV-002



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 20 -

Page

Environmental Division Waterloo

Work Order Reference WT2312825

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	GHD Ltd. (Acct GHDL100)	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☐ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Jennifer Balkwill	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	519-884-0510	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimur
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☒ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimur
Street:	455 Phillip St.	Email 1 or Fax Jennifer.Balkwill@ghd.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimur
City/Province:	Waterloo, ON	Email 2 See SSOW/PO	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. A ☐ fees may apply to rush requests on weekends, statutory holidays an routine tests
Postal Code:	N2L 3X2	Email 3	Date and Time Required for all E&P TATs:
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients	For tests that can not be performed according to the TAT requested, you will be contacted.
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Analysis Request
Company:	GHD Ltd. (GHDL100)	Email 1 or Fax accountspayableCDN@ghd.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	WT2022GHDL1000234	AFE/Cost Center:	PO#
Job #:	12598913-03	Major/Minor Code:	Routing Code:
PO / AFE:	735-005299-2	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): WT2312825 | ALS Contact: Rick H | Sampler: ZCV

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINER	O.Reg 153 Metals/Inorganics	VOCs, PHCs F1-F4	Trip Blank VOCs/F1	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes
	S-12598913-051223-ZCV-001	12-May-23	10:10	SOIL	2	X					
	S-12598913-051223-ZCV-002	12-May-23	11:15	SOIL	4	X	X				
	S-12598913-Tripblank-051223-ZCV	12-May-23			1			X			

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	Please include drop down MECP Standard list to compare data to criteria in excel file provided by the lab

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				7.9			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Zack CV	Date: May 12, 2023	Time: 11:50	Received by:	Date:	Time:	Received by: AP	Date: 12 MAY 23	Time: 0:50

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

SOL-227

VS-201

CERTIFICATE OF ANALYSIS

Work Order	: **WT2401203**	Page	: 1 of 14
Client	: **GHD Limited**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Jan-2024 15:35
PO	: 735-005299-3	Date Analysis Commenced	: 17-Jan-2024
C-O-C number	: ----	Issue Date	: 24-Jan-2024 17:23
Sampler	: Zack CV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-3		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Centralized Prep, Waterloo, Ontario
Niki Goebel		Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.

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.

Analytical Results

WT2401203-001

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-011724-ZCV-001
Client sampling date / time: 17-Jan-2024 14:55

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	15.5	0.25	%	E144/WT	-	17-Jan-2024	1305186
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	108	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Chrysene-d12	1719-03-5	130	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Naphthalene-d8	1146-65-2	78.0	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Phenanthrene-d10	1517-22-2	107	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346

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.

Analytical Results

WT2401203-002

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-011724-ZCV-002
Client sampling date / time: 17-Jan-2024 15:05

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	13.6	0.25	%	E144/WT	-	17-Jan-2024	1305186
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346

Analytical Results

WT2401203-002

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-011724-ZCV-002
Client sampling date / time: 17-Jan-2024 15:05

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	113	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Chrysene-d12	1719-03-5	95.5	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Naphthalene-d8	1146-65-2	95.3	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346
Phenanthrene-d10	1517-22-2	111	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305346

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.

Analytical Results

WT2401203-003

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-011724-ZCV-003
Client sampling date / time: 17-Jan-2024 12:55

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.158	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	20.2	0.25	%	E144/WT	-	17-Jan-2024	1305186
pH (1:2 soil:CaCl2-aq)	----	7.21	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	8.70	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.64	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	1.91	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.16	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	4.72	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	56.0	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	7.0	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198

Analytical Results

WT2401203-003

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-003
Client sampling date / time: 17-Jan-2024 12:55

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Metals								
Boron, hot water soluble	7440-42-8	0.31	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.238	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	18.6	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	6.15	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	14.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Lead	7439-92-1	14.6	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0375	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.28	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	12.8	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.112	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.515	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	33.0	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	62.7	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.17	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	98.2	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	99.5	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	101	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	101	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-004

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-004
Client sampling date / time: 17-Jan-2024 13:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.161	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	20.6	0.25	%	E144/WT	-	17-Jan-2024	1305186
pH (1:2 soil:CaCl2-aq)	----	7.29	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	10.1	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.41	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	1.57	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.12	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.16	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	3.75	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	51.1	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.49	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	8.1	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.49	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.202	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	16.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	5.64	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	13.5	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Lead	7439-92-1	13.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0261	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.30	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	12.0	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.095	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.513	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	28.9	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	61.6	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	<0.10	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

Analytical Results

WT2401203-004

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-004

Client sampling date / time: 17-Jan-2024 13:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	99.6	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	105	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	105	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	102	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-005

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-005

Client sampling date / time: 17-Jan-2024 13:25

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.185	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	20.4	0.25	%	E144/WT	-	17-Jan-2024	1305186
pH (1:2 soil:CaCl2-aq)	----	7.23	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	13.2	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.84	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	1.53	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.10	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.20	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	4.74	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	61.3	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.58	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	7.5	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.50	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.316	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	17.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	6.12	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	15.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198

Analytical Results

WT2401203-005

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-005

Client sampling date / time: 17-Jan-2024 13:25

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Metals								
Lead	7439-92-1	25.9	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0400	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.49	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	13.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.115	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.618	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	29.5	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	95.0	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.12	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	0.280	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	0.615	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	1.26	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	1.03	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	1.39	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	0.525	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	0.558	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	1.06	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	0.161	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	2.51	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluorene	86-73-7	0.056	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	0.607	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	0.618	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	2.09	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	98.0	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	99.4	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	104	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	103	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-006

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-006

Client sampling date / time: 17-Jan-2024 13:41

Analytical Results

WT2401203-006

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-006
Client sampling date / time: 17-Jan-2024 13:41

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.181	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	18.0	0.25	%	E144/WT	-	17-Jan-2024	1305186
pH (1:2 soil:CaCl2-aq)	----	7.44	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	9.23	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.53	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	9.71	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.78	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.12	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	5.18	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	67.6	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.62	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	6.7	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.29	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.329	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	19.2	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	6.52	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	13.8	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Lead	7439-92-1	15.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0471	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.37	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	14.2	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.116	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.556	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	35.8	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	77.3	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.32	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

Analytical Results

WT2401203-006

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-006

Client sampling date / time: 17-Jan-2024 13:41

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	88.8	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	98.8	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	97.2	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	95.6	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-007

Sub-Matrix:**Soil** (Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-007

Client sampling date / time: 17-Jan-2024 13:49

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.179	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	18.4	0.25	%	E144/WT	-	17-Jan-2024	1305186
pH (1:2 soil:CaCl2-aq)	----	7.34	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	8.93	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.50	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	10.0	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.82	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	5.18	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	61.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.57	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	6.0	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.29	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.286	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	18.6	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	6.23	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	13.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198

Analytical Results

WT2401203-007

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-007
Client sampling date / time: 17-Jan-2024 13:49

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Metals								
Lead	7439-92-1	15.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0435	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.32	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	13.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.109	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.507	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	33.5	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	75.3	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.20	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	96.7	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	104	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	105	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	102	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-008

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-008
Client sampling date / time: 17-Jan-2024 14:10

Analytical Results

WT2401203-008

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-008
Client sampling date / time: 17-Jan-2024 14:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.138	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	14.4	0.25	%	E144/WT	-	18-Jan-2024	1305531
pH (1:2 soil:CaCl2-aq)	----	7.41	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	8.09	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.20	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	0.79	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	<0.10	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	4.18	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	41.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.41	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	5.3	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.26	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.258	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	15.6	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	5.02	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	9.73	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Lead	7439-92-1	13.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0300	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.34	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	10.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.085	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.492	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	31.4	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	74.3	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.13	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

Analytical Results

WT2401203-008

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-011724-ZCV-008

(Matrix: **Soil/Solid**) *Client sampling date / time:* 17-Jan-2024 14:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	92.7	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	105	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	104	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	97.7	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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.

Analytical Results

WT2401203-009

Sub-Matrix:**Soil** *Client sample ID:* S-12598913-011724-ZCV-009

(Matrix: **Soil/Solid**) *Client sampling date / time:* 17-Jan-2024 14:22

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Conductivity (1:2 leachate)	----	0.165	0.00500	mS/cm	E100-L/WT	22-Jan-2024	23-Jan-2024	1305195
Moisture	----	19.1	0.25	%	E144/WT	-	18-Jan-2024	1305531
pH (1:2 soil:CaCl2-aq)	----	7.59	0.10	pH units	E108A/WT	18-Jan-2024	24-Jan-2024	1305197
Cyanides								
Cyanide, weak acid dissociable	----	<0.050	0.050	mg/kg	E336A/WT	18-Jan-2024	18-Jan-2024	1305201
Fixed-Ratio Extractables								
Calcium, soluble ion content	7440-70-2	9.63	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Magnesium, soluble ion content	7439-95-4	1.27	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium, soluble ion content	17341-25-2	1.51	0.50	mg/L	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Sodium adsorption ratio [SAR]	----	0.12	0.10	-	E484/WT	22-Jan-2024	22-Jan-2024	1305196
Metals								
Antimony	7440-36-0	0.11	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Arsenic	7440-38-2	3.81	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Barium	7440-39-3	40.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Beryllium	7440-41-7	0.42	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron	7440-42-8	6.8	5.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Boron, hot water soluble	7440-42-8	0.23	0.10	mg/kg	E487/WT	22-Jan-2024	22-Jan-2024	1305200
Cadmium	7440-43-9	0.228	0.020	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Chromium	7440-47-3	14.3	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Cobalt	7440-48-4	5.20	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Copper	7440-50-8	11.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198

Analytical Results

WT2401203-009

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid**)

Client sample ID: S-12598913-011724-ZCV-009
Client sampling date / time: 17-Jan-2024 14:22

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Metals								
Lead	7439-92-1	60.4	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Mercury	7439-97-6	0.0234	0.0050	mg/kg	E510C/WT	21-Jan-2024	23-Jan-2024	1305199
Molybdenum	7439-98-7	0.32	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Nickel	7440-02-0	11.7	0.50	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Selenium	7782-49-2	<0.20	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Silver	7440-22-4	<0.10	0.10	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Thallium	7440-28-0	0.085	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Uranium	7440-61-1	0.438	0.050	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Vanadium	7440-62-2	25.1	0.20	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Zinc	7440-66-6	72.5	2.0	mg/kg	E440C/WT	21-Jan-2024	22-Jan-2024	1305198
Speciated Metals								
Chromium, hexavalent [Cr VI]	18540-29-9	0.11	0.10	mg/kg	E532/WT	17-Jan-2024	19-Jan-2024	1305187
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	93.6	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Chrysene-d12	1719-03-5	106	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Naphthalene-d8	1146-65-2	104	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302
Phenanthrene-d10	1517-22-2	99.8	0.1	%	E641A/WT	18-Jan-2024	19-Jan-2024	1305302

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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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2401203**	Page	: 1 of 15
Client	: **GHD Limited**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Jan-2024 15:35
PO	: 735-005299-3	Issue Date	: 24-Jan-2024 17:23
C-O-C number	: ----		
Sampler	: Zack CV		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-3		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-003	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-004	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-005	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-006	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-007	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-008	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-009	E336A	17-Jan-2024	18-Jan-2024	14 days	1 days	✓	18-Jan-2024	14 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-003	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-004	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-005	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-006	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-007	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-008	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-009	E487	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-003	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-004	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E510C	17-Jan-2024	21-Jan-2024	28 days	4 days	✓	23-Jan-2024	28 days	6 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E440C	17-Jan-2024	21-Jan-2024	180 days	4 days	✓	22-Jan-2024	180 days	5 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E484	17-Jan-2024	22-Jan-2024	180 days	5 days	✓	22-Jan-2024	180 days	0 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E100-L	17-Jan-2024	22-Jan-2024	30 days	5 days	✓	23-Jan-2024	30 days	6 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-001	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-002	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E144	17-Jan-2024	----	----	----		17-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E144	17-Jan-2024	----	----	----		18-Jan-2024	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E144	17-Jan-2024	----	----	----		18-Jan-2024	----	1 days	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-004	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-005	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-006	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-007	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-008	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-009	E108A	17-Jan-2024	18-Jan-2024	30 days	1 days	✓	24-Jan-2024	30 days	7 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-001	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-002	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-011724-ZCV-003	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E641A	17-Jan-2024	18-Jan-2024	60 days	1 days	✓	19-Jan-2024	40 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-003	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-004	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-005	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-006	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-007	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-008	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
S-12598913-011724-ZCV-009	E532	17-Jan-2024	17-Jan-2024	30 days	0 days	✓	19-Jan-2024	7 days	1 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1305200	1	19	5.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1305195	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1305187	1	19	5.2	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1305199	1	19	5.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1305198	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	1305186	2	35	5.7	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1305346	2	34	5.8	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1305197	1	19	5.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1305196	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1305201	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1305200	2	19	10.5	10.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1305195	2	20	10.0	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1305187	2	19	10.5	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1305199	2	19	10.5	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1305198	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	1305186	2	35	5.7	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1305346	2	34	5.8	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1305197	1	19	5.2	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1305196	2	20	10.0	10.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1305201	1	19	5.2	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1305200	1	19	5.2	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1305195	1	20	5.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1305187	1	19	5.2	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1305199	1	19	5.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1305198	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	1305186	2	35	5.7	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1305346	2	34	5.8	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1305196	1	20	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1305201	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
PAHs by Hex:Ace GC-MS	E641A	1305346	2	34	5.8	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1305201	1	19	5.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L ALS Environmental - Waterloo	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A ALS Environmental - Waterloo	Soil/Solid	MECP 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 HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 ALS Environmental - Waterloo	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are sieved through a 355 µm sieve, and digested with 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.
PAHs by Hex:Ace GC-MS	E641A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.

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 Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2401203**	Page	: 1 of 15
Client	: GHD Limited	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-03	Date Samples Received	: 17-Jan-2024 15:35
PO	: 735-005299-3	Date Analysis Commenced	: 17-Jan-2024
C-O-C number	: ----	Issue Date	: 24-Jan-2024 17:23
Sampler	: Zack CV 604 748 3661		
Site	: ----		
Quote number	: 12598913-03-SSOW-735-005299-3		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Waterloo Centralized Prep, Waterloo, Ontario
Niki Goebel		Waterloo Metals, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1305186)											
WT2400850-025	Anonymous	Moisture	----	E144	0.25	%	18.4	18.7	1.38%	20%	----
Physical Tests (QC Lot: 1305195)											
WT2401168-004	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.553 mS/cm	554	0.181%	20%	----
Physical Tests (QC Lot: 1305197)											
WT2401168-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.54	7.51	0.399%	5%	----
Physical Tests (QC Lot: 1305531)											
WT2401178-001	Anonymous	Moisture	----	E144	0.25	%	4.18	4.21	0.776%	20%	----
Cyanides (QC Lot: 1305201)											
WT2401168-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 1305196)											
WT2401168-004	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	5.95	6.07	2.00%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	4.54	4.63	1.96%	30%	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	88.3	88.4	0.113%	30%	----
Metals (QC Lot: 1305198)											
WT2401168-007	Anonymous	Antimony	7440-36-0	E440C	0.10	mg/kg	0.15	0.16	0.009	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	6.24	6.51	4.26%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	170	167	1.74%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	1.17	1.20	2.56%	30%	----
		Boron	7440-42-8	E440C	5.0	mg/kg	15.3	15.2	0.1	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.067	0.059	0.009	Diff <2x LOR	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	35.8	35.5	0.776%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	18.2	18.2	0.0904%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	32.4	32.6	0.600%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	11.4	11.3	0.992%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.58	0.59	2.65%	40%	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	38.3	38.5	0.407%	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	0.189	0.189	0.0004	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	1.06	1.00	6.03%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 1305198) - continued											
WT2401168-007	Anonymous	Vanadium	7440-62-2	E440C	0.20	mg/kg	48.3	48.7	0.901%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	81.2	78.8	3.03%	30%	----
Metals (QC Lot: 1305199)											
WT2401168-007	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0163	0.0168	0.0004	Diff <2x LOR	----
Metals (QC Lot: 1305200)											
WT2401168-007	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.26	0.26	0.006	Diff <2x LOR	----
Speciated Metals (QC Lot: 1305187)											
WT2401168-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1305302)											
WT2401168-001	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	0.072	<0.050	0.022	Diff <2x LOR	J
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	0.071	0.055	0.016	Diff <2x LOR	J
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	0.113	0.086	0.028	Diff <2x LOR	J
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	0.062	<0.050	0.012	Diff <2x LOR	J
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	0.078	0.058	0.020	Diff <2x LOR	J
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	0.135	0.087	0.047	Diff <2x LOR	J
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	0.060	<0.050	0.010	Diff <2x LOR	J
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	0.060	<0.050	0.010	Diff <2x LOR	J
		Pyrene	129-00-0	E641A	0.050	mg/kg	0.114	0.078	0.036	Diff <2x LOR	J
Polycyclic Aromatic Hydrocarbons (QC Lot: 1305346)											
WT2401056-001	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 1305346) - continued											
WT2401056-001	Anonymous	Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	0.216 µg/g	0.305	34.0%	50%	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	0.071 µg/g	0.130	0.058	Diff <2x LOR	J
		Naphthalene	91-20-3	E641A	0.034	mg/kg	<0.034 µg/g	<0.034	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
J	*Duplicate results and limits are expressed in terms of absolute difference.*

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: 1305186)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1305195)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 1305531)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 1305201)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 1305196)						
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: 1305198)						
Antimony	7440-36-0	E440C	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440C	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440C	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440C	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440C	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440C	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440C	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440C	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440C	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440C	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440C	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----
Metals (QCLot: 1305199)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1305200)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 1305187)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305302)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346) - continued						
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1305186)									
Moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 1305195)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	98.9	90.0	110	----
Physical Tests (QCLot: 1305197)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1305531)									
Moisture	----	E144	0.25	%	50 %	99.0	90.0	110	----
Cyanides (QCLot: 1305201)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	1.25 mg/kg	100	80.0	120	----
Metals (QCLot: 1305196)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	112	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	108	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	111	80.0	120	----
Metals (QCLot: 1305198)									
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	106	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	100	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	97.6	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	93.3	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	98.2	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	102	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	99.6	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	99.9	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	102	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	101	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	99.0	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	104	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	85.6	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	100	80.0	120	----
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	100	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	103	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 1305198) - continued									
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	99.1	80.0	120	----
Metals (QCLot: 1305199)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	102	80.0	120	----
Metals (QCLot: 1305200)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	103	70.0	130	----
Speciated Metals (QCLot: 1305187)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	101	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305302)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	96.5	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	98.2	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	108	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	104	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	88.8	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	103	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	102	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	97.2	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	88.8	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	87.0	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	98.0	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	98.9	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	100	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	91.0	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	100	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	96.9	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	95.6	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	95.9	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	90.2	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	93.8	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	101	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	102	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	92.2	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	99.3	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	92.6	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346) - continued									
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	97.1	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	79.8	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	95.0	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	98.3	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	102	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	89.8	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	75.7	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	97.4	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	92.9	60.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 1305201)										
WT2401168-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.23 mg/kg	1.25 mg/kg	97.9	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305302)										
WT2401168-001	Anonymous	Acenaphthene	83-32-9	E641A	0.386 mg/kg	0.5 mg/kg	95.1	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.385 mg/kg	0.5 mg/kg	95.0	50.0	140	----
		Anthracene	120-12-7	E641A	0.430 mg/kg	0.5 mg/kg	106	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.384 mg/kg	0.5 mg/kg	94.6	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.337 mg/kg	0.5 mg/kg	83.1	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.377 mg/kg	0.5 mg/kg	92.9	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.376 mg/kg	0.5 mg/kg	92.7	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.382 mg/kg	0.5 mg/kg	94.3	50.0	140	----
		Chrysene	218-01-9	E641A	0.325 mg/kg	0.5 mg/kg	80.1	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.346 mg/kg	0.5 mg/kg	85.4	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.351 mg/kg	0.5 mg/kg	86.5	50.0	140	----
		Fluorene	86-73-7	E641A	0.390 mg/kg	0.5 mg/kg	96.2	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.381 mg/kg	0.5 mg/kg	93.9	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.365 mg/kg	0.5 mg/kg	90.0	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.409 mg/kg	0.5 mg/kg	101	50.0	140	----
		Naphthalene	91-20-3	E641A	0.396 mg/kg	0.5 mg/kg	97.7	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.360 mg/kg	0.5 mg/kg	88.7	50.0	140	----
		Pyrene	129-00-0	E641A	0.351 mg/kg	0.5 mg/kg	86.6	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346)										
WT2401056-001	Anonymous	Acenaphthene	83-32-9	E641A	0.396 mg/kg	0.5 mg/kg	99.2	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.398 mg/kg	0.5 mg/kg	99.5	50.0	140	----
		Anthracene	120-12-7	E641A	0.424 mg/kg	0.5 mg/kg	106	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.426 mg/kg	0.5 mg/kg	106	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.374 mg/kg	0.5 mg/kg	93.6	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.389 mg/kg	0.5 mg/kg	97.4	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.374 mg/kg	0.5 mg/kg	93.5	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.391 mg/kg	0.5 mg/kg	97.8	50.0	140	----
		Chrysene	218-01-9	E641A	0.330 mg/kg	0.5 mg/kg	82.6	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.350 mg/kg	0.5 mg/kg	87.7	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1305346) - continued										
WT2401056-001	Anonymous	Fluoranthene	206-44-0	E641A	0.388 mg/kg	0.5 mg/kg	97.1	50.0	140	----
		Fluorene	86-73-7	E641A	0.446 mg/kg	0.5 mg/kg	112	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.409 mg/kg	0.5 mg/kg	102	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.381 mg/kg	0.5 mg/kg	95.3	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.347 mg/kg	0.5 mg/kg	86.7	50.0	140	----
		Naphthalene	91-20-3	E641A	0.373 mg/kg	0.5 mg/kg	93.3	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.440 mg/kg	0.5 mg/kg	110	50.0	140	----
		Pyrene	129-00-0	E641A	0.365 mg/kg	0.5 mg/kg	91.3	50.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1305195)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1384 µS/cm	103	70.0	130	----
Metals (QCLot: 1305196)									
	RM	Calcium, soluble ion content	7440-70-2	E484	43.54 mg/L	111	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	15.24 mg/L	108	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	33.47 mg/L	106	70.0	130	----
Metals (QCLot: 1305198)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	93.0	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	101	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	105	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	111	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	118	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	104	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	107	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	105	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	108	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	110	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	108	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	107	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	107	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	103	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	107	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	102	70.0	130	----
Metals (QCLot: 1305199)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	98.5	70.0	130	----
Metals (QCLot: 1305200)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.366 mg/kg	119	60.0	140	----
Speciated Metals (QCLot: 1305187)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	91.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo

Work Order Reference

WT2401203

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: jennifer.balkwill@ghd.com

Email 2: See SSOW/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayableCDN@ghd.com

Email 2:

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resuests on weekends, statutory holidays and non routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the

Project Information

ALS Account # / Quote #:	WT2022GHDL1000234.
Job #:	12598913-04
PO / AFE:	735-005299-3
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): WT2401203 FH

ALS Contact: Rick H

Sampler: Zack C

Analysis Requ

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153/04 Metals/inorganics	PAHs	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	S-12598913- 011724-ZW-001	17-Jan-24	14:55	SOIL	1	-	X			
	S-12598913- " -002	"	15:05	SOIL	1	-	X			
	S-12598913- " -003	"	12:55	SOIL	2	X	X			
	S-12598913- " -004	"	13:10	SOIL	2	X	X			
	S-12598913- " -005	"	13:25	SOIL	2	X	X			
	S-12598913- " -006	"	13:49	SOIL	2	X	X			
	S-12598913- " -007	"	13:49	SOIL	2	X	X			
	S-12598913- " -008	"	14:10	SOIL	2	X	X			
	S-12598913- " -009	"	14:22	SOIL	2	X	X			
	S-12598913-			SOIL						
	S-12598913-			SOIL						
	S-12598913-			SOIL						

Field duplicate

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please include drop down MECP Standard list to compare data to criteria in excel file.

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☑ N/A Sample Custody Seals Intact: ☐ YES ☑ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				2.2			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Zack C	01/17/2024	15:45

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
TZ	17-Jan-24	15:35

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

SOL-489

CERTIFICATE OF ANALYSIS

Work Order	: **WT2402154**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-04	Date Samples Received	: 30-Jan-2024 15:15
PO	: 735-005299-3	Date Analysis Commenced	: 30-Jan-2024
C-O-C number	: ----	Issue Date	: 31-Jan-2024 13:55
Sampler	: Zack Claxton-Vandenberk		
Site	: ----		
Quote number	: 12598913-04-SSOW-735-005299-3		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Centralized Prep, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
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.

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

>: greater than.
<: less than.

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.

Analytical Results

WT2402154-001

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-013024-ZCV-001
Client sampling date / time: 30-Jan-2024 11:55

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	27.0	0.25	%	E144/WT	-	30-Jan-2024	1317594
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	98.8	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene-d12	1719-03-5	94.4	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene-d8	1146-65-2	88.6	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene-d10	1517-22-2	102	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575

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.

Analytical Results

WT2402154-002

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-013024-ZCV-004
Client sampling date / time: 30-Jan-2024 13:03

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	23.8	0.25	%	E144/WT	-	30-Jan-2024	1317594
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575

Analytical Results

WT2402154-002

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-013024-ZCV-004
Client sampling date / time: 30-Jan-2024 13:03

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	97.3	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene-d12	1719-03-5	94.2	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene-d8	1146-65-2	80.6	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene-d10	1517-22-2	99.1	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575

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.

Analytical Results

WT2402154-003

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-013024-ZCV-005
Client sampling date / time: 30-Jan-2024 13:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Physical Tests								
Moisture	----	22.4	0.25	%	E144/WT	-	30-Jan-2024	1317594
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Acenaphthylene	208-96-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Anthracene	120-12-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benz(a)anthracene	56-55-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(a)pyrene	50-32-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(b+j)fluoranthene	n/a	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(g,h,i)perylene	191-24-2	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Benzo(k)fluoranthene	207-08-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene	218-01-9	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Dibenz(a,h)anthracene	53-70-3	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluoranthene	206-44-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Fluorene	86-73-7	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 1-	90-12-0	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575

Analytical Results

WT2402154-003

Sub-Matrix:**Soil**
(Matrix: **Soil/Solid)**

Client sample ID: S-12598913-013024-ZCV-005
Client sampling date / time: 30-Jan-2024 13:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Methylnaphthalene, 1+2-	----	<0.050	0.05	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Methylnaphthalene, 2-	91-57-6	<0.030	0.030	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene	91-20-3	<0.010	0.010	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene	85-01-8	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Pyrene	129-00-0	<0.050	0.050	mg/kg	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Polycyclic Aromatic Hydrocarbons Surrogates								
Acridine-d9	34749-75-2	82.7	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Chrysene-d12	1719-03-5	101	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Naphthalene-d8	1146-65-2	90.2	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575
Phenanthrene-d10	1517-22-2	92.6	0.1	%	E641A/WT	30-Jan-2024	31-Jan-2024	1317575

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.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2402154**	Page	: 1 of 5
Client	: **GHD Limited**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 604 748 3661	Telephone	: +1 519 886 6910
Project	: 12598913-04	Date Samples Received	: 30-Jan-2024 15:15
PO	: 735-005299-3	Issue Date	: 31-Jan-2024 13:55
C-O-C number	: ----		
Sampler	: Zack Claxton-Vandenberk		
Site	: ----		
Quote number	: 12598913-04-SSOW-735-005299-3		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-001	E144	30-Jan-2024	----	----	----		30-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-004	E144	30-Jan-2024	----	----	----		30-Jan-2024	----	0 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-005	E144	30-Jan-2024	----	----	----		30-Jan-2024	----	0 days	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-001	E641A	30-Jan-2024	30-Jan-2024	60 days	0 days	✓	31-Jan-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-004	E641A	30-Jan-2024	30-Jan-2024	60 days	0 days	✓	31-Jan-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] S-12598913-013024-ZCV-005	E641A	30-Jan-2024	30-Jan-2024	60 days	0 days	✓	31-Jan-2024	40 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Moisture Content by Gravimetry	E144	1317594	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1317575	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Moisture Content by Gravimetry	E144	1317594	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1317575	1	12	8.3	5.0	✓
Method Blanks (MB)							
Moisture Content by Gravimetry	E144	1317594	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1317575	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
PAHs by Hex:Ace GC-MS	E641A	1317575	1	12	8.3	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
PAHs by Hex:Ace GC-MS	E641A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2402154**	Page	: 1 of 6
Client	: GHD Limited	Laboratory	: ALS Environmental - Waterloo
Contact	: Jennifer Balkwill	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 12598913-04	Date Samples Received	: 30-Jan-2024 15:15
PO	: 735-005299-3	Date Analysis Commenced	: 30-Jan-2024
C-O-C number	: ----	Issue Date	: 31-Jan-2024 13:55
Sampler	: Zack Claxton-Vandenberk 604 748 3661		
Site	: ----		
Quote number	: 12598913-04-SSOW-735-005299-3		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Waterloo Centralized Prep, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1317594)											
WT2401213-001	Anonymous	Moisture	----	E144	0.25	%	7.10	7.08	0.281%	20%	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1317575)											
WT2402174-001	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1317594)						
Moisture	----	E144	0.25	%	<0.25	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1317575)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1317594)									
Moisture	----	E144	0.25	%	50 %	97.8	90.0	110	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1317575)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	87.3	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	87.7	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	85.8	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	88.2	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	83.4	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	89.2	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	93.0	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	89.3	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	80.9	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	87.0	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	92.2	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	90.4	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	88.5	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	77.3	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	85.6	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	74.2	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	87.4	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	89.0	60.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1317575)										
WT2402174-001	Anonymous	Acenaphthene	83-32-9	E641A	0.369 mg/kg	0.5 mg/kg	92.9	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.367 mg/kg	0.5 mg/kg	92.4	50.0	140	----
		Anthracene	120-12-7	E641A	0.358 mg/kg	0.5 mg/kg	90.1	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.382 mg/kg	0.5 mg/kg	96.2	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.356 mg/kg	0.5 mg/kg	89.6	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.374 mg/kg	0.5 mg/kg	94.3	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.379 mg/kg	0.5 mg/kg	95.5	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.393 mg/kg	0.5 mg/kg	99.0	50.0	140	----
		Chrysene	218-01-9	E641A	0.385 mg/kg	0.5 mg/kg	97.0	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.366 mg/kg	0.5 mg/kg	92.2	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.389 mg/kg	0.5 mg/kg	98.0	50.0	140	----
		Fluorene	86-73-7	E641A	0.381 mg/kg	0.5 mg/kg	96.0	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.400 mg/kg	0.5 mg/kg	101	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.349 mg/kg	0.5 mg/kg	87.8	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.352 mg/kg	0.5 mg/kg	88.7	50.0	140	----
		Naphthalene	91-20-3	E641A	0.317 mg/kg	0.5 mg/kg	79.9	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.364 mg/kg	0.5 mg/kg	91.6	50.0	140	----
		Pyrene	129-00-0	E641A	0.371 mg/kg	0.5 mg/kg	93.3	50.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Canada Toll Free: 1 800 668 9878

Page of

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Jennifer Balkwill
Phone:	519-884-0510
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: jennifer.balkwill@ghd.com

Email 2: See SSOW/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accountspayableCDN@ghd.com

Email 2:

Turnaround Time (TAT) Requested

☐ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☒ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
Same day [E2] if received by 10am M-S - 200% rush surcharge. A
fees may apply to rush resuests on weekends, statutory holidays an
routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the

Analysis Requ

Environmental Division
Waterloo
Work Order Reference
WT2402154

Telephone : +1 519 886 6910

Project Information	
ALS Account # / Quote #:	WT2022GHDL1000234
Job #:	12598913-04
PO / AFE:	735-005299-3
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): WT2402154 CM

ALS Contact: Rick H

Sampler: Zack C-V

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	PAHs	SAMPLES ON HOLD	EXTENDED STORAGE RE	SUSPECTED HAZARD (se
	S-12598913-013024-ZW-001	30-Jan-24	11:55	SOIL	1	X			
	S-12598913-013024-ZW-004	30-Jan-24	13:03	SOIL	1	X			
	S-12598913-013024-ZW-005	30-Jan-24	13:20	SOIL	1	X			
				SOIL					
				SOIL					
				SOIL					
				SOIL					
				SOIL					
				SOIL					
				SOIL					
				SOIL					
				SOIL					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☐ NO

Are samples for human consumption/ use?
☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please include drop down MECP Standard list to compare data to criteria in excel file.

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				3.8			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Zack C-V	Jan 30, 2024	15:15

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
CM	Jan 30/24	15:15

AUG 2020 FRONT

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

CM SOL- 627

Appendix E

Analytical Data Verification Memorandum

Data Verification Report

20 February 2024

To	Greg Brooks	**Project No.**	12598913
Copy to	Chris Heij, Laura Bender, Steve Harris, Terra MacMillan	**DVR No.**	01
From	Jennifer Balkwill	**Contact No.**	+1 519 884-0510
Project Name	Schlegel Urban-Phase I ESA-Woolwich, ON	**Email**	jennifer.balkwill@ghd.com
Subject	Data Quality Assessment and Verification Listowel Road and Arthur Street South Development Lands Elmira, Ontario Schlegel Urban Developments Corp.		

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

Laboratory:	ALS Canada Ltd. (ALS)				
Lab Job No.:	WT2304664, WT2304876, WT2304877, WT2305360, WT2306573, WT2306784, WT2225373, WT2305801, WT2311679, WT2311844, WT2311846, WT2312825, WT2401203, WT2402154				
Date(s) Sampled:	December 2022 – January 2024				
Media Sampled:	Soil, Potable Water and Groundwater				
QA/QC	**Criteria**	**Pass**	**Qualifiers**	**Fail**	**N/A**
Holding Times	Analyte specific	☐	☒	☐	☐
Temperature	<10ºC at receipt	☒	☐	☐	☐
Sample Preservation	Required container/preservatives	☒	☐	☐	☐
Field Duplicate (blind)	Within 100%/2xRL (soil)	☐	☒	☐	☐
Field Blank (blind)	Non detect	☐	☐	☐	☒
Trip Blank	Non detect	☒	☐	☐	☐
Lab QA/QC	Within standard recoveries	☐	☒	☐	☐

The following results are qualified based on analytical interferences:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2225373	12/16/2022	S-12598913-121622-JPF-003	Chrysene	0.055	J+	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-004	Chrysene	0.084	J+	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-005	Chrysene	0.058	J+	mg/kg

The following results are qualified due to holding time exceedance:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F2 (C10-C16)	10	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F2 minus Naphthalene	25	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F3 (C16-C34)	383	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F3 minus PAH	378	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F4 (C34-C50)	498	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-007	Petroleum hydrocarbons F4 gravimetric - silica gel (GHH)	2070	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F2 (C10-C16)	12	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F2 minus Naphthalene	25	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F3 (C16-C34)	404	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F3 minus PAH	402	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F4 (C34-C50)	399	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-008	Petroleum hydrocarbons F4 gravimetric - silica gel (GHH)	1540	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F2 (C10-C16)	12	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F2 minus Naphthalene	25	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F3 (C16-C34)	407	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F3 minus PAH	406	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F4 (C34-C50)	367	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-009	Petroleum hydrocarbons F4 gravimetric - silica gel (GHH)	1350	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F2 (C10-C16)	12	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F2 minus Naphthalene	25	UJ	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F3 (C16-C34)	411	J	mg/kg

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F3 minus PAH	410	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F4 (C34-C50)	354	J	mg/kg
WT2225373	12/16/2022	S-12598913-121622-JPF-010	Petroleum hydrocarbons F4 gravimetric - silica gel (GHH)	1630	J	mg/kg

The following results are qualified based on laboratory control standard acceptance violations:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2311844	05/04/2023	S-12598913-050423-ZCV-001	Boron	8.4	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-002	Boron	7.1	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-003	Boron	6.9	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-004	Boron	5.3	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-005	Boron	6.0	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-006	Boron	8.4	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-007	Boron	6.8	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-008	Boron	8.6	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-009	Boron	8.5	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-010	Boron	8.2	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-011	Boron	10.8	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-012	Boron	7.0	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-013	Boron	5.4	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-014	Boron	6.7	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-015	Boron	11.6	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-016	Boron	5.0	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-017	Boron	5.5	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-019	Boron	5.6	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-021	Boron	9.0	J+	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-022	Boron	7.3	J+	mg/kg
WT2311846	05/04/2023	GW-12598913-050423-ZCV-001	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20	UJ	µg/L
WT2311846	05/04/2023	GW-12598913-050423-ZCV-002	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20	UJ	µg/L

The following results are qualified based on matrix spike recovery outlier:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2305360	03/06/2023	GW-12598913-230306-JB-UA1	Arsenic (dissolved)	0.18	J+	µg/L

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2305360	03/06/2023	GW-12598913-230306-JB-UA1(S)	Arsenic (dissolved)	0.62	J+	µg/L
WT2305360	03/06/2023	GW-12598913-230306-JB-UA2	Arsenic (dissolved)	0.28	J+	µg/L
WT2305360	03/06/2023	GW-12598913-230306-JB-UA3	Arsenic (dissolved)	0.27	J+	µg/L
WT2305360	03/06/2023	GW-12598913-230306-JB-UA4	Arsenic (dissolved)	0.32	J+	µg/L
WT2305360	03/06/2023	GW-12598913-230306-JB-DUP01	Arsenic (dissolved)	0.25	J+	µg/L
WT2311844	05/04/2023	S-12598913-050423-ZCV-001	2,4'-DDT	0.00090	UJ	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-001	4,4'-DDT		R	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-001	Methoxychlor		R	mg/kg

The following results are qualified due to laboratory duplicate variability:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2311844	05/04/2023	S-12598913-050423-ZCV-021	4,4'-DDD	0.00123	J	mg/kg

The following results are qualified due to field duplicate variability:

Lab Report #	Sample Date (mm/dd/yyyy)	Sample ID	Analyte	Result	Qualifier	Units
WT2304664	02/24/2023	S-12598913-022423-CH-004	Beryllium	0.46	J	mg/kg
WT2304664	02/24/2023	S-12598913-022423-CH-005	Beryllium	0.80	J	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-008	Total DDE	0.00313	J	mg/kg
WT2311844	05/04/2023	S-12598913-050423-ZCV-009	Total DDE	0.00171	J	mg/kg

Conclusion:

Based on the assessment detailed in the foregoing, the data summarized are acceptable with the specific qualifications and exceptions noted above.

Notes:

N/A - Not Applicable

QA/QC - Quality Assurance/Quality Control

RL - Reporting Limit

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

J+ - The result is an estimated quantity, but the result may be biased high.

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

PAHs - Polycyclic aromatic hydrocarbons

Data verification reference documents:

1. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, September 2016.
2. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-94-013, September 2016.

Regards



Jennifer Balkwill
Data Management - Data Validator

