871 Equestrian Court, Unit 1, Oakville, ON L6L 6L7
Tel: 647-795-8153 | www.pecg.ca

Phase Two Environmental Site Assessment (ESA)

Black Bear Ridge Golf & Resort

449-501 Harmony Road, Corbyville, ON

Project #
2200902

Prepared For
Black Bear Ridge GP Inc.

August 2, 2024

871 Equestrian Court, Unit 1, Oakville, ON L6L 6L7
Tel: 647-795-8153 | www.pecg.ca

August 2, 2024

Alex Sharpe
Black Bear Ridge GP Inc.
501 Harmony Road
Corbyville, ON K0K 1V0

Dear Alex Sharpe:

Re: Phase Two Environmental Site Assessment, Black Bear Ridge Golf & Resort, 449-501 Harmony Road, ON
Project #: 2200902

We are pleased to present our Phase Two Environmental Site Assessment (ESA) report for the above-noted property. The scope of this Phase Two ESA conforms to the requirements outlined in Ontario Regulation 153/04 and 407/19. The purpose of this Phase Two ESA was to support a zoning approval application with the City of Belleville and is required to support filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP).

The report provides information from Palmer's site reconnaissance, drilling activities, soil and ground water sampling, review of laboratory certificate of analysis, and our conclusions for your consideration.

We trust that this report will be satisfactory for your current needs. If you have any questions or require further information, please contact our office at your convenience.

Yours truly,

Sarah Vlantis, B.Sc., P.Geo (limited), QP_{ESA}
Team Lead, Land Quality & Remediation

Executive Summary

Palmer is pleased to provide this Phase Two Environmental Site Assessment (ESA) report to Black Bear Ridge GP Inc. The Phase Two ESA was prepared for the parcel of land located at 449-501 Harmony Road, Corbyville, ON (hereafter collectively referred to as the “Phase Two Property”).

It is Palmer’s understanding that the purpose of this Phase Two ESA is to support a zoning approval application with the City of Belleville and is required to support filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP). The Phase Two Property (also referred to as the "Subject Property" or "Site") is contemplated for residential redevelopment. This Phase Two ESA Report has been prepared in accordance with Schedule E of Ontario Regulation 407/19 (amending Ontario Regulation 153/04) under the Environmental Protection Act (EPA).

The Phase Two Property is a 76.5-hectare, irregular shaped, parcel of land located on the north side of Harmony Road, west of the intersection with Highway 37 in Corbyville, Ontario. The Site is operating as Black Bear Golf Club and has eleven (11) building structures which include one (1) retail store, two (2) conference buildings including a snack bar, one (1) detached bathroom, one (1) water filter shed, one (1) cart storage garage, one (1) pumphouse, one (1) golf equipment shed, and three (3) cabins. All buildings are constructed slab-on-grade. The remaining parts of the Site comprise asphalt-paved, grass, and gravel surfaced areas, as well as a woodlot and agricultural lands.

Based on the findings of our recently completed Phase One ESA, the Phase One Study Area (“surrounding area”) covers land uses within a 250 metre (m) radius of the Phase One Property. The Phase One Study Area is partly developed with residential, parkland, institutional, and community land uses.

No areas of natural significance exist on the subject property or Phase One Study Area. Several man-made ponds were observed on the northwestern and southeastern portions of the subject property. Additionally, two (2) wetlands were observed in the northern, southern and eastern portions of the Site. A portion of the southern wetland is considered to be provincially significant. A tributary of the Moira River intersects the southern portion of the site and flows southwestward to the Moira River.

Historically, the Site was first developed in 1956 with two narrow roads and small buildings or structures. The property continued to be developed, with the construction of several man-made ponds starting in 1987. The current golf course operations were fully developed by 2011.

Based on the findings of the historical records review, Site reconnaissance, and personal interviews, it was concluded that four (4) potentially contaminating activities (PCAs) were identified either on the Phase Two Property or within the Phase One Study Area. These PCAs were deemed to be contributing to four (4) areas of potential environmental concern (APECs) on the Phase Two Property. The identified PCAs and APECs are as follows:

Table A. Summary of APECs and PCAs

APEC	Location of APEC on the Phase One Property	PCA	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern (COPC)	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
APEC #1: Golf Course Operations	North and Eastern Portions of Phase One Property	#40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing and Bulk Storage	On-Site – The Phase Two Property currently operates as Black Bear Ridge Golf & Resort since the early 1990s. Reportedly, several pesticides, herbicides, and fungicides are applied to the golf course portion of the Phase Two Property several times throughout the year	Organochlorine (OC) Pesticides	Soil and Ground Water
APEC #2: Fill Materials of Unknown Quality	North and Eastern Portions of Phase One Property	#30: Importation of Fill Materials of Unknow Quality	On-Site- Fill materials of unknown quality were imported to site during site development of the golf course in the 1990s.	Petroleum Hydrocarbon (PHCs), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Volatile Organic Compounds (VOCs), Metals, As, Sb, Se, Cyanide (CN-), Hexavalent Chromium (Cr(VI)), Mercury (Hg), pH, Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR)	Soil
APEC #3: Former Railway Tracks	Western Portion of Phase One Property	#46: Rail Yards, Tracks and Spurs	On-Site – A historic railway corridor was located in the western portion of the Phase Two Property.	Polycyclic Aromatic Hydrocarbons (PAHs)	Soil and Ground Water
APEC #4: Agricultural Land	Western Portion of Phase One Property	#40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing and Bulk Storage	On-Site – Agricultural land use where application of pesticides has likely occurred since the early 2000s.	OC Pesticides	Soil and Ground Water

A Phase Two ESA was recommended to assess potential subsurface impacts as a result of the aforementioned PCAs and APECs.

The Phase Two ESA entailed the drilling of a total of twelve (12) sampled boreholes to depths ranging between 2.49 to 7.70 metres below ground surface (mbgs) at strategically selected and accessible locations on the Phase Two Property. Ground water monitoring wells were also installed in all twelve (12) boreholes.

The observed soil stratigraphy generally comprised surficial grass overlying topsoil, silt, sand, clayey silt, sandy silt, gravelly sand, silty clay, or silty sand fill, which was underlain by a stratum of sand, gravel, gravelly sand, clayey silt, silty sand, silty clay or sandy silt till. The soil across the property is considered to be coarse-textured for the purpose of this assessment.

Fieldwork for this investigation began on July 24, 2023 by soil sampling from a total of nine (9) exterior boreholes drilled to depths of 2.49 to 6.89 m below existing grade with the installation of nine (9) monitoring wells. The stabilized ground water levels were measured at depths of 0.56 to 3.75 m below existing grade. No free-product was measured in any of the monitoring wells.

Additional field work was conducted on September 1, 2023 by soil sampling from a total of three (3) exterior boreholes drilled to depths of 3.15 to 4.60 m below existing grade with the installation of three (3) monitoring wells. The stabilized ground water levels were measured at depths of 0.56 to 1.41 m below existing grade. No free-product was measured in any of the monitoring wells.

Based on the site topography and ground water level measurements, the ground water flow is interpreted to flow across the Site in a southerly direction. The results of the ground water monitoring also indicate that the primary near surface water table resides within the native (till) layer.

Twenty-three (23) soil samples (representative of fill and native soils) and thirteen (13) ground water samples were collected and submitted for laboratory analyses.

In comparison with the new (2011) Ontario *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the* EPA criteria, the results of laboratory analyses revealed that all contaminant concentrations in the soil and ground water met the Table 1 Site Condition Standards (SCS).

As the soil and ground water analytical results do not exceed the Table 1 SCS, no appreciable impacts to the subsurface or other environmental concern have been identified in association with the Phase Two Property. Therefore, in our opinion, no further actions are warranted at this time.

The statements made in this Executive Summary are subject to the same limitations as contained in the report and should be read in conjunction with the entire report.

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1. Introduction

Palmer was retained by Black Bear Ridge GP Inc. (the 'Client') to conduct a Phase Two Environmental Site Assessment (ESA) for the parcel of land located at 449-501 Harmony Road, Corbyville, ON (hereinafter referred to as the 'Phase Two Property'), as shown in **Drawing 1**.

It is Palmer's understanding that the purpose of this Phase Two ESA is to support a zoning approval application with the City of Belleville and is required to support filing of a Record of Site Condition (RSC) with the Ministry of the Environment, Conservation and Parks (MECP). The Phase Two Property (also referred to as the "Subject Property" or "Site") is contemplated for residential redevelopment. The Phase Two ESA Report has been prepared in accordance with Schedule E of Ontario Regulation 407/19 (amending Ontario Regulation 153/04) under the Environmental Protection Act (EPA).

The assessment consisted of a program of drilling, sampling, laboratory analysis and evaluation of results which characterized the subsurface conditions beneath the Site to establish any environmental contamination affecting the Site.

Conditions noted in this report are general in nature. This report presents the results of the investigation and the conclusions we have drawn regarding the possible impact of the conditions observed.

1.1 Phase Two Property Description

The Phase Two Property is a 76.5-hectare, irregular shaped, parcel of land located on the north side of Harmony Road, west of the intersection with Highway 37 in Corbyville, Ontario. The Site is currently operating as Black Bear Golf Club and has eleven (11) building structures which include one (1) retail store, two (2) conference buildings including a snack bar, one (1) detached bathroom, one (1) water filter shed, one (1) cart storage garage, one (1) pumphouse, one (1) golf equipment shed, and three (3) cabins. All buildings are constructed on-grade. The remaining parts of the Site comprise asphalt-paved, grass, and gravel surfaced areas, as well as a woodlot.

The subject property is located west of Highway 37, as shown in **Drawing 1** and the photograph appendix. The municipal address is 501 Harmony Road, Corbyvile, ON and has three (3) Property Identification Numbers (PINs). The legal description and PINs of the Phase Two Property includes:

- Part of Lot 9 Concession 5, Thurlow Part 1 21R4660, City of Belleville, County of Hastings, Province of Ontario; with PIN 40525-0213 (LT);
- Part of Lot 10, Concession 5, Thurlow, Part 1, 2, 3, 4, 5 21R22509; T/W Easement over Part 6, 7, 8, 9, 10, 11 21R22509 as in HT42508; S/T Easement over Part 2 21R22509 in favour of Part 1, 21R0313 & Part of Lot 8 Concession 5 as in QR56468 & Part 1 21R0119 & Part of Lot 10, Concession 5 as in QR498154 & Part of Lot 11 Concession 5, as in QR37428 and QR608086 Partially Released by HT147417 and Part 2 21R4660 as in HT42509, City of Belleville, Province of Ontario with PIN 40527-0164 (LT); and,

- Part of Lot 9, Concession 5 Thurlow Lying East of CNR as in QR547504 & Part 1, 21R20229; Part of Lot 10, Concession 5, Thurlow as in QR498154 Except Parts 1 to 5, 21R22509, Part of Lot 11, Concession 5 Thurlow as in QR374288, Part of Lot 11, Concession 5, Thurlow, QR608086 Except Part 1, 21R24097; Subject to an Easement As in QR126142; Subject to an Easement Over Parts 7 to 11; 21R22509 in Favor of Parts 1 to 5, 21R22509 as in HT42508; Subject to an Easement over Part 6, 21R22509 in Favor of Parts 1 to 5, 21R22509 as in HT42508; Subject to an Easement as in QR374288; Subject to an Easement as in QR84333; Together with an easement over Part 2, 21R22509 as in HT42509; City of Belleville, Province of Ontario with PIN 40527-0181 (LT).

The center of the combined area of the Phase Two Property is located in UTM Zone 17, with approximate coordinates of Easting 307687.57 m and Northing 4902951.17 m.

1.2 Property Ownership

At the time of the investigation, the Phase Two Property was owned by Black Bear Ridge GP Inc. and 449 Harmony Road Inc. The authorization for Palmer to proceed with the Phase Two ESA was given by Alex Sharpe of Black Bear Ridge GP Inc. The contact information for the proponent is provided below:

Company Name:	Black Bear Ridge GP Inc.
Company Address:	501 Harmony Road, Corbyville, ON, K0K 1V0
Contact Name:	Alex Sharpe
Contact email:	asharpe@blackbearridge.ca

1.3 Current and Proposed Future Uses

Historically, the Site was first developed in 1956 with two narrow roads and small buildings or structures/barns. The property continued to be developed, with the construction of several man-made ponds starting in 1967. The current golf course operations were fully developed by 2011.

The current and proposed land uses are as follows:

Current or Proposed	Description of Property Use
Current	Parkland – Currently operating as Black Bear Ridge Golf Club
Proposed	Residential– Expanding a portion of Black Bear Ridge Golf & Resort for residential development

1.4 Applicable Site Condition Standards

Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act as amended - “O.Reg. 153/04, as amended” - establishes the legislative and regulatory requirements for contaminated sites in Ontario. The Ministry of Environment, Conservation and Parks (MECP) document “Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act,” dated April 15, 2011 sets out the prescribed contaminants and applicable Site Condition Standards (SCS) for those contaminants for the purposes of O. Reg. 153/04, as amended. The MECP SCS are set out in Tables 1 to 9 criteria applicable for various site conditions.

The selection of the appropriate MECP SCS for a Phase Two ESA is dependent upon several site-specific conditions, such as the existing/proposed property use, the existing/potential ground water use, the depth of clean-up, soil texture, depth to bedrock and proximity to the nearest body of water.

The MECP SCS applicable to the Site have been evaluated on the basis of the following rationale:

Site Sensitivity:

- A portion of the wetland identified along the southern boundary of the Phase Two Property is considered to be provincially significant. In addition, a tributary of the Moira River intersects the southern portion of the Phase Two Property. As such, the Site is considered environmentally significant;
- The borehole drilling program revealed that the bedrock is deeper than 7.70 metres (m) below existing grade across the Site;
- The glacially-derived native sand, gravel, gravelly sand, clayey silt, silty sand, silty clay or sandy silt materials are of moderate permeability to depths up to at least 7.70 m below ground surface; and
- The subsurface soil pH values are between 7.67 and 7.90. Seven (7) soil samples (and one duplicate soil sample) were collected on July 24, 25, 26 and 27, 2023 at BH/MW23-2, BH/MW23-3, BH/MW23-4, BH/MW23-7, BH/MW23-8 and BH/MW23-11 between the 0.76 and 1.52 m below existing grade, to determine the soil pH for the Phase Two Property.

Land Use:

- The subject site is currently developed with eleven (11) building structures to support parkland land uses. Proposed residential redevelopment of a portion of the Site is anticipated.

Ground Water Use:

- The site's water supply is currently derived from potable wells.

Depth and Soil Texture:

- For the purpose of the report, the assessment criteria corresponding to the full depth option will be used for comparison to the laboratory analytical results.
- One soil sample was collected on July 27, 2023 at the location of BH/MW23-4 between 2.29 and 3.05 m below existing grade, to determine the soil grain size for the Phase Two Property.
- Based upon field observations, and soil grain size analyses conducted by ALS Environmental, the site stratigraphy generally comprises 11 % gravel, 12% coarse sand, 25% medium sand, and 25% fine sand. Grain size analyses was also conducted by Palmer on additional six (6) samples. The stratigraphy generally comprised of an average of 22.5% gravel, 39.2% sand, 7.2% clay and 31.2% silt. Therefore, for the purpose of this report, the assessment criteria corresponding to coarse-textured soils were selected for comparison in laboratory analytical results.

- The selected soil texture is applicable to at least one-third of the Site being assessed. Therefore, the coarse-textured soil SCS can be used, as per Ontario Regulation 153/04, s.42 (1).

Based on the above information, the applicable EPA site assessment criteria selected for use at this Site is the Full Depth Background SCS (Table 1) criteria for residential/parkland/institutional/industrial/commercial/ community (RPIICC) land uses.

2. Background Information

The environmental investigation conducted at the Site and the details of our findings are outlined in **Section 3**. The Phase Two ESA was conducted at the Site to address the APECs identified by the Palmer 2023 Phase One ESA for the Site.

2.1 Physical Setting

The Phase Two Property is located at a topographic elevation of approximately 120 m above mean sea level (masl). Topography at and in the general vicinity of the Site is relatively flat with a drop in elevation to the southwest, as shown in **Figure 8.2.1**.

The Phase Two Property is located within the broad physiographic region known as the Napanee Plain (Chapman and Putnam, 1984). This region generally comprises a flat to undulating plain of limestone that was mostly stripped of overburden by glacial action, with localized glacial till deposits occurring in valleys incised into the rock surface.

Local surficial geologic mapping (The Ontario Geological Survey, 2003) of the Belleville area indicates that stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain and organic deposits of peat, muck and mark, underlie the Phase Two Property.

Bedrock geologic mapping of Ontario (The Ontario Geological Survey, 1990) indicates that the glacially derived overburden soil at the Phase Two Property is underlain by middle Ordovician Age bedrock consisting of limestones, dolostones, arkose, sandstone and shales of the Bobcaygeon, Gull River and Verulam Formations.

No areas of natural significance exist on the subject property or Phase One Study Area. Several man-made ponds were observed on the northwestern, and southeastern portions of the subject property. Two (2) wetlands were observed on the subject property. These wetlands are located in the northern portion of the site, and the southern and eastern portions of the site. A portion of the southern wetland is considered to be provincially significant. A tributary of the *Moira River* intersects the southern portion of the site and flows southwestward to Moira River. The regional ground water flow is surmised to be also directed southwestward due to the influence of Moira River. The local hydrogeology is controlled by this waterbody, the underlying geology, and the topography and is surmised to be directed southwestward. The static ground water level beneath the Phase Two Property was measured to be between 0.56 and 3.75 m below existing grade.

There are no well-head protection areas or other designation identified by the Municipality in its official plan for the protection of ground water on the Phase Two Property or within the Phase One Study Area.

The Phase Two Property is serviced by drinking water wells. There are thirty-three (33) well records for the Phase One Property and eighty-six (86) records for the 250 m search radius. The records relate to domestic, observation, public and abandoned wells advanced to a maximum depth of 32.3 m below the ground surface in the vicinity of the Phase One Property.

2.2 Past Investigations

One (1) report relating to environmental conditions at the Phase Two Property was reviewed. A summary of the description of relevant report data, analysis, and findings relevant to the Phase Two ESA, including the presence of a contaminant on, in, or under the Phase Two Property or the existence of an area of potential environmental concern is as follows:

Report Title: Phase One Environmental Site Assessment (ESA) Black Bear Ridge Golf & Resort 449-501 Harmony Road, Corbyville
Date: August 1, 2023
Prepared by: Palmer Environmental Consulting Group
Prepared for: Black Bear Ridge GP Inc

A Phase One ESA was completed for 449-501 Harmony Road, Corbyville, Ontario to support a zoning approval application with the City of Belleville and to support filing a Record of Site Condition (RSC). The Phase One Property is a 76.5-hectare, irregular shaped, parcel of land located on the north side of Harmony Road. The Site is operated as Black Bear Golf Club with eleven (11) building structures which include one (1) retail store, two (2) conference buildings including a snack bar, one (1) detached bathroom, one (1) detached bathroom, one (1) water filter shed, one (1) cart storage garage, one (1) pumphouse, one (1) golf equipment shed, and three (3) cabins.

Based on the findings of the historical records review, site reconnaissance, and interview; PCAs and APECs were identified in association with the Phase One Property and/or Phase One Study Area. The PCAs are associated with the golf course operations with applications of pesticides, fill materials of unknown quality imported to site during development of the golf course, former railway tracks, and agricultural land with pesticide applications. Refer to Table A in the Executive Summary of this report.

A Phase Two ESA was recommended to assess any subsurface impacts as a result of the PCAs and APECs identified in the Phase One ESA.

3. Scope of the Investigation

The Phase Two ESA Report has been prepared in accordance with Schedule E of Ontario Regulation 407/19 (amending Ontario Regulation 153/04) under the Environmental Protection Act (EPA). It is Palmer's understanding that the purpose of this Phase Two ESA was to support a zoning approval application with the City of Belleville and is required to support filing of a RSC with MECP. The Phase Two Property is contemplated for residential redevelopment.

3.1 Overview of Site Investigation

To address the APECs identified in the Palmer 2023 Phase One ESA, Palmer conducted a Phase Two ESA consisting of drilling boreholes, installing monitoring wells, and sampling and chemical testing of soil and ground water samples during the Phase Two ESA investigation.

Twelve (12) boreholes (BH/MW23-1 through to BH/MW23-12) were advanced across the Site. All of the twelve (12) boreholes were completed as monitoring wells.

The rationale for the selection of borehole/monitoring well locations is shown on **Table 1** below:

Table 1. APEC Locations and Associated Boreholes and Monitoring Wells

Areas of Potential Environmental Concern	Location on Site	Sample Location / Sample ID
APEC 1 (Associated with golf course operations)	North and Eastern Portions of Phase One Property	BH/MW23-2, BH/MW23-3, BH/MW23-4, BH/MW23-7, BH/MW23-8 and BH/MW23-11
APEC 2 (Associated with fill materials of unknown quality)	North and Eastern Portions of Phase One Property	BH/MW23-2, BH/MW23-3, BH/MW23-4, BH/MW23-7, BH/MW23-8 and BH/MW23-11
APEC 3 (Associated with former railway tracks)	Western Portion of Phase One Property	BH/MW23-1, BH/MW23-2, BH/MW23-5, BH/MW23-6 BH/MW23-10 and BH/MW23-12
APEC 4 (Associated with agricultural land)	Western Portion of Phase One Property	BH/MW23-1, BH/MW23-5 and BH/MW23-9

The scope of work for this Phase Two ESA included the following tasks:

- Planned a site investigation through the preparation of a Sampling and Analysis Plan (refer to **Appendix A1**).
- Acquired utility locates: Prior to the advancement of the boreholes, arranging for the location of underground and overhead utilities including electrical (hydro), natural gas, water supply, sanitary and storm sewer, telephone, cable and communication. Underground utilities were marked by local utility locates company representatives, and a private locator, Check Mark Locates, was retained to clear the borehole locations prior to drilling of the boreholes.
- Mobilized, drilled, and logged twelve (12) sampled boreholes to depths of 2.49 to 7.70 metres below ground surface (mbgs).

- Installed 50-mm diameter perforated polyvinyl chloride (PVC) ground water monitoring wells in twelve (12) of the boreholes. All ground water monitoring wells were installed with 3.05 m of slotted PVC intake screen.
- Screened soil sample head-space for soil vapours using a portable photo ionization detector (PID) *RKI Eagle 2*.
- Measured the static ground water levels in the twelve (12) monitoring wells.
- Completed an elevation survey of the twelve (12) monitoring wells to obtain a ground water elevation measurement to confirm ground water flow direction at the Site at the time of the field investigation.
- Purged three (3) well casing volumes from each monitoring well or until each well was dry and collected ground water samples from the twelve (12) monitoring wells.
- Submitted soil and ground water samples under Chain of Custody protocol to an accredited laboratory to carry out chemical analysis for contaminants of potential concern in accordance with O.Reg. 153/04 - "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*" published by the MECP and dated March 9, 2004, as amended by O. Reg. 511/09, s. 22 ("Analytical Protocol").
- Reviewed and interpreted laboratory results of chemical analysis data and observations made during the site investigation.
- Completed an evaluation of the information from the above and preparing a Phase Two Conceptual Site Model (CSM) to identify locations and concentrations of contaminants (if any) above the applicable SCS at the Site.
- Prepared a Phase Two ESA report of the investigation findings, conclusions, and recommendations.

3.2 Media Investigated

The Phase Two ESA included the investigation of soil and ground water at the Site.

Soil and ground water samples were selected for chemical analysis to determine whether any contaminants of potential concern (COPCs) were present in the soil and ground water in the locations of the APECs, outlined in the Palmer 2023 Phase One ESA.

A total of twenty-three (23) soil samples, including four (4) duplicate soil samples, and thirteen (13) ground water samples, including two (2) duplicate ground water samples and one (1) trip blank sample, were submitted to ALS Environmental, for analysis of various COPCs to investigate the soil and ground water quality related to the aforementioned APECs. These COPC included PHCs, PAHs, VOCs, metals and inorganic parameters (As, Sb, Se, Na, Cl-, CN-, Cr(VI), Hg, low or high pH, EC and SAR), and Organochlorine (OC) Pesticides. Borehole and monitoring well locations are presented in **Drawing 2**.

3.3 Phase One Conceptual Site Model

Site Description

The Phase One Property is a 76.5- hectrare, irregular shaped, parcel of land located on the north side of Harmony Road, west of the intersection with Highway 37 in Corbyville, Ontario. The Site has eleven (11) building structures which include one (1) retail store, two (2) conference buildings including a snack bar, one (1) detached bathroom, one (1) water filter shed, one (1) cart storage garage, one (1) pumphouse, one (1) golf equipment shed, and three (3) cabins. All buildings are constructed slab-on-grade. The remaining parts of the Site comprise asphalt-paved, grass, and gravel surfaced areas, as well as a woodlot.

Historically, the Site was first developed in 1956 with two narrow roads and small buildings or structures. The property continued to be developed, with the construction of several man-made ponds starting 1987. The golf course was fully developed by 2011.

Water Bodies / Areas of Natural Significance

No areas of natural significance exist on the subject property or Phase One study area. Several man-made ponds were observed on the northwestern, and southeastern portions of the subject property. Two (2) wetlands were observed on the subject property. These wetlands are located in the northern portion of the site, and the southern and eastern portions of the site. A portion of the southern wetland is considered to be provincially significant. A tributary of the *Moira River* intersects the southern portion of the site and, flows southwestward to the *Moira River*.

Drinking Water Wells

There are thirty-three (33) drinking water well records for the Phase One Property and eighty-six (86) records exist for the 250 m search radius. The records for Phase One Study Area relate to domestic, observation, public and abandoned wells.

Neighboring Land Use

The Phase One Study Area is partly developed with parkland, residential, community and institutional land uses, as presented in **Drawing 2**.

Areas of Potential Environmental Concerns (APECs)

Based on the findings of the historical record review, Site reconnaissance, and interviews, any APECs located on the Phase One Property and within the Phase One Study Area are labeled and located, as shown in **Drawing 3**. The following Potentially Contaminating Activities (PCAs) were found to be associated with the current or historical land uses of the Phase One Property and/or Phase One Study Area:

APEC	Location of APEC on the Phase One Property	PCA	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern (COPC)	Media Potentially Impacted (Ground Water, Soil and/or Sediment)
APEC #1: Golf Course Operations	North and Eastern Portions of Phase One Property	#40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing and Bulk Storage	On-Site – The Phase One Property currently operates as Black Bear Ridge Golf & Resort since the early 1990s. Reportedly, several pesticides, herbicides, and fungicides are applied to the golf course portion of the Phase One Property several times throughout the year	Organochlorine (OC) Pesticides	Soil and Ground Water
APEC #2: Fill Materials of Unknown Quality	North and Eastern Portions of Phase One Property	#30: Importation of Fill Materials of Unknow Quality	On-Site- Fill materials of unknown quality were imported to site during site development of the golf course in the 1990s.	Petroleum Hydrocarbon (PHCs), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Volatile Organic Compounds (VOCs), Metals, As, Sb, Se, Cyanide (CN-), Hexavalent Chromium (Cr(VI)), Mercury (Hg), pH, Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR)	Soil
APEC #3: Former Railway Tracks	Western Portion of Phase One Property	#46: Rail Yards, Tracks and Spurs	On-Site – A historic railway corridor was located in the western portion of the Phase One Property.	Polycyclic Aromatic Hydrocarbons (PAHs)	Soil and Ground Water
APEC #4: Agricultural Land	Western Portion of Phase One Property	#40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing and Bulk Storage	On-Site – Agricultural land use where application of pesticides has likely occurred since the early 2000s.	OC Pesticides	Soil and Ground Water

No additional PCAs considered to pose an APEC to the Phase One Property were identified in association with the Phase One Study Area.

Description of Assessment

PCAs with known or potential to affect the Phase One Property are as follows:

PCA Location	Location of APEC on the Phase One Property	Contaminants of Concern	Impact to Phase One Property (Known or Potential)
Phase One Property	North and Eastern Portions of Phase One Property	Organochlorine (OC) Pesticides	Potential
Phase One Property	North and Eastern Portions of Phase One Property	Petroleum Hydrocarbon (PHCs), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Volatile Organic Compounds (VOCs), Metals, As,	Potential

PCA Location	Location of APEC on the Phase One Property	Contaminants of Concern	Impact to Phase One Property (Known or Potential)
		Sb, Se, Hot-Water Soluble Boron (B-HWS), Cyanide (CN-), Hexavalent Chromium (Cr(VI)), Mercury (Hg), pH, Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR)	
Phase One Property	Western Portion of Phase One Property	Polycyclic Aromatic Hydrocarbons (PAHs)	Potential
Phase One Property	Western Portion of Phase One Property	OC Pesticides	Potential

No additional PCAs considered to pose an APEC to the Phase One Property were identified in association with the Phase One Study Area.

Underground utilities are expected to be present on the subject property (sanitary sewer, storm sewer, onsite potable well and septic system water, natural gas, telephone, electricity) and could potentially act as preferential pathways.

Local surficial geologic mapping of the Belleville area indicates that stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain and organic deposits of peat, muck and mark, underlie the Phase One Property.

No areas of natural significance exist on the subject property or Phase One study area. Several man-made ponds were observed on the northwestern, and southeastern portions of the subject property. Two (2) wetlands were observed on the subject property. These wetlands are located in the northern portion of the site, and the southern and eastern portions of the site. A portion of the southern wetland is considered to be provincially significant. A tributary of the *Moira River* intersects the southern portion of the site and, flows southwestward to Moira River. The local hydrogeology is controlled by this waterbody, the underlying geology, and the topography and is surmised to be directed southwestward.

It is not expected that any uncertainty or absence of information would affect the validity of the Conceptual Site Model (CSM).

3.4 Deviations from Sampling and Analysis Plan

The field investigation and sampling program was carried out following the requirements of the Sampling and Analysis Plan (SAP) (shown in **Appendix A1**) with the following exceptions.

- Due to monitoring wells BH/MW23-9 and BH/MW23-12 remaining dry, no ground water sample analysis was conducted at these monitoring well locations.

3.5 Impediments

There were no impediments at the Site during the Phase Two ESA on-site investigation.

4. Investigation Method

Fieldwork for this investigation began on July 24, 2023 by soil sampling from a total of nine (9) exterior boreholes drilled to depths of 2.49 to 7.70 mbgs with the installation of nine (9) monitoring wells at the locations shown in **Figure 8.2.2**. The boreholes on the Phase Two Property were strategically placed to address the PCAs and APECs identified in Table A.

Additional fieldwork was conducted on September 1, 2023 by soil sampling from a total of three (3) exterior boreholes drilled to depths of 3.15 to 4.60 m below existing grade with the installation of three (3) monitoring wells at the locations also shown in **Figure 8.2.2**.

4.1 General

This section of the report describes the various investigation methods used in the Phase Two ESA, including drilling, soil sampling, monitoring well installation, ground water sampling and analytical testing.

The Phase Two ESA was carried out in accordance with Palmer's SAP (**Appendix A1**).

The borehole locations were established in the field by Palmer staff prior to drilling. *Ontario One-Call* was contracted to locate and clear buried utility lines including telephone cables, natural gas mains, and hydro power lines. All the detected underground lines were identified on the ground by marking paints of various colours, as shown in **Drawing 2**.

Soil

Representative soil samples were recovered at each of the borehole locations. The soil stratigraphy was logged during drilling as soil samples were collected with dedicated dual tubes. Visual observations of any foreign materials or odours were also logged. The Finalized Field Logs are presented in **Appendix A2**.

Soil samples were split into portions that were collected into a plastic bag and a sample jar. Head space vapour concentrations were determined by allowing the bags to warm up to ambient temperature, probing into partially opened bags using a monitoring probe, and measuring the sample head space with a PID. Selected samples were placed in laboratory-supplied glass jars or vials and stored in a cooler during transport to the laboratory.

Ground Water

Upon completion of drilling, a 50-mm diameter PVC monitoring well was installed in all boreholes for ground water monitoring. Initial ground water levels were measured and a dedicated length of low-density polyethylene (LDPE) tubing was inserted into the wells.

The wells were purged to waste in sealed drums and fresh ground water samples were drawn for chemical analyses using a low-flow peristaltic pump. Samples were also placed in laboratory-supplied glass bottles or vials and stored in a cooler on ice during transport to the laboratory.

4.2 Drilling and Excavating

Boreholes were advanced by using a *CME-55* as well as a *Geoprobe 7822DT* mounted on a track equipped with augers and split spoons, supplied and operated by Canadian Environmental Drilling & Contractors Inc. under the direction of Palmer staff.

Disposable nitrile gloves were used and replaced between the handling of samples and all soil sampling equipment (stainless steel trowels, spatulas, etc.) was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included physical removal of any adhered debris, wash/scrub in “Alconox” soap solution, distilled water rinse, methanol rinse, and air dry.

Samples were collected continuously from the dual tubes. Samples submitted to the laboratory were based on visual observations, results of headspace screening, and identified APECs and associated parameters of concern.

4.3 Soil: Sampling

All soil samples were collected in accordance with strict environmental sampling protocols to ensure reliable results. The equipment used to collect the soil samples was previously discussed in Section 4.0, 4.1, and 4.2.

The observed soil stratigraphy generally comprised surficial grass overlying topsoil, silt, sand, sandy silt, clayey silt, gravelly sand, silty clay, or silty sand fill, which was underlain by a stratum of sand, gravel, gravelly sand, clayey silt, silty sand, silty clay or sandy silt till, as described in **Table 2** below. The Finalized Field Logs are provided in **Appendix A2**.

Table 2. Soil Stratigraphy Summary

Borehole/ Monitoring Well ID	Soil Stratigraphy	Depth (m)	Observations
BH/MW23-1	Sandy Silt Fill	0.00 to 1.45	No staining observed on the surface
	Sandy Silt	1.45 to 2.97	No staining or odour observed in this stratum
	Sand and Gravel	2.97 to 4.60	No staining or odour observed in this stratum
BH/MW23-2	Topsoil	0.00 to 0.13	No staining observed on the surface
	Sandy Silt Fill	0.13 to 0.69	No staining or odour observed in this layer
	Silty Sand	0.69 to 1.45	No staining or odour observed in this stratum
	Gravelly Sand	1.45 to 2.97	No staining or odour observed in this stratum
	Sand	2.97 to 5.3	No staining or odour observed in this stratum

Borehole/ Monitoring Well ID	Soil Stratigraphy	Depth (m)	Observations
BH/MW23-3	Topsoil	0.00 to 0.13	No staining observed on the surface
	Sandy Silt Fill	0.13 to 2.44	No staining or odour observed in this layer
	Gravel	2.44 to 2.97	No staining or odour observed in this stratum
	Sandy Silt Till	2.97 to 5.26	No staining or odour observed in this stratum
	Sandy Silt	5.26 to 6.22	No staining or odour observed in this stratum
BH/MW23-4	Topsoil	0.00 to 0.20	No staining observed on the surface
	Silt Fill	0.20 to 0.69	No staining or odour observed in this layer
	Sand Fill	0.69 to 2.21	No staining or odour observed in this layer
	Silty Sand Till	2.21 to 2.97	No staining or odour observed in this stratum
	Sand and Gravel	2.97 to 3.73	No staining or odour observed in this stratum
	Sandy Silt Till	3.73 to 5.66	No staining or odour observed in this stratum
	Sand and Gravel	5.66 to 5.79	No staining or odour observed in this stratum
BH/MW23-5	Clayey Silt Fill	0.00 to 1.45	No staining observed on the surface
	Sandy Silt	1.45 to 2.21	No staining or odour observed in this stratum
	Clayey Silt	2.21 to 2.97	No staining or odour observed in this stratum
	Sandy Gravel	2.97 to 3.66	No staining or odour observed in this stratum
BH/MW23-6	Topsoil	0.00 to 0.10	No staining observed on the surface
	Silty Clay Fill	0.10 to 1.45	No staining or odour observed in this layer
	Silty Clay	1.45 to 2.21	No staining or odour observed in this stratum
	Clayey Silt	2.21 to 3.73	No staining or odour observed in this stratum
	Sand and Gravel	3.73 to 4.27	No staining or odour observed in this stratum
BH/MW23-7	Topsoil	0.00 to 0.05	No staining observed on the surface

Borehole/ Monitoring Well ID	Soil Stratigraphy	Depth (m)	Observations
	Sandy Silt Fill	0.05 to 1.45	No staining or odour observed in this layer
	Sandy Silt Till	1.45 to 5.41	No staining or odour observed in this stratum
	Clayey Silt	5.41 to 6.02	No staining or odour observed in this stratum
	Sandy Silt	6.02 to 7.65	No staining or odour observed in this stratum
BH/MW23-8	Topsoil	0.00 to 0.10	No staining observed on the surface
	Sandy Silt Fill	0.10 to 1.45	No staining or odour observed in this layer
	Sandy Silt	1.45 to 6.48	No staining or odour observed in this stratum
BH/MW23-9	Topsoil	0.00 to 0.05	No staining observed on the surface
	Sandy Silt Fill	0.05 to 1.45	No staining or odour observed in this layer
	Sandy Silt	1.45 to 2.97	No staining or odour observed in this stratum
	Gravel	2.97 to 3.15	No staining or odour observed in this stratum
BH/MW23-10	Topsoil	0.00 to 0.10	No staining observed on the surface
	Sandy Silt Fill	0.10 to 2.21	No staining or odour observed in this layer
	Silty Sand	2.21 to 2.97	No staining or odour observed in this stratum
	Sandy Silt	2.97 to 6.38	No staining or odour observed in this stratum
BH/MW23-11	Topsoil	0.00 to 0.08	No staining observed on the surface
	Sandy Silt Fill	0.08 to 1.02	No staining or odour observed in this layer
	Sand	1.02 to 1.45	No staining or odour observed in this stratum
	Gravelly Sand	1.45 to 4.52	No staining or odour observed in this stratum
BH/MW23-12	Topsoil	0.00 to 0.13	No staining observed on the surface
	Sandy Silt Fill	0.13 to 2.36	No staining or odour observed in this layer
	Sand	2.36 to 2.49	No staining or odour observed in this stratum

4.4 Soil: Field Screening Methods

All soil samples were screened in the field for evidence of staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each borehole location.

The soil sample headspace screening was conducted with a RKI Eagle 2 calibrated to a known hexane and isobutylene gas. The PID readings were recorded in parts per million (ppm), as shown in the Finalized Field Logs in **Appendix A2**.

4.5 Ground Water: Monitoring Well Installations

Upon completion of drilling, a 50-mm diameter, flush-joint threaded PVC monitoring well was installed in twelve (12) of the boreholes for ground water monitoring by Canadian Environmental Drilling & Contractors Inc. under the direction of Palmer staff.

The monitoring wells included a 3 m length of slotted PVC intake screen. The wells were then extended from the top of the intake screen to the ground surface using solid PVC riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.6 m above the top of the well screen to allow for settlement of the sand packs and to accommodate expansion of the overlying well seals. A bentonite seal was placed above the sand pack and extended to approximately 0.3 mbgs. Concrete and a monument well casing were installed between the ground surface and 1.07 m above the ground surface. No glue was used in the construction of the monitoring well.

Elevations and associated monitoring well construction details are shown in **Table 8.1.1**. The location of the monitoring wells are shown in **Figure 8.2.3**, and the well completion diagrams are also shown on the Finalized Field Logs in **Appendix A2**.

All ground water monitoring wells installed at the Phase Two Property were instrumented with sufficient lengths of LDPE tubing to facilitate well development and purging requirements. Following the initial installation, depths to the static water level were measured and each monitoring well was developed by purging either three (3) well casing volumes or until the well went dry at least once. The well development occurred in order to remove any fluids that may have been introduced into the well during drilling, to remove particulates that may have become entrained in the well and filter pack, to stabilize and grade the filter pack, improve connectivity between the well and the formation, and restore ground water that may have been disturbed or altered during the drilling process to ensure the samples to be representative of true formation waters. The purging activities were carried out using the dedicated LDPE tubing and a low-flow peristaltic pump.

Purging of the twelve installed monitoring wells was completed between July 25 and September 7, 2023 and was as follows:

Table 3. Monitoring Well Development Details

Monitoring Well ID	Date of Development/Purging	Time of Development/Purging	Volume of Fluid Removed from Well (L)
BH/MW23-1	September 7, 2023	9:00	19
BH/MW23-2	July 27, 2023	12:00	23.9
BH/MW23-3	July 25, 2023	13:00	4.8
BH/MW23-4	July 27, 2023	14:30	0.85
BH/MW23-5	September 7, 2023	10:00	16.7
BH/MW23-6	July 25, 2023	13:00	13.1
BH/MW23-7	July 26, 2023	10:00	30.2
BH/MW23-8	July 26, 2023	12:00	21.5
BH/MW23-9	N/A	N/A	Dry
BH/MW23-10	July 25, 2023	13:30	19.8
BH/MW23-11	July 26, 2023	9:30	18.4
BH/MW23-12	N/A	N/A	Dry

The development was completed on the aforementioned dates as all monitoring wells were purged until dry.

4.6 Ground Water: Field Measurement of Ground water Quality Parameters

On July 26 to 28, 2023, after the monitoring wells were purged until dry, the following water quality field parameters were measured using a Quanta multi-probe prior to sampling:

Table 4. Ground Water Quality Parameters

Monitoring Well ID	pH (pH units)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Temperature (°C)
BH/MW23-2	5.44	0.468	11.63	18.81
BH/MW23-3	4.50	0.440	10.45	16.35
BH/MW23-4	5.56	0.457	6.64	17.46
BH/MW23-6	4.71	0.862	9.37	14.59
BH/MW23-7	4.68	0.496	10.43	17.48
BH/MW23-8	5.09	0.525	11.71	15.12
BH/MW23-10	4.21	0.936	12.39	14.06
BH/MW23-11	5.13	0.580	3.38	21.57
BH/MW23-12	N/A	N/A	N/A	N/A

On September 7, 2023 after three (3) newly installed monitoring wells were purged until dry, the following water quality field parameters were measured using a Quanta multi-probe prior to sampling:

Table 5. Additional Ground Water Quality Parameters

Monitoring Well ID	pH (pH units)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Temperature (°C)
BH/MW23-1	6.10	0.487	9.43	15.22
BH/MW23-5	5.93	0.441	6.48	15.67
BH/MW23-9	N/A	N/A	N/A	N/A

4.7 Ground Water: Sampling

All ground water samples were collected in accordance with strict environmental sampling protocols to ensure reliable results. Any equipment used to collect the ground water samples are previously discussed in *Section 4.0, 4.1,* and *4.2*.

The wells were purged to waste in sealed drums and fresh ground water samples were drawn for chemical analyses. During the sampling round, ground water samples were collected using a low-flow peristaltic pump, with dedicated tubing installed in each of the monitoring wells. This method minimizes the velocity of the formation water entering the well screen, as the drawdown is kept to a minimum (i.e., less than 10 cm) by adjusting the pumping rate. The samples were placed in laboratory-supplied glass bottles or vials and stored in a cooler on ice during transport to the laboratory.

Ground water monitoring, including measuring the depth to the stabilized water level, was conducted on July 25 to 28 and September 1 and 7, 2023. Measurements of ground water depth were made using an electronic oil water interface probe. Ground water level measurements are shown in **Table 8.1.2**.

In addition, the ground water was screened in the field (during all monitoring events) for evidence of free product including presence of liquid petroleum hydrocarbons (LPH), sheen (iridescence), odour and colour, as summarized in **Table 8.1.3**.

4.8 Sediment: Sampling

Sediment sampling was not within the scope of this Phase Two ESA.

4.9 Analytical Testing

ALS Environmental (ALS) performed chemical analysis on soil and ground water samples collected from boreholes/monitoring wells at the Site. ALS is an accredited laboratory under the Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA), in accordance with the international standard ISO/IE 17025:2005 – General Requirements for the Competence of Testing and Calibration. ALS is accredited for all parameters required under Ontario Regulation 153/04 – Record of Site Condition, as outlined in MECP Technical Update entitled “Laboratory Accreditation Requirements under the New Records of Site Condition Regulation (O. Reg. 153/04).

Based on visual observations, results of headspace screening, and identified APECs and associated parameters of concern, twenty-three (23) selected soil samples (representative of fill materials and native soils), and thirteen (13) ground water samples were submitted to ALS Environmental, for the following analyses:

- PHC/VOCs on seven (7) soil samples (including one (1) QA/QC sample);
- Metals, As, Sb, Se, Cyanide (CN-), Hexavalent Chromium (Cr(VI)), Mercury (Hg), pH, Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) on seven (7) soil samples (including one (1) QA/QC sample);
- PAHs on seven (7) soil samples (including one (1) QA/QC sample) and seven (7) ground water samples (including one (1) QA/QC sample); and
- OC Pesticides on ten (10) soil samples (including one (1) QA/QC sample) and eight (8) ground water samples (including one (1) QA/QC sample).

The Laboratory Certificate of Analyses and Analytical Reports are reproduced in **Appendix A3**.

4.10 Residue Management Procedures

All soil cuttings from the borehole drilling activities, water from the well development and purging, and all fluids from equipment cleaning are stored in secure containers on the Phase Two Property. Secured containers will be disposed of upon project completion.

4.11 Elevation Surveying

The ground surface elevation of borehole and monitoring wells was surveyed by Palmer personnel. The elevations were surveyed based on a marked local benchmark. The benchmark is at Station 00819658522, located on Ritz Road in Corbyville, ON. The elevation at this point is understood to be at Geoidal Elev. 115.495 metres.

4.12 Quality Assurance and Quality Control Measures

A Quality Assurance and Quality Control (QA/QC) program, developed as part of the SAP, was followed by Palmer to ensure the integrity of all soil and ground water samples was maintained and that they were representative of the Site conditions. The QA/QC program was developed in accordance with the Analytical Protocol.

The jars and preservatives (where applicable) used in the collection of soil and ground water samples were supplied by ALS Environmental. The soil samples intended to be submitted for analysis of VOCs and PHC F1 were immediately preserved in laboratory provided methanol vials to sequester the volatile compounds.

The soil samples from the boreholes which were advanced using solid stem augers were collected with split spoon samplers which were decontaminated after the extraction of each sample.

The soil and ground water samples were labelled as they were collected. Samples were stored in ice-packed coolers, until the samples were transported to the laboratory for chemical analysis.

The soil and ground water samples were handed over to the laboratory by Palmer staff. Chains of Custody of the samples were logged with Chain of Custody Forms.

As discussed in Section 4.4 above, the monitoring wells were installed by direct drilling with solid stem and hollow stem augers. All drilling equipment arrived at the Site in a pre-cleaned condition. The augers were cleaned with a brush and washed between monitoring well locations.

The stainless-steel sampling tool (trowel) was decontaminated between sampling locations in the following sequence: cleaned with a brush to remove adhered soil and/or debris, rinsed with distilled water and allowed to air dry.

Field duplicate samples for both soil and ground water were submitted to ALS for chemical analysis for QA/QC purposes.

For soil samples, four (4) duplicate samples (23-4-1D, duplicate of soil sample 23-4-1, 23-4-2D, duplicate of soil sample 23-4-2, 23-8-2D, duplicate of soil sample 23-8-2 and 23-10-2D, duplicate of soil sample 23-10-2) were submitted to ALS for analysis.

For ground water samples, two (2) duplicate ground water samples (23-6D, duplicate of ground water sample 23-6 and 23-7D, duplicate of ground water sample 23-7) and one (1) trip blank were submitted to ALS for analysis.

The laboratory quality assurance program included the analysis of laboratory duplicate samples, methods blanks, matrix spikes and samples of reference materials, in accordance with the Analytical Protocol.

5. Review and Evaluation

5.1 Geology

The subsurface profiles and associated below grade elevations encountered at the Phase Two Property are described in the Finalized Field Logs in **Appendix A2**.

The estimated thickness range of each geologic unit is as follows:

Table 6. Summary of Geology

	Geologic Unit	Range Depth (m)
Surface	Topsoil	0.00 to 0.20
Fill Strata	Sandy Silt Fill	0.00 to 2.44
	Clayey Silt Fill	0.00 to 1.45
	Silty Clay Fill	0.10 to 1.45
	Silt Fill	0.20 to 0.69
	Sand Fill	0.69 to 2.21
Till Strata	Silty Sand Till	0.69 to 2.97
	Sand	1.02 to 2.49
	Sandy Silt Till	1.45 to 7.65
	Gravelly Sand	1.45 to 4.52
	Silty Clay	1.45 to 2.21
	Clayey Silt	2.21 to 6.02
	Gravel	2.44 to 3.15
	Sand and Gravel	2.97 to 5.79
Bedrock	Not encountered	

The soil across the property is considered to be coarse-textured for the purpose of this ESA.

5.2 Ground Water: Elevations and Flow Direction

Ground water levels were measured in the monitoring wells from September 7, 2023, using a Heron Interface Probe. Ground water levels and measured elevations are presented on the borehole logs and are summarized below:

Table 7. Summary of Ground Water Conditions

Monitoring Well ID	Date	Ground Surface Elevation (mAMSL)	Depth to GW (mbgs)	GW Elevation (mAMSL)	Observations
BH/MW23-1	09/07/23	112.53	1.41	111.12	None
BH/MW23-2	09/07/23	112.36	1.05	111.31	None
BH/MW23-3	09/07/23	120.78	3.75	117.03	None
BH/MW23-4	09/07/23	124.56	1.99	122.57	None
BH/MW23-5	09/07/23	110.39	0.56	109.83	None
BH/MW23-6	09/07/23	112.16	2.75	109.41	None
BH/MW23-7	09/07/23	113.30	1.83	111.47	None
BH/MW23-8	09/07/23	116.93	1.79	115.14	None
BH/MW23-9	09/07/23	108.94	-	N/A	Remained Dry
BH/MW23-10	09/07/23	111.37	2.61	108.76	None
BH/MW23-11	09/07/23	107.48	0.76	106.72	None
BH/MW23-12	09/07/23	109.20	-	N/A	Remained Dry

The results of the ground water monitoring indicated that the primary near surface water table resides within the native (till) layer.

As summarized in **Table 8.1.3**, no free-product was observed in any of the monitoring wells monitored on the Phase Two Property.

Based on the overburden ground water elevations, the ground water is interpreted to flow across the Site in a southerly direction. The ground water elevations and interpreted flow direction is presented in **Figure 8.2.3**.

Temporal variability in the ground water flow direction could not be assessed during this Phase Two investigation since ground water elevations were obtained during two (2) filed visits in Summer 2023 and no historical ground water data is available.

5.3 Ground water Hydraulic Gradients

The horizontal hydraulic gradient was estimated for the water table based on the September 7, 2023 ground water elevations.

The horizontal hydraulic gradient is calculated using the following equation:

$i = \Delta h / \Delta s$

Where,

i = horizontal hydraulic gradient
Δh (m) = Ground water elevation difference; and,
Δs (m) = separation distance.

The following horizontal hydraulic gradient calculations using ground water monitoring data across the site revealed lower hydraulic gradients within the native till unit on the Phase Two Property:

		Horizontal Hydraulic Gradient in Native (Till) Unit (m/m)
Horizontal	Average	0.009
	Maximum	0.016
	Minimum	0.002

It should be noted that vertical hydraulic gradients were not evaluated for the Site and ground water impacts were not vertically distributed at the depths investigated at the Phase Two Property.

The hydraulic conductivity of the till unit was derived by using Hazen's formula, which comprises the use of a coefficient of 1.0 m (Terzaghi and Peck, 1948) and a D10 of 0.005 mm (refer to laboratory grain size analyses provided in **Appendix A3**). Based on grain size analysis testing, the hydraulic conductivity of the native till is on the order of $2.5x10^{-7}$ m/s. Therefore, the soil's ability to transmit water across the site (in the native till materials) is slow and verifies that the potential for vertical migration of contamination is limited on the Phase Two Property. Furthermore, a hydraulic conductivity of $2.5x10^{-7}$ m/s is consistent with an unconsolidated deposit of glacial till with silty sand (Freeze and Cherry, 1979) and represents a moderately permeable aquitard unit.

5.4 Fine-Medium Soil Texture

Fine-medium soil texture was not used for this investigation, as soil grain size analyses conducted by ALS Environmental on one (1) soil sample collected from the native till unit (23-4-4), revealed sandy loam (a mixture of sand, silt, and clay) till, which resembles coarse textured soils, as previously discussed in *Section 1.4*. Additionally, six (6) samples were collected during a geotechnical investigation and analyzed for grain size by Palmer. The stratigraphy generally comprised of an average of 22.5% gravel, 39.2% sand, 7.2% clay and 31.2% silt.

5.5 Soil: Field Screening

Sample headspace screening with the PID yielded readings of non-detect, as shown in the Finalized Field Logs in **Appendix A2**.

These readings and any field observations (staining, odours, etc.) were considered when selecting soil samples for laboratory analyses.

5.6 Soil Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative “worst case” soil samples was based on visual and/or olfactory evidence of impacts, known historical contamination and the presence of potential water bearing zones. The results of the soil sample analyses, and their respective Table 1 SCS, are summarized in **Table Series 8.1.4**.

A total of twenty-three (23) soil samples including four (4) duplicate soil samples were submitted to ALS for analysis of various COPC to investigate the soil quality related to the APECs. These COPC included PHCs, PAHs, VOCs, metals and inorganic parameters (As, Sb, Se, Na, Cl-, CN-, Cr(VI), Hg, low or high pH, EC and SAR), and Organochlorine (OC) Pesticides.

The concentrations of COPCs in the tested soil samples were in compliance with the MECP Table 1 SCS. No measured contaminant concentration exceedances in soil were detected as presented in **Drawings 4a** to **4e**.

Furthermore, soil maximum concentration data can be seen in **Table Series 8.1.7**.

5.7 Ground Water Quality

On July 26 to 28 and September 7, 2023, thirteen (13) ground water samples, two (2) duplicates and one (1) trip blank were collected from monitoring wells BH/MW23-1, BH/MW23-2, BH/MW23-3, BH/MW23-4, BH/MW23-5, BH/MW23-6, BH/MW23-7, BH/MW23-8, BH/MW23-10 and BH/MW23-11 to assess ground water quality at the Site. Ground water samples were not collected from monitoring well BH/MW23-12 due to the well being dry. The results of the ground water sample analyses, and their respective Table 1 SCS, are summarized in **Table Series 8.1.5**.

No evidence of free product (i.e. visible film or sheen), or odour was observed during well purging and ground water sampling from the newly installed wells and existing wells.

The samples collected were analysed for one or more of the COPCs, including PAHs and OC Pesticides.

The concentrations of the COPCs in the tested ground water samples were in compliance with the MECP Table 1 SCS. No measured contaminant concentration exceedances in ground water were detected as presented in **Drawings 5a** and **5b**.

Ground water maximum concentration data can also be seen in **Table Series 8.1.7**.

5.8 Sediment Quality

Sediment sampling was not part of this investigation, as previously discussed in *Section 4.8* and **Table 8.1.6**.

5.9 Quality Assurance and Quality Control Results

The QA/QC samples for this Phase Two ESA investigation included field duplicates for soil and ground water, and a trip blank for QA/QC purposes. The trip blank was submitted with ground water samples for analysis of PAHs.

The purpose of the duplicate samples is to measure the precision or reproducibility of the field and laboratory methodology used in the collection and analysis of the samples. The precision is evaluated in terms of the relative percent difference (RPD). The RPDs of the primary and duplicate samples were not calculated in situations where the concentrations of both primary and duplicate samples were at least 5 times less than the laboratory Reporting Detection Limits (RDLs) for the parameters analyzed.

Laboratory quality control limits for duplicate, method blank, method blank spike, matrix spike and surrogate recoveries were within the acceptable limits. Various soil and ground water samples were found to have recovery greater than upper control limit/data quality objective. These samples did not exceed the criteria, and therefore are not considered a QA/QC concern.

No tested parameters were detected in the trip blank.

All of the samples were handled in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (Analytical Protocol) with respect to preservation methods, storage requirements, or container type without any exception. Holding times were met for all samples.

The RPDs for all remaining reported concentrations were not calculated considering that the results were below the laboratory minimum detection limits or less than 5 times of the method detection limit in both samples. No other QA/QC concerns were noted.

Based on the review of QA/QC sample results of soil and ground water, it is certified that:

- All Certificates of Analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47 (3);
- A Certificate of Analysis report has been received for each sample submitted for analysis; and
- All Certificates of Analysis or analytical reports received have been included in full in **Appendix A3** of this Phase Two ESA report.

ALS has certified that the analytical methods and data meet the requirements of the Analytical Protocol and that holding times were met for all samples.

The sampling program was carried out in accordance with the SAP. All requirements of the Analytical Protocol were met.

In summary, decision making was not affected by the quality of the data obtained and the overall objectives of the assessment were met.

5.10 Phase Two Conceptual Site Model

Section i. A description and assessment of the Phase Two Property:

The Phase Two Property is a 76.5- hectare, irregular shaped, parkland property that currently comprises Black Bear Golf Club. Historically, the Site was first developed in 1956 with two narrow roads and small buildings or structures. The property continued to be developed, with the construction of several man-made ponds starting 1987. The golf course was fully developed by 2011 including eleven (11) building structures which include one (1) retail store, two (2) conference buildings including a snack bar, one (1) detached bathroom, one (1) water filter shed, one (1) cart storage garage, one (1) pumphouse, one (1) golf equipment shed, and three (3) cabins, with asphalt-paved, grass and gravel surfaced areas. The remaining parts of the Site comprise asphalt-paved, grass, and gravel surfaced areas, as well as a woodlot.

<table>
<tr><td>A. Potentially Contaminating Activities (PCAs)</td><td>There are four (4) PCAs (1-4) on the Phase Two Property and no PCAs within the Phase One Study Area.

<table><tr><td>PCA 1 (Item #40)</td><td>On-Site</td><td>Golf Course Operations</td></tr><tr><td>PCA 2 (Item #30)</td><td>On-Site</td><td>Fill Materials of Unknown Quality</td></tr><tr><td>PCA 3 (Item #46)</td><td>On-Site</td><td>Former Railway Tracks</td></tr><tr><td>PCA 4 (Item #40)</td><td>On-Site</td><td>Agricultural Land</td></tr></table>
Refer to Drawing 3.</td></tr>
<tr><td>B. Areas of Potential Environmental Concerns (APECs)</td><td>There are four (4) APECs on the Phase Two Property where PCAs (on-Site) may have affected the soil and/or ground water at the Phase Two Property:

<table><tr><td>APEC #1</td><td>Several pesticides, herbicides, and fungicides are applied to the golf course since the early 1990s, potentially impacting the north and eastern portions of the Phase Two Property. Maximum concentrations are expected between ground surface and 2.5 mbgs in soil and deeper in ground water.</td></tr><tr><td>APEC #2</td><td>Fill materials of unknown quality were imported to the Site during development of the golf course in the 1990s, potentially impacting the north and eastern portions of the Phase Two Property. Maximum concentrations are expected between ground surface and 2.5 mbgs in soil.</td></tr><tr><td>APEC #3</td><td>Former railway corridor located on the Site, potentially impacting the western portion of the Phase Two Property. Maximum concentrations are expected</td></tr></table></td></tr>
</table>

	between ground surface and 1.50 mbgs in soil and deeper in ground water.
APEC #4	Agricultural land use where application of pesticides has likely occurred since the early 2000s, potentially impacting the western portion of the Phase Two Property. Maximum concentrations are expected between ground surface and 1 mbgs in soil and deeper in ground water.

Refer to **Drawing 3**.

COPC associated with the abovementioned APECs include the following:

APEC	COPC	Borehole Location Sampled for COPC in Soil	Monitoring Well Location Sampled for COPC in GW
#1	Organochlorine (OC) Pesticides	BH23-2 (0.00 – 0.76 mbgs) BH23-3 (0.76 – 1.52 mbgs) BH23-4 (0.76 – 1.52 mbgs) BH23-7 (1.52 – 2.29 mbgs) BH23-8 (0.00 – 0.76 mbgs) BH23-11 (0.76 – 1.52 mbgs)	MW23-2 (0.44 – 5.38 mbgs) MW23-3 (1.85 – 5.95 mbgs) MW23-4 (1.93 – 5.03 mbgs) MW23-7 (2.53 – 7.49 mbgs) MW23-8 (1.69 – 6.14 mbgs) MW23-11 (1.17 – 4.19 mbgs)
#2	Petroleum Hydrocarbon (PHCs), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Volatile Organic Compounds (VOCs), Metals, As, Sb, Se, Cyanide (CN-), Hexavalent Chromium (Cr(VI)), Mercury (Hg), pH, Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR)	BH23-2 (0.76 – 1.52 mbgs) BH23-3 (0.76 – 1.52 mbgs) BH23-4 (0.00 – 1.52 mbgs) BH23-7 (1.52 – 2.29 mbgs) BH23-8 (0.76 – 1.52 mbgs) BH23-11 (0.76 – 1.52 mbgs)	N/A
#3	Polycyclic Aromatic Hydrocarbons (PAHs)	BH23-1 (0.76 – 1.52 mbgs)	MW23-1 (1.41 – 4.54 mbgs)

			BH23-2 (0.00 – 0.76 mbgs) BH23-5 (0.76 – 1.52 mbgs) BH23-6 (0.76 – 1.52 mbgs) BH23-10 (0.76 – 1.52 mbgs) BH23-12 (0.76 – 1.52 mbgs)	MW23-2 (0.44 – 5.38 mbgs) MW23-5 (0.56 – 3.30 mbgs) MW23-6 (4.28 – 5.35) MW23-10 (2.54 – 6.06 mbgs) MW23-12 (Dry)
	#4	OC Pesticides	BH23-1 (0.00 – 0.76 mbgs) BH23-5 (0.00 – 0.76 mbgs) BH23-9 (0.00 – 0.76 mbgs)	MW23-5 (0.56 – 3.30 mbgs)
	Soil samples associated with APEC #1 were collected at depths between 0.00 and 2.29 mbgs in relation to potential impacts from golf course operations located in the north and eastern portions of the Phase Two Property. Soil samples associated with APEC #2 were collected at depths between 0.00 and 2.29 mbgs in relation to potential impacts from fill materials of unknown quality located in the north and eastern portions of the Phase Two Property. Soil samples associated with APEC #3 were collected at depths between 0.00 and 1.52 mbgs in relation to potential impacts from former railway tracks located in the western portion of the Phase Two Property. Soil samples associated with APEC #4 were collected at depths between 0.00 and 0.76 mbgs in relation to potential impacts from agricultural land located in the western portion of the Phase Two Property. Refer to **Cross-Section A-A', B-B'**, and **C-C'**.			
C. Any subsurface structures and utilities on, in, or under the Phase Two Property	No subsurface structures were identified on, in, or under the Phase Two Property. Subsurface utilities identified on, in, or under the Phase Two Property include: • Onsite potable wells and septic system, golf course irrigation system; and • Communication cables, Hydro, and natural gas services. Refer to **Drawing 2**. Site-wide, subsurface structures and utilities are generally installed above the ground water table at the site.			

Section ii. A description of the physical setting of the Phase Two Property:

The Phase Two Property is a 76.5-hectare, irregular shaped, parcel of land located on the north side of Harmony Road, west of the intersection with Highway 37 in Corbyville, Ontario. Refer to **Drawing 2.**

A. Stratigraphy from ground surface to the deepest aquifer or aquitard investigated

The observed soil stratigraphy comprised:

	Geologic Unit	Depth Range (m)
Surface	Topsoil	0.00 to 0.20
Fill Strata	Sandy Silt Fill	0.00 to 2.44
	Clayey Silt Fill	0.00 to 1.45
	Silty Clay Fill	0.10 to 1.45
	Silt Fill	0.20 to 0.69
	Sand Fill	0.69 to 2.21
Till Strata	Silty Sand Till	0.69 to 2.97
	Sand	1.02 to 2.49
	Sandy Silt Till	1.45 to 7.65
	Gravelly Sand	1.45 to 4.52
	Silty Clay	1.45 to 2.21
	Clayey Silt	2.21 to 6.02
	Gravel	2.44 to 3.15
	Sand and Gravel	2.97 to 5.79
Bedrock	Not encountered	

Fill strata was identified between 0.00 and 2.44 m below existing grade; however, no evidence of any man-made materials (i.e., waste, debris, concrete, etc.) was observed in the strata. Therefore, the observed fill material is considered to be re-worked native materials. However, investigation of the fill material occurred during this Phase Two ESA to confirm chemical quality due to APEC #2. Refer to **Cross-Sections A-A', B-B', and C-C'**.

One (1) soil sample was collected in the till strata between 2.29 and 3.05 mbg to determine the soil grain size for the Phase Two Property. Soil grain size analyses conducted by the laboratory classified the soil as sandy loam comprising approximately 61.6% sand. Additionally, six (6) samples were collected during a geotechnical investigation and analyzed for grain size by Palmer. The stratigraphy generally comprised of an average of 22.5% gravel, 39.2% sand, 7.2% clay and 31.2% silt. Since more than 50% of the particles were larger than 75 micrometres in diameter, the assessment criteria corresponding to coarse textured soils were selected for comparison in laboratory analytical results.

B. Hydrogeological characteristics

The results of the ground water monitoring indicated that the primary near surface water table resides within the native (till) layer. No evidence of free-product was observed in the ground water in the monitoring wells on the Phase Two Property, and no visible

<table>
<tr><td></td><td>seen was present in ground water during well development of in any ground water samples collected.
Ground water flow is interpreted to flow across the Site in a southerly direction. Refer to Figure 8.2.3.

The following horizontal hydraulic gradient calculations using ground water monitoring data across the site were revealed on the Phase Two Property:

<table>
<tr><th></th><th></th><th>Native (Till) Unit</th></tr>
<tr><td rowspan="3">Horizontal</td><td>Average</td><td>0.009 m/m</td></tr>
<tr><td>Maximum</td><td>0.016 m/m</td></tr>
<tr><td>Minimum</td><td>0.002 m/m</td></tr>
</table>

Based on grain size analysis testing, the hydraulic conductivity of the native till is $2.5x10^{-7}$ m/s. Therefore, the soil's ability to transmit water across the site (in the native till materials) is slow and verifies that the potential for migration of contamination is limited on the Phase Two Property.</td></tr>
<tr><td>C. Approximate depth of bedrock</td><td>Bedrock was not revealed at the final drilling depth of 7.70 m below existing grade across the Site during this investigation.

Well records within the Phase One Study Area indicated that bedrock exists approximately 6.10 mbgs in the vicinity of the Phase Two Property however bedrock was not encountered during the Phase Two drilling program.</td></tr>
<tr><td>D. Approximate depth to water table</td><td>Ground water was observed between 0.76 to 3.75 mbgs generally in the native (till) unit.</td></tr>
<tr><td>E. Any respect in which Section 35, 41, or 43.1 of the regulation applies to the property</td><td>Section 41, environmentally sensitive areas, and Section 43.1, shallow soil property or water body, applies to the Phase Two Property based on the following:

• The Phase Two Property contains two (2) wetlands in the northern, southern and eastern portions of the Site. A portion of the southern wetland is considered to be Provincially Significant. Therefore, it is appropriate to apply these sections to the property. Refer to Figure 8.2.1

Section 35 does not apply to the Phase Two Property</td></tr>
<tr><td>F. Areas on, in, or under the Phase Two Property where excess soil is finally placed</td><td>Excess soil has not been placed at the Phase Two Property for grading and/or backfilling purposes.</td></tr>
<tr><td>G. Approximate locations, if known, of any proposed buildings and other structures</td><td>The proposed redevelopment will be residential.</td></tr>
</table>

	Residential redevelopment will comprise residential lots including townhouses, quads, and cabins. The proposed lot locations are shown in **Drawing 2**.

Section iii. Where a contaminant is present on, in, or under the Phase Two Property at a concentration greater than the applicable site condition standard, identification of:

A. Each area where a contaminant is present on, in or under the Phase Two Property	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation.
B. The contaminants associated with each of the areas referred to in subparagraph A	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation.
C. Each medium in which a contaminant associated with an area referred to in subparagraph is present	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation.
D. A description and assessment of what is known about each of the areas referred to in subparagraph A	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation.
E. The distribution, in each of the areas referred to in subparagraph A	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation. However, **Drawing 4** shows the profile locations for **Cross-Sections A-A', B-B', and C-C'** and depict the soil stratigraphy with no impacted areas.
F. Anything known about the reason for the discharge of the contaminants present on, in or under the Phase Two Property at a concentration greater than the applicable site condition standard into the natural environment	Not applicable. See Item D.
G. Anything known about migration of the contaminants present on, in or under the Phase Two Property at a concentration greater than the applicable site condition	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation. Furthermore, in consideration of the Site geology (underlain by

	standard away from any area of potential environmental concern, including the identification of any preferential pathways	moderately permeable native materials and hydraulic conductivity and gradient information summarized in ii.B, above), the potential for migration of contamination is expected to be limited.
H.	Climatic or meteorological conditions that may have influenced distribution and migration of the contaminants	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation. Meteorological conditions may have influenced the distribution and migration of the contaminants by raising the ground water table. However, no areas of contamination were identified on the Phase Two Property. In addition, the calculated hydraulic conductivity revealed the soil's ability to transmit water across the site (in the native till materials) is slow and verifies that the potential for migration of contamination is limited on the Phase Two Property. Ground water data for the Site does not suggest considerable influence on seasonal ground water levels due to climatic or meteorological conditions.
I.	If applicable, information concerning soil vapour intrusion of the contaminants into building including, (1) relevant construction features of a building, such as a basement or crawl space, (2) building heating, ventilation and air conditioning design and operation, (3) subsurface utilities	This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation.

Section iv. Where contamination is present on, in, or under the Phase Two Property at a concentration greater than the applicable site condition standard, one or more cross-sections:

This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation. Refer to **Cross-Section A-A', Cross-Section B-B', and Cross-Section C-C'.**

Section v. For each area where a contaminant is present on, in or under the property at a concentration greater than the applicable site condition standard for the contaminant, a diagram identifying the release mechanisms, contaminant transport pathway, the human and ecological receptors located on, in, or under the Phase Two Property, receptor exposure points, and routes of exposure:

This does not apply to the Phase Two Property. No areas of contamination were identified in concentrations greater than the applicable SCS on, in, or under the Phase Two Property during this investigation. Refer to **Drawing 6.**

Section vi. If a non-standard delineation was conducted in accordance with Section 7.1 of Schedule E as part of preparing the Phase Two ESA:

A non-standard delineation was not conducted as part of this Phase Two ESA.

Section vii. If the exemption set out in paragraph 1 or 2 of Section 49.1 is being relied upon:

The exemption set out in paragraph 1 and 2 of Section 49.1 of Ontario Regulation 407/19 is not being relied upon as part of this Phase Two ESA.

Section viii. If the exemption set out in paragraph 3 of Section 49.1 is being relied upon:

The exemption set out in paragraph 3 of Section 49.1 of Ontario Regulation 407/19 is not being relied upon as part of this Phase Two ESA.

Summary of Remedial Activities:

Remedial activities were not required at the Phase Two Property. All soil and ground water samples collected and analyzed for COPC were within the applicable Table 1 SCS for RPIICC property uses with coarse-textured soils.

6. Conclusions

In comparison with the (2011) *Ontario Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the* EPA criteria, the results of the laboratory analyses indicated that the measured contaminated concentrations in soil and ground water were well below the Table 1 SCS for RPIICC property uses.

As the soil and ground water analytical results do not exceed the Table 1 SCS, no appreciable impacts to the subsurface or other environmental concern have been identified in association with the Phase Two Property. Therefore, in our opinion, no further actions are warranted at this time.

6.1 Limitations

This report was prepared by Palmer for the account of Black Bear Ridge GP Inc. in accordance with the professional services agreement.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

The nature of the sampling works makes it possible that contrary conditions may be identified in locations which were not sampled. However, it does suggest that the conditions will be localized and not extensive. The soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations made during drilling and therefore should not be interpreted as exact planes of geological change.

The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects Palmer's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Palmer accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

Unless stated otherwise in this report, provided that the report is still reliable, and less than 18 months old, Palmer may issue a third-party reliance letter to parties, client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Palmer's report, by such reliance agree to be bound by our proposal and Palmer's standard reliance letter. Palmer's standard reliance letter indicates that in no event shall Palmer be liable for any damages, howsoever arising, relating to third-party reliance on Palmer's report. No reliance by any party is permitted without such agreement. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Palmer.

The original of the technology-based document sent herewith has been authenticated and will be retained by Palmer for a minimum of five years. Since the file transmitted is now out of Palmer's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

6.2 Signatures and Certification

This report was prepared by Bailey Fleet, B.Sc.(Env.) who is currently an Environmental Scientist with Palmer in the Toronto Office. She has experience in conducting Phase One and Two ESAs at various land use types, in accordance with Ontario Regulation 153/04 and 511/09 and the CSA Z768-01 environmental protocols.

The report was reviewed by Kalina Naydenova, M.Sc., who is an Environmental Scientist with Palmer in the Oakville Office. She has over 15 years' experience conducting numerous Phase One and Two ESAs at various land use types, conducting soil and ground water sampling procedures in accordance with ASTM 1527-13 and ASTM E1903-19, as well as experience with Ontario Regulation 153/04 and 511/09 and the CSA Z768-01 and Z769-00 environmental protocols.

This report was reviewed by Sarah Vlantis, B.Sc., P.Geo (limited), Land Quality & Remediation Team Lead in the Oakville office of Palmer. She has over 15 years' experience conducting Phase One and Two ESAs, soil and ground water sampling, and site remediation in accordance with Ontario Regulation 153/04 and 511/09, the CSA Z768-01 and Z769-00 environmental protocols, the Consulting Engineers of Ontario's Generally Accepted Standards for Environmental Investigations, and the Canadian Mortgage and Housing Corporation (CMHC) environmental site investigation procedures for mortgage loan insurance. The aforementioned ESAs have covered all land use types across Canada. Sarah also has numerous years of experience in preparing and filing Record of Site Conditions (RSCs) with the Ministry of the Environment, Conservation and Parks (MECP). Sarah also has experience conducting Excess Soil Reuse Planning assessments in accordance with Ontario Regulation 406/19.

Prepared By:

Sylvia Babiarz, M.Env.Sc
Environmental Scientist

Kalina Naydenova. M.Sc.
Environmental Scientist

Reviewed By:

Sarah Vlantis, B.Sc., P.Geo (limited), QP_{ESA}
Team Lead, Land Quality & Remediation

7. References

- Atlas of Canada, Topographic Maps;
  - http://atlas.nrcan.gc.ca/Site/english/toporama/index.html
- Chapman and Putnam, The Physiography of Southern Ontario, 1984;
- Google Earth, 2020;
- Phase One Environmental Site Assessment, Palmer, 2023;
- Freeze, Alan R. and Cherry, John A., Ground water, 1979;
- Google Earth, 2015.
- Terzaghi and Peck, Soil Mechanics in Engineering Practice, 1948;
- The Ontario Geological Survey, 1990; and,
- The Ontario Geological Survey, 2003.

8. Tables and Figures

8.1 Tables

8.1.1 Monitoring Well Installation

Monitoring Well ID	Ground Surface Elevation (mAMSL)	Monitoring Well Construction Details	Associated Elevations Below Grade (m)
BH/MW23-1	112.53	50-mm PVC solid riser pipe	0.00 – 1.49
		50-mm PVC slotted intake screen	1.49 – 4.54
BH/MW23-2	112.36	50-mm PVC solid riser pipe	0.00 – 2.33
		50-mm PVC slotted intake screen	2.33 – 5.38
BH/MW23-3	120.78	50-mm PVC solid riser pipe	0.00 – 2.90
		50-mm PVC slotted intake screen	2.90 – 5.95
BH/MW23-4	124.56	50-mm PVC solid riser pipe	0.00 – 1.98
		50-mm PVC slotted intake screen	1.98 – 5.03
BH/MW23-5	110.39	50-mm PVC solid riser pipe	0.00 – 1.77
		50-mm PVC slotted intake screen	1.77 – 3.30
BH/MW23-6	112.16	50-mm PVC solid riser pipe	0.00 – 1.23
		50-mm PVC slotted intake screen	1.23 – 4.28
BH/MW23-7	113.30	50-mm PVC solid riser pipe	0.00 – 4.44
		50-mm PVC slotted intake screen	4.44 – 7.49
BH/MW23-8	116.93	50-mm PVC solid riser pipe	0.00 – 3.09
		50-mm PVC slotted intake screen	3.09 – 6.14
BH/MW23-9	108.94	50-mm PVC solid riser pipe	0.00 – 1.35
		50-mm PVC slotted intake screen	1.35 – 2.88
BH/MW23-10	111.37	50-mm PVC solid riser pipe	0.00 – 3.01
		50-mm PVC slotted intake screen	3.01 – 6.06
BH/MW23-11	107.48	50-mm PVC solid riser pipe	0.00 – 1.14
		50-mm PVC slotted intake screen	1.14 – 4.19
BH/MW23-12	109.20	50-mm PVC solid riser pipe	0.00 – 0.95
		50-mm PVC slotted intake screen	0.95 – 2.47

8.1.2 Water Levels

Monitoring Well ID	Date	Ground Surface Elevation (mAMSL)	Depth to GW (mbgs)	GW Elevation (mAMSL)
BH/MW23-1	09/07/23	112.53	1.41	111.12
BH/MW23-2	09/07/23	112.36	1.05	111.31
BH/MW23-3	09/07/23	120.78	3.75	117.03
BH/MW23-4	09/07/23	124.56	1.99	122.57
BH/MW23-5	09/07/23	110.39	0.56	109.83
BH/MW23-6	09/07/23	112.16	2.75	109.41
BH/MW23-7	09/07/23	113.30	1.83	111.47
BH/MW23-8	09/07/23	116.93	1.79	115.14
BH/MW23-9	09/07/23	108.94	DRY	N/A
BH/MW23-10	09/07/23	111.37	2.61	108.76
BH/MW23-11	09/07/23	107.48	0.76	106.72
BH/MW23-12	09/07/23	109.20	DRY	N/A

8.1.3 LNAPLs and DNAPLs

No light or dense non-aqueous phase liquid measurements were detected at the Phase Two Property, as discussed in *Sections 4.7, 5.2*, and *5.7*.

8.1.4 Soil Data

8.1.4.1 PHCs with BTEX

Soil Analytical Results: Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)

				PHCs					BTEX			
				F1 (C6-C10)	F1 (C6-C10) - BTEX*	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Benzene	Toluene	Ethylbenzene	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				25	25	10	240	120	0.02	0.2	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date									
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
4. **BOLD** *Denotes entries exceed the criteria*
5. *Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Insitutional/Industrial/Commercial/Community Property Use with Coarse and Medium-Fine Textured Soils*
6. * *F1 fraction does not include BTEX; however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result*

8.1.4.2 VOCs

Soil Analytical Results: Volatile Organic Compounds (VOCs)

				VOCs																																							
				Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroform	1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Methylene Chloride	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,3-Dichloropropene (cis) + (trans)	Ethylbenzene	Hexane (n)	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl tert-Butyl Ether (MTBE)	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.5	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	0.05	0.05	0.05	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.25	0.02	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																																								
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05

Notes:

1.	-	*In guideline row(s) denotes no criteria for that parameter*
2.	-	*In data row(s) denotes parameter not analyzed*
3.	mbgs	*Denotes metres below ground surface*
4.	**BOLD**	*Denotes entries exceed the criteria*
5.		*Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Insitutional/Industrial/Commercial/Community Property Use with Coarse and Medium-Fine Textured Soils*

8.1.4.3 Metals & Inorganics

Soil Analytical Results: Metals and Inorganics

				Metals																					Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																									
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.1	1.4	32.2	0.19	<5.0	<0.1	0.024	8.76	3	5.76	3.6	<0.005	0.19	5.68	<0.2	<0.1	0.095	0.452	15.5	12.3	1.04	<0.1	0.104	<0.05	0.14
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.1	2.62	104	0.5	9.5	<0.1	0.072	36.6	7.31	14.3	6.8	0.008	0.41	20.3	<0.2	<0.1	0.19	0.704	35.4	33.1	0.93	0.15	0.115	<0.05	<0.1
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.1	1.54	33.1	0.18	5	<0.1	0.03	10.1	3.2	5.61	3.06	<0.005	0.28	5.68	<0.2	<0.1	0.09	0.526	19.1	13	0.8	<0.1	0.084	<0.05	0.13
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.1	2.91	122	0.63	10.4	0.13	0.115	34.8	7.57	14.6	7.97	0.016	0.4	19	<0.2	<0.1	0.218	0.701	38.2	37.6	2.63	0.12	0.17	<0.05	0.21
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.1	2.04	107	0.39	7.8	<0.1	0.044	30	6.22	12	4.59	<0.005	0.28	16.8	<0.2	<0.1	0.155	0.572	28.9	26.5	0.85	<0.1	0.107	<0.05	0.1
BH/MW23-8	23-8-2D	0.76 - 1.52	26-Jul-23	<0.1	1.87	96.1	0.34	7.6	<0.1	0.059	19.5	5.37	10.2	4.24	0.006	0.54	10.8	<0.2	<0.1	0.136	0.492	26.7	25	0.88	<0.1	0.109	<0.05	0.11
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.1	2.16	54.1	0.37	6.6	<0.1	0.027	39.1	5.06	9.54	4.63	0.006	0.6	19.8	<0.2	<0.1	0.095	0.483	26.7	23.2	2.07	0.12	0.117	<0.05	0.22

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
5. **BOLD** *Denotes entries exceed the criteria*
6. *Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Insitutional/Industrial/Commercial/Community Property Use with Coarse and Medium-Fine Textured Soils*
7. * *Denotes the boron standards are for hot water soluble extract for all surface soils. For subsurface soils the standards are for total boron (mixed strong acid digest), as ecological criteria are not considered*
8. ** *Denotes analysis for methyl mercury only applies when mercury (total) standard is exceeded*

8.1.4.4 PAHs

Soil Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

				PAHs																		
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.072	0.093	0.16	0.36	0.3	0.47	0.68	0.48	2.8	0.1	0.56	0.12	0.23	0.59	0.59	0.59	0.09	0.69	1
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																			
BH/MW23-1	23-1-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-5	23-5-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-6	23-6-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2D	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-12	23-12-2	0.76 - 1.52	27-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
4. **BOLD** *Denotes entries exceed the criteria*
5. *Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Insitutional/Industrial/Commercial/Community Property Use with Coarse and Medium-Fine Textured Soils*
6. * *The methyl naphthalenes standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene with the provision that if both are detected the sum of the two must not exceed the standard*

8.1.4.5 OC Pesticides

Soil Analytical Results: Organochlorine (OC) Pesticides

				OC Pesticides														
				DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	0.05	1.4	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date															
BH/MW23-1	23-1-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00021	<0.00042	<0.00021	<0.00042	<0.0005	<0.00021	<0.00021	<0.0005	<0.0005	<0.0005	<0.00021	<0.0005
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-4	23-4-2D	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-5	23-5-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00025	<0.00042	<0.00025	<0.00042	<0.0005	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.00025	<0.0005
BH/MW23-7	23-7-1	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-8	23-8-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-9	23-9-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00022	<0.00042	<0.00022	<0.00042	<0.0005	<0.00022	<0.00022	<0.0005	<0.0005	<0.0005	<0.00022	<0.0005
BH/MW23-11	23-11-2	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
4. **BOLD** *Denotes entries exceed the criteria*
5. *Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Insitutional/Industrial/Commercial/Community Property Use with Coarse and Medium-Fine Textured Soils*

8.1.5 Ground Water Data

8.1.5.1 PAHs

Ground Water Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

			PAHs																	
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			4.1	1	0.1	0.2	0.01	0.1	0.2	0.1	0.1	0.2	0.4	120	0.2	2	2	2	7	0.1	0.2
Sample Location	Sample ID	Sample Date																			
BH/MW23-1	23-1	7-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-2	23-2	28-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.115	0.047	0.068	0.051	<0.02	<0.01
BH/MW23-5	23-5	7-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-6	23-6	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.084	0.034	0.05	0.055	<0.02	0.024
BH/MW23-6	23-6D	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.074	0.03	0.044	<0.05	<0.02	0.022
BH/MW23-10	23-10	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.032	0.013	0.019	<0.05	<0.02	<0.01
TRIP BLANK	TRIP BLANK	28-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
4. **BOLD** *Denotes entries exceed the criteria*
5. *Criteria is Ontario Regualtion 153/04, Table 1 Full Depth Background Site Condition Standards for All Types of Property Use*
6. * *The methyl naphthalenes standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene with the provision that if both are detected the sum of the two must not exceed the standard*

8.1.5.2 OC Pesticides

Ground Water Analytical Results: Organochlorine (OC) Pesticides

			OC Pesticides													
			DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			1.8	10	0.05	0.01	0.06	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Date															
BH/MW23-2	23-2	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-3	23-3	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-4	23-4	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-5	23-5	7-Sep-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7D	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-8	23-8	27-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-11	23-11	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Notes:

1. - *In guideline row(s) denotes no criteria for that parameter*
2. - *In data row(s) denotes parameter not analyzed*
3. mbgs *Denotes metres below ground surface*
4. **BOLD** *Denotes entries exceed the criteria*
5. *Criteria is Ontario Regualtion 153/04, Table 1 Full Depth Background Site Condition Standards for All Types of Property Use*

8.1.6 Sediment Data

Sediment sampling was not part of this investigation.

8.1.7 Soil and Ground Water Maximum Concentration Data

8.1.7.1 Soil Maximum Concentration Data

Parameter	MECP Table 1 RPIICC SCS (µg/g)	Maximum Soil Concentration (µg/g)	Location of Maximum Concentration	Sample Depth (m)
VOCs - BTEX				
Benzene	0.02	<0.005	All Locations	0.00 – 1.52
Ethylbenzene	0.05	<0.015	All Locations	0.00 – 1.52
Toluene	0.2	<0.05	All Locations	0.00 – 1.52
Xylene Mixture	0.05	<0.05	All Locations	0.00 – 1.52
Metals				
Barium	220	122	BH/MW23-7	0.76 – 1.52
Beryllium	2.5	0.63	BH/MW23-7	0.76 – 1.52
Boron (total)	36	10.4	BH/MW23-7	0.76 – 1.52
Cadmium	1.2	0.115	BH/MW23-7	0.76 – 1.52
Chromium Total	70	39.1	BH/MW23-11	0.76 – 1.52
Cobalt	21	7.57	BH/MW23-7	0.76 – 1.52
Copper	92	14.6	BH/MW23-7	0.76 – 1.52
Lead	120	7.97	BH/MW23-7	0.76 – 1.52
Molybdenum	2	0.6	BH/MW23-11	0.76 – 1.52
Nickel	82	20.3	BH/MW23-3	0.76 – 1.52
Silver	0.5	<0.1	All Locations	0.76 – 1.52
Thallium	1	0.218	BH/MW23-7	0.76 – 1.52
Uranium	2.5	0.704	BH/MW23-3	0.76 – 1.52
Vanadium	86	38.2	BH/MW23-7	0.76 – 1.52
Zinc	200	37.6	BH/MW23-7	0.76 – 1.52
Metals – Hydride Forming				
Antimony	1.3	<0.1	All Location	0.76 – 1.52
Arsenic	18	2.91	BH/MW23-7	0.76 – 1.52
Selenium	1.5	<0.2	All Location	0.76 – 1.52
OC Pesticides				
Aldrin	0.05	<0.02	All Locations	0.00 – 1.52
Chlordane	0.05	<0.03	All Locations	0.00 – 1.52
DDD	0.05	<0.03	All Locations	0.00 – 1.52
DDE	0.05	<0.03	All Locations	0.00 – 1.52

Parameter	MECP Table 1 RPIICC SCS (µg/g)	Maximum Soil Concentration (µg/g)	Location of Maximum Concentration	Sample Depth (m)
DDT	1.4	<0.03	All Locations	0.00 – 1.52
Dieldrin	0.05	<0.02	All Locations	0.00 – 1.52
Endosulfan	0.04	<0.03	All Locations	0.00 – 1.52
Endrin	0.04	<0.02	All Locations	0.00 – 1.52
Heptachlor	0.05	<0.02	All Locations	0.00 – 1.52
Heptachlor Epoxide	0.05	<0.02	All Locations	0.00 – 1.52
Hexachlorobenzene	0.01	<0.01	All Locations	0.00 – 1.52
Hexachlorobutadiene	0.01	<0.01	All Locations	0.00 – 1.52
Hexachlorocyclohexane Gamma-	0.01	<0.01	All Locations	0.00 – 1.52
Hexachloroethane	0.01	<0.01	All Locations	0.00 – 1.52
Methoxychlor	0.05	<0.02	All Locations	0.00 – 1.52
PAHs				
Acenaphthene	0.072	<0.05	All Locations	0.00 – 1.52
Acenaphthylene	0.093	<0.05	All Locations	0.00 – 1.52
Anthracene	0.16	<0.05	All Locations	0.00 – 1.52
Benz(a)anthracene	0.36	<0.05	All Locations	0.00 – 1.52
Benzo(a)pyrene	0.3	<0.05	All Locations	0.00 – 1.52
Benzo(b)fluoranthene	0.47	<0.05	All Locations	0.00 – 1.52
Benzo(g,h,i)perylene	0.68	<0.05	All Locations	0.00 – 1.52
Benzo(k)fluoranthene	0.48	<0.05	All Locations	0.00 – 1.52
Chrysene	2.8	<0.05	All Locations	0.00 – 1.52
Dibenzo(a,h)anthracene	0.1	<0.05	All Locations	0.00 – 1.52
Fluoranthene	0.56	<0.05	All Locations	0.00 – 1.52
Fluorene	0.12	<0.05	All Locations	0.00 – 1.52
Indeno(1,2,3-cd)pyrene	0.23	<0.05	All Locations	0.00 – 1.52
Methlynaphthalene, 2-(1-)	0.59	<0.05	All Locations	0.00 – 1.52
Naphthalene	0.09	<0.01	All Locations	0.00 – 1.52
Phenanthrene	0.69	<0.05	All Locations	0.00 – 1.52
Pyrene	1	<0.05	All Locations	0.00 – 1.52
PHCs				
Petroleum Hydrocarbons F1	25	<5.0	All Locations	0.00 – 1.52
Petroleum Hydrocarbons F2	10	<10	All Locations	0.00 – 1.52
Petroleum Hydrocarbons F3	240	<50	All Locations	0.00 – 1.52

Parameter	MECP Table 1 RPIICC SCS (µg/g)	Maximum Soil Concentration (µg/g)	Location of Maximum Concentration	Sample Depth (m)
Petroleum Hydrocarbons F4	120	<50	All Locations	0.00 – 1.52
VOCs – Trihalomethanes				
Bromodichloromethane	0.05	<0.05	All Locations	0.00 – 1.52
Bromoform	0.05	<0.05	All Locations	0.00 – 1.52
Dibromochloromethane	0.05	<0.05	All Locations	0.00 – 1.52
VOCs				
Acetone	0.5	<0.5	All Locations	0.00 – 1.52
Bromomethane	0.05	<0.05	All Locations	0.00 – 1.52
Carbon Tetrachloride	0.05	<0.05	All Locations	0.00 – 1.52
Chlorobenzene	0.05	<0.05	All Locations	0.00 – 1.52
Chloroform	0.05	<0.05	All Locations	0.00 – 1.52
Dichlorobenzene, 1,2-	0.05	<0.05	All Locations	0.00 – 1.52
Dichlorobenzene, 1,3-	0.05	<0.05	All Locations	0.00 – 1.52
Dichlorobenzene, 1,4-	0.05	<0.05	All Locations	0.00 – 1.52
Dichlorodifluoromethane	0.05	<0.05	All Locations	0.00 – 1.52
Dichloroethane, 1,1-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloroethane, 1,2-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloroethylene, 1,1-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloroethylene , 1,2-cis-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloroethylene, 1,2-trans-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloropropane, 1,2-	0.05	<0.05	All Locations	0.00 – 1.52
Dichloropropene, 1,3-	0.05	<0.05	All Locations	0.00 – 1.52
Ethylene Dibromide	0.05	<0.05	All Locations	0.00 – 1.52
Hexane (n)	0.05	<0.05	All Locations	0.00 – 1.52
Methyl Ethyl Ketone	0.5	<0.5	All Locations	0.00 – 1.52
Methyl Isobutyl Ketone	0.5	<0.5	All Locations	0.00 – 1.52
Methyl tert-Butyl Ether (MTBE)	0.05	<0.04	All Locations	0.00 – 1.52
Methylene Chloride	0.05	<0.045	All Locations	0.00 – 1.52
Styrene	0.05	<0.05	All Locations	0.00 – 1.52
Tetrachloroethane, 1,1,1,2-	0.05	<0.05	All Locations	0.00 – 1.52
Tetrachloroethane, 1,1,2,2-	0.05	<0.05	All Locations	0.00 – 1.52
Tetrachloroethylene	0.05	<0.05	All Locations	0.00 – 1.52
Trichloroethane, 1,1,1-	0.05	<0.05	All Locations	0.00 – 1.52

Parameter	MECP Table 1 RPIICC SCS (µg/g)	Maximum Soil Concentration (µg/g)	Location of Maximum Concentration	Sample Depth (m)
Trichloroethane, 1,1,2-	0.05	<0.05	All Locations	0.00 – 1.52
Trichloroethylene	0.05	<0.01	All Locations	0.00 – 1.52
Trichlorofluoromethane	0.25	<0.05	All Locations	0.00 – 1.52
Vinyl Chloride	0.02	<0.02	All Locations	0.00 – 1.52
Other Regulated Parameters				
Chromium VI	0.66	0.15	BH/MW23-3	0.76 – 1.52
Cyanide (CN-)	0.051	<0.05	All Locations	0.76 – 1.52
Electrical Conductivity	0.57	0.17	BH/MW23-7	0.76 – 1.52
Mercury	0.27	0.0156	BH/MW23-7	0.76 – 1.52
Sodium Adsorption Ratio (unitless)	2.4	0.21	BH/MW23-7	0.76 – 1.52

Note:

1. ND or < represents Non-Detect.
2. Bold entries exceed the Criteria.
3. Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use with All-Textured Soils.

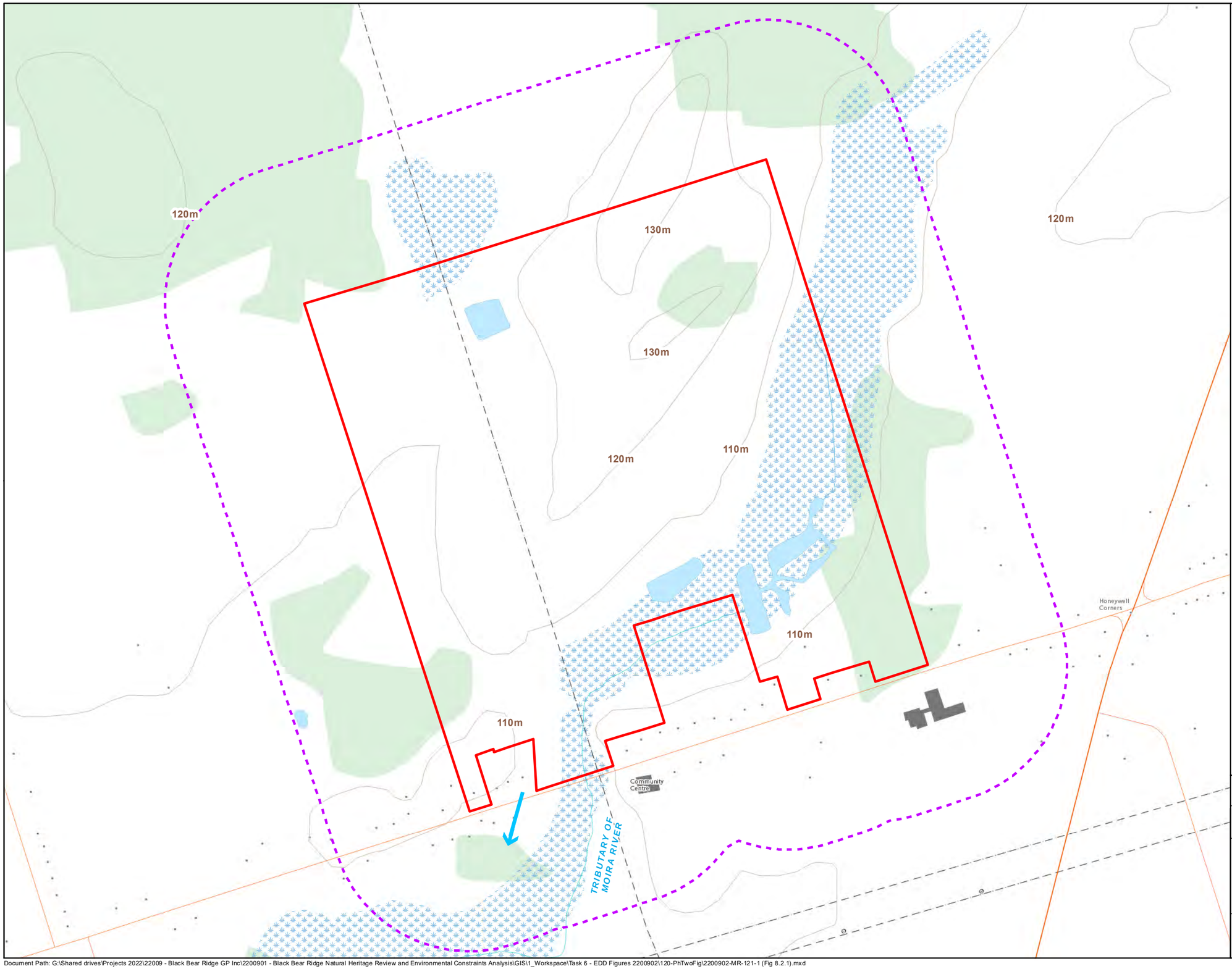
8.1.7.2 Ground Water Maximum Concentration Data

Parameter	MECP Table 1 All Types of Property Uses SCS (µg/L)	Maximum Ground Water Concentration (µg/L)	Location of Maximum Concentration
OC Pesticides			
Aldrin	0.01	<0.008	All Locations
Chlordane	0.06	<0.011	All Locations
DDD	1.8	<0.006	All Locations
DDE	10	<0.006	All Locations
DDT	0.05	<0.006	All Locations
Dieldrin	0.05	<0.008	All Locations
Endosulfan	0.05	<0.01	All Locations
Endrin	0.05	<0.01	All Locations
Heptachlor	0.01	<0.008	All Locations
Heptachlor Epoxide	0.01	<0.008	All Locations
Hexachlorobenzene	0.01	<0.008	All Locations
Hexachlorobutadiene	0.01	<0.008	All Locations
Hexachlorocyclohexane Gamma-	0.01	<0.008	All Locations
Hexachloroethane	0.01	<0.008	All Locations
Methoxychlor	0.05	<0.008	All Locations
PAHs			
Acenaphthene	4.1	<0.01	All Locations
Acenaphthylene	1	<0.01	All Locations
Anthracene	0.1	<0.01	All Locations
Benz(a)anthracene	0.2	<0.01	All Locations
Benzo(a)pyrene	0.01	<0.005	All Locations
Benzo(b)fluoranthene	0.1	<0.01	All Locations
Benzo(g,h,i)perylene	0.2	<0.01	All Locations
Benzo(k)fluoranthene	0.1	<0.01	All Locations
Chrysene	0.1	<0.01	All Locations
Dibenzo(a,h)anthracene	0.2	<0.005	All Locations
Fluoranthene	0.4	<0.01	All Locations
Fluorene	120	<0.01	All Locations
Indeno(1,2,3-cd)pyrene	0.2	<0.01	All Locations

Parameter	MECP Table 1 All Types of Property Uses SCS (µg/L)	Maximum Ground Water Concentration (µg/L)	Location of Maximum Concentration
Methlynaphthalene, 2-(1-)	2	0.115	BH/MW23-2
Naphthalene	7	0.055	BH/MW23-6
Phenanthrene	0.1	<0.02	All Locations
Pyrene	0.2	0.024	BH/MW23-6

Note:

1. ND or < represents Non-Detect.
2. Bold entries exceed the Criteria.
3. Criteria is Ontario Regulation 153/04, Table 1 Full Depth Background Site Condition Standards for All Types of Property Uses with All-Textured Soils.



LEGEND

- Phase Two Property
- Phase One Study Area
- Regionally Inferred Ground Water Flow Direction

0 50 100 150 200 250

METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:6,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 22, 2023

Basemap:
Toporama webmap service

NORTH

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Areas of Natural Significance and Water Bodies

Palmer

REF. NO. 2200902-MR-121-1

Figure 8.2.1

Document Path: G:\Shared drives\Projects 2022\22009 - Black Bear Ridge GP Inc\2200901 - Black Bear Ridge Natural Heritage Review and Environmental Constraints Analysis\GIS\1_Workspace\Task 6 - EDD Figures 2200902\120-PhTwoFig\2200902-MR-121-1 (Fig 8.2.1).mxd

LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 22, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

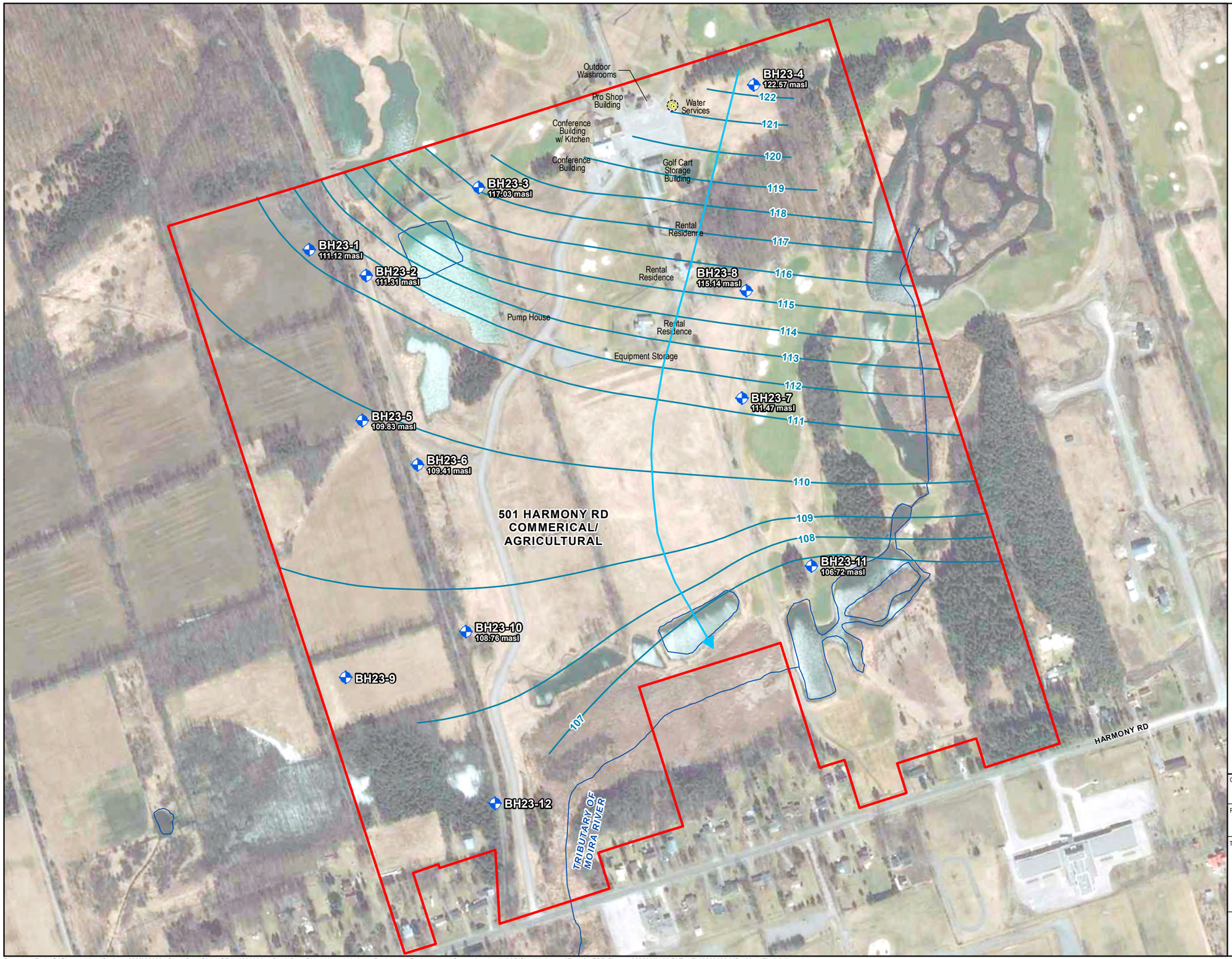
TITLE
Property Before Actions Taken to Reduce the Concentration of Contaminants

Palmer

REF. NO. 2200902-MR-122-1

Figure 8.2.2

Document Path: G:\Shared drives\Projects 2022\22009 - Black Bear Ridge GP Inc\2200901 - Black Bear Ridge Natural Heritage Review and Environmental Constraints Analysis\GIS\1_Workspace\Task 6 - EDD Figures 2200902\120-PhTwoFig\2200902-MR-122-1 (Fig 8.2.2).mxd



LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Ground Water Elevation Contour *(masl)*
- Plastic Water Storage Container
- Monitoring Well Location

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 22, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Interpreted Contours of Ground Water Elevations

Palmer

REF. NO. 2200902-MR-123-1

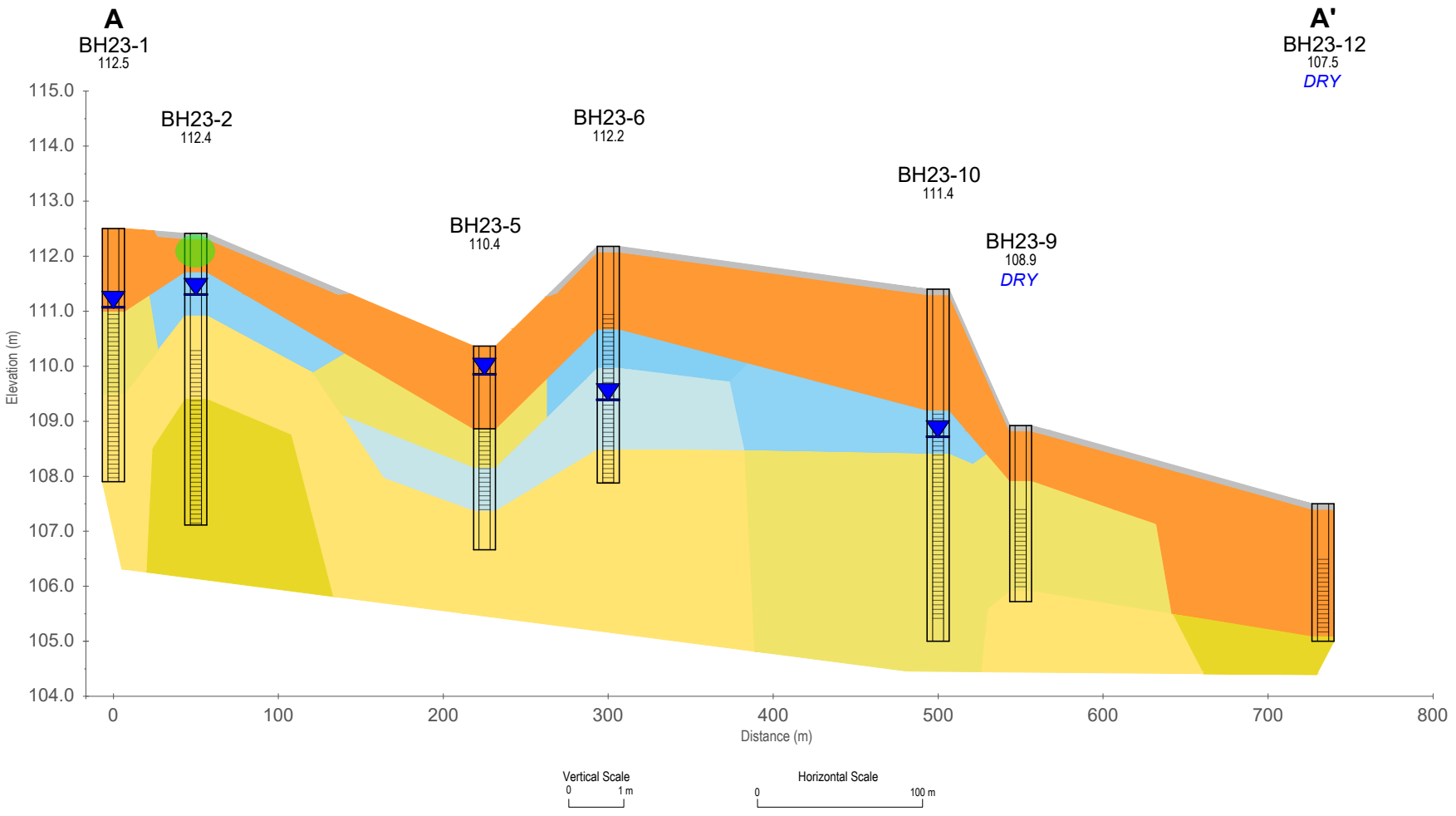
Figure 8.2.3

Document Path: G:\Shared drives\Projects 2022\22009 - Black Bear Ridge GP Inc\2200901 - Black Bear Ridge Natural Heritage Review and Environmental Constraints Analysis\GIS\1_Workspace\Task 6 - EDD Figures 2200902\120-PhTwoFig\2200902-MR-123-1 (Fig 8.2.3).mxd

Soil Analytical Results: Metals and Inorganics

				Metals																						Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																										
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.1	1.4	32.2	0.19	<5.0	<0.1	0.024	8.76	3	5.76	3.6	<0.005	0.19	5.68	<0.2	<0.1	0.095	0.452	15.5	12.3	1.04	<0.1	0.104	<0.05	0.14

Bedrock Not Encountered. No Exceedances Identified in Soil.



LEGEND:

SOILS

- Topsoil
- Fill
- Silty Clay
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-2: Metals & Inorganics

DATE: 9/26/2023	FIGURE NO. XA	TITLE: **Cross Section A-A' - Metals & Inorganics**	
CLIENT: Black Bear Ridge GP Inc		PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road	
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

Palmer™

871 Equestrian Court, Unit 1
Oakville, ON
L6L 6L7

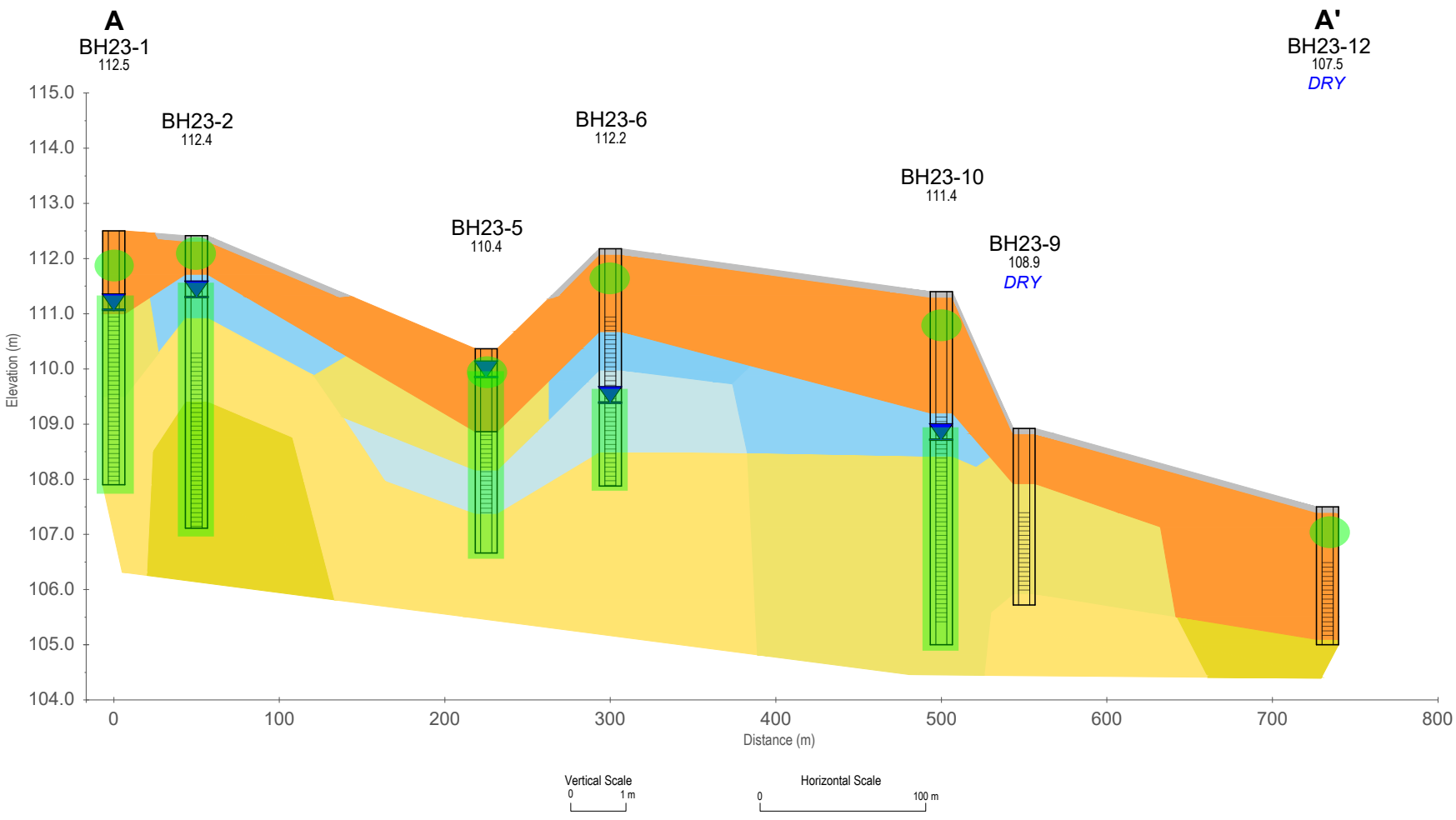
Soil Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

				PAHs																		
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.072	0.093	0.16	0.36	0.3	0.47	0.68	0.48	2.8	0.1	0.56	0.12	0.23	0.59	0.59	0.59	0.09	0.69	1
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																			
BH/MW23-1	23-1-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-5	23-5-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-6	23-6-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2D	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-12	23-12-2	0.76 - 1.52	27-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05

Ground Water Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

			PAHs																			
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			4.1	1	0.1	0.2	0.01	0.1	0.2	0.1	0.1	0.2	0.4	120	0.2	2	2	2	7	0.1	0.2
Sample Location	Sample ID	Sample Date																				
BH/MW23-1	23-1	07-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-2	23-2	28-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.115	0.047	0.068	0.051	<0.02	<0.01
BH/MW23-5	23-5	07-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-6	23-6	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.084	0.034	0.05	0.055	<0.02	0.024
BH/MW23-6	23-6D	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.074	0.03	0.044	<0.05	<0.02	0.022
BH/MW23-10	23-10	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.032	0.013	0.019	<0.05	<0.02	<0.01

Bedrock Not Encountered. No Exceedances Identified in Soil and Ground Water.



LEGEND:

SOILS

- Topsoil
- Fill
- Silty Clay
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-1: PAHs
BH23-2: PAHs
BH23-5: PAHs
BH23-6: PAHs
BH23-10: PAHs+ duplicate
BH23-12: PAHs

Ground Water:

MW23-1: PAHs
MW23-2: PAHs
MW23-5: PAHs
MW23-6: PAHs + duplicate
MW23-10: PAHs

DATE: 9/26/2023	FIGURE NO. XA		TITLE: Cross Section A-A' - PAHs
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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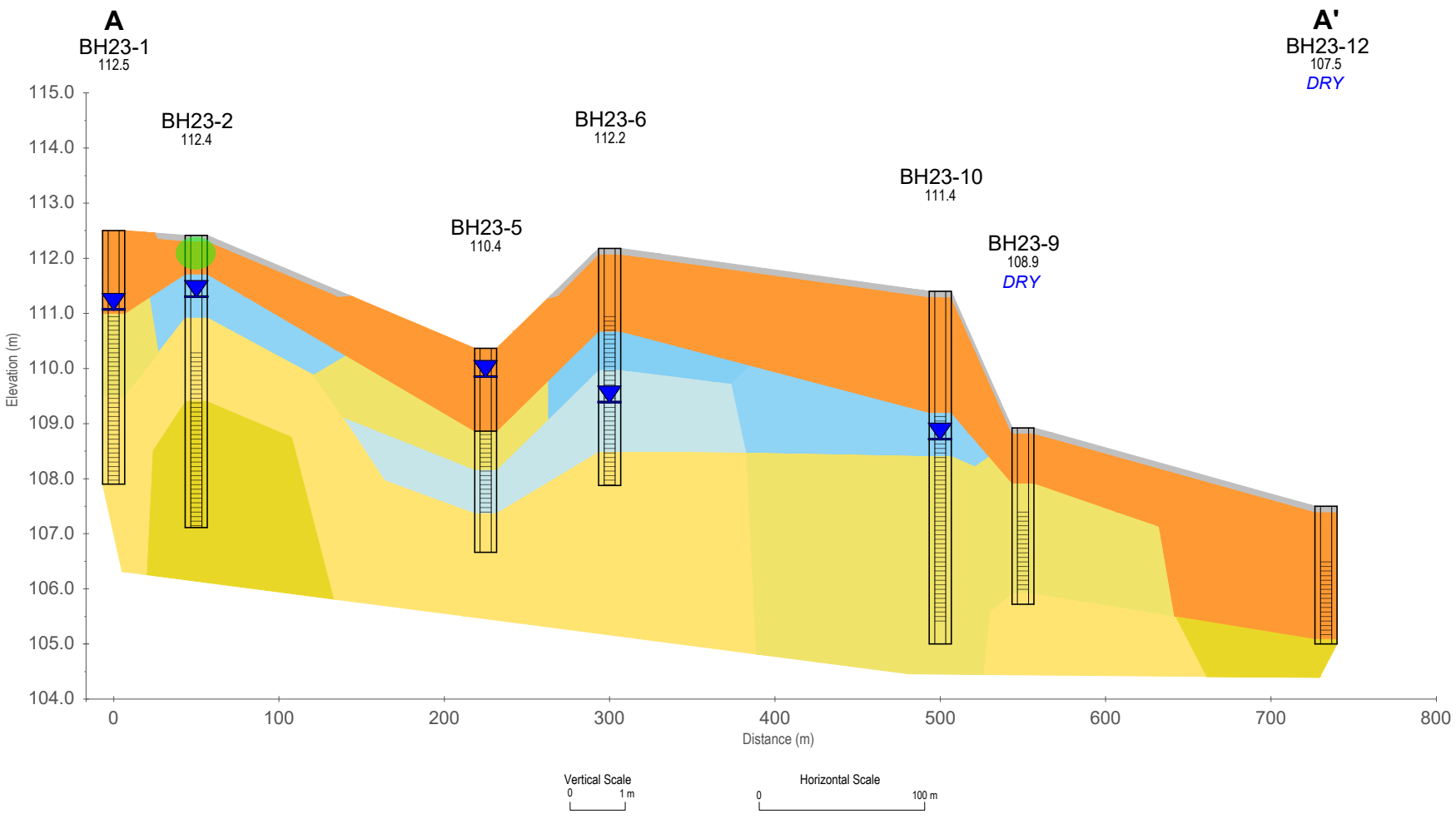
Soil Analytical Results: Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)

				PHCs					BTEX			
				F1 (C6-C10)	F1 (C6-C10) - BTEX*	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Benzene	Toluene	Ethylbenzene	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				25	25	10	240	120	0.02	0.2	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date									
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil.



LEGEND:

SOILS

- Topsoil
- Fill
- Silty Clay
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-2: PHC, BTEX

DATE: 9/26/2023	FIGURE NO. XA	TITLE: **Cross Section A-A' - PHCs & BTEX**	
CLIENT: Black Bear Ridge GP Inc		PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road	
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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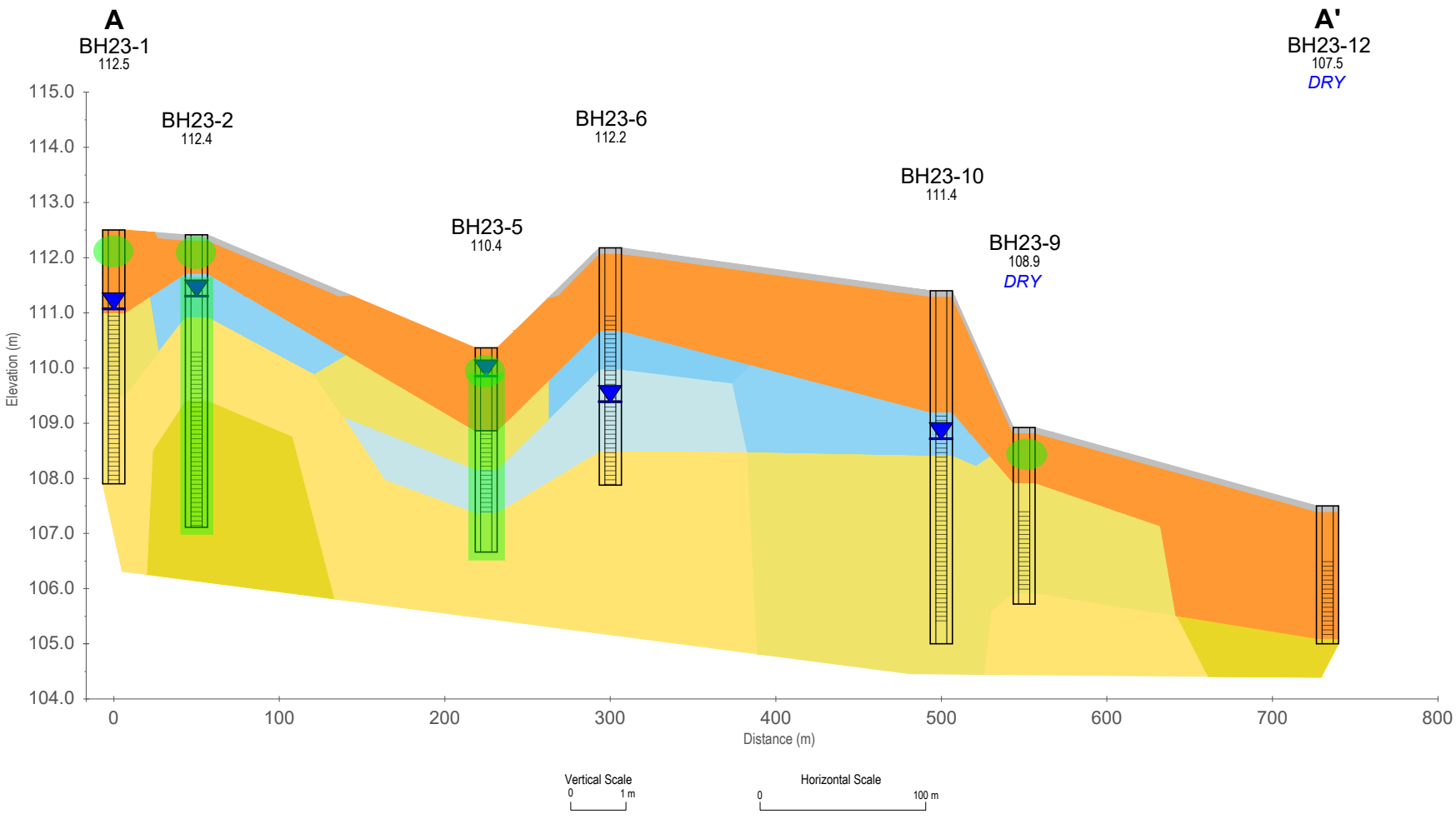
Soil Analytical Results: Organochlorine (OC) Pesticides

				OC Pesticides													
				DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	0.05	1.4	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date															
BH/MW23-1	23-1-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00021	<0.00042	<0.00021	<0.00042	<0.0005	<0.00021	<0.00021	<0.0005	<0.0005	<0.0005	<0.00021	<0.0005
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-5	23-5-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00025	<0.00042	<0.00025	<0.00042	<0.0005	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.00025	<0.0005
BH/MW23-9	23-9-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00022	<0.00042	<0.00022	<0.00042	<0.0005	<0.00022	<0.00022	<0.0005	<0.0005	<0.0005	<0.00022	<0.0005

Ground Water Analytical Results: Organochlorine (OC) Pesticides

			OC Pesticides														
			DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			1.8	10	0.05	0.01	0.06	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Date															
BH/MW23-2	23-2	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-5	23-5	07-Sep-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Bedrock Not Encountered. No Exceedances Identified in Soil or Ground Water.



LEGEND:

SOILS

- Topsoil
- Fill
- Silty Clay
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-1: OC Pesticides
BH23-2: OC Pesticides
BH23-5: OC Pesticides
BH23-9: OC Pesticides

Ground Water:

MW23-2: OC Pesticides
MW23-5: OC Pesticides

DATE: 9/26/2023	FIGURE NO. XA		TITLE: **Cross Section A-A' - OC Pesticides**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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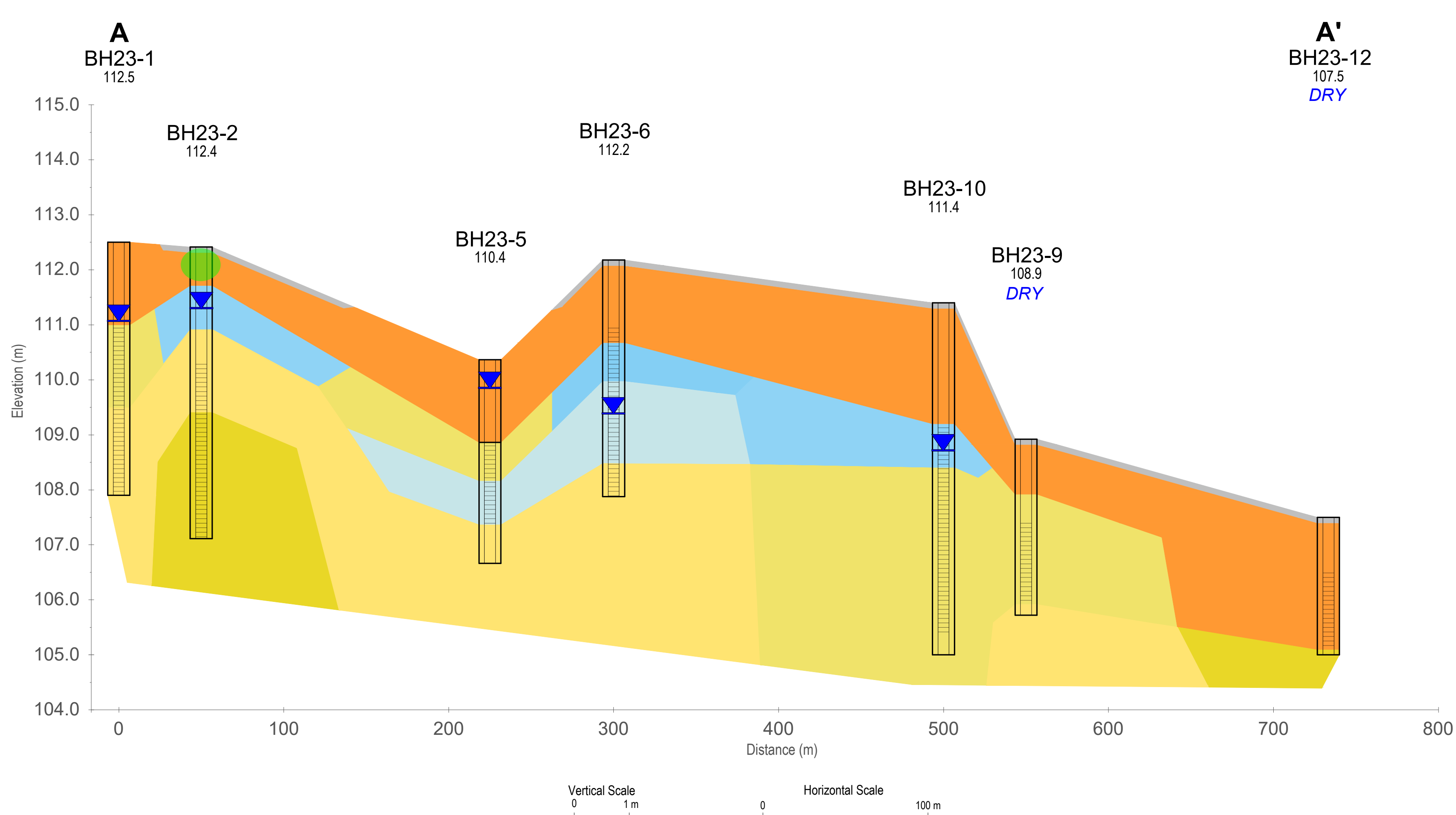
Soil Analytical Results: Volatile Organic Compounds (VOCs)

				VOCs																			
				Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroform	1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Methylene Chloride
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011). Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.5	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																				
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045

				VOCs																				
				1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,3-Dichloropropene (cis) + (trans)	Ethylbenzene	Hexane (n)	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl tert-Butyl Ether (MTBE)	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011). Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	-	-	0.05	0.05	0.05	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.25	0.02	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																				
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil.



LEGEND:

SOILS

- Topsoil
- Fill
- Silty Clay
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

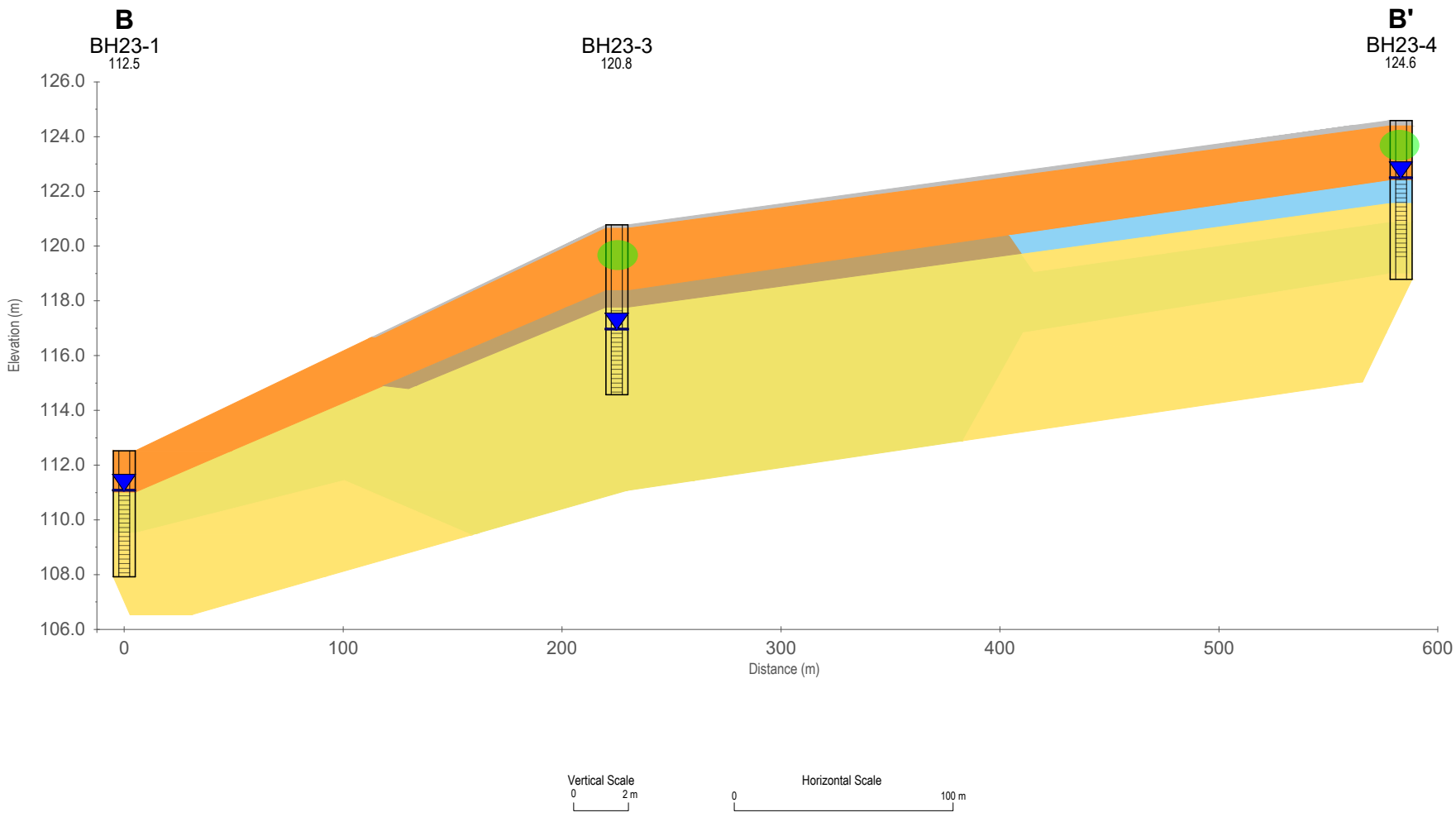
BH23-2: VOCs

DATE: 9/26/2023	FIGURE NO. XA	TITLE: **Cross Section A-A' - VOCs**	
CLIENT: Black Bear Ridge GP Inc		PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road	
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	Palmer™ 871 Equestrian Court, Unit 1 Oakville, ON L6L 6L7
DRAWN: CV	APPROVED: BF	REVISION: 1	

Soil Analytical Results: Metals and Inorganics

				Metals																						Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																										
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.1	2.62	104	0.5	9.5	<0.1	0.072	36.6	7.31	14.3	6.8	0.008	0.41	20.3	<0.2	<0.1	0.19	0.704	35.4	33.1	0.93	0.15	0.115	<0.05	<0.1
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.1	1.54	33.1	0.18	5	<0.1	0.03	10.1	3.2	5.61	3.06	<0.005	0.28	5.68	<0.2	<0.1	0.09	0.526	19.1	13	0.8	<0.1	0.084	<0.05	0.13

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Gravel
- Silty Sand
- Sandy Silt
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-3: Metals & Inorganics
BH23-4: Metals & Inorganics

DATE: 9/26/2023	FIGURE NO. XB		TITLE: **Cross Section B-B' - Metals & Inorganics**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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Oakville, ON
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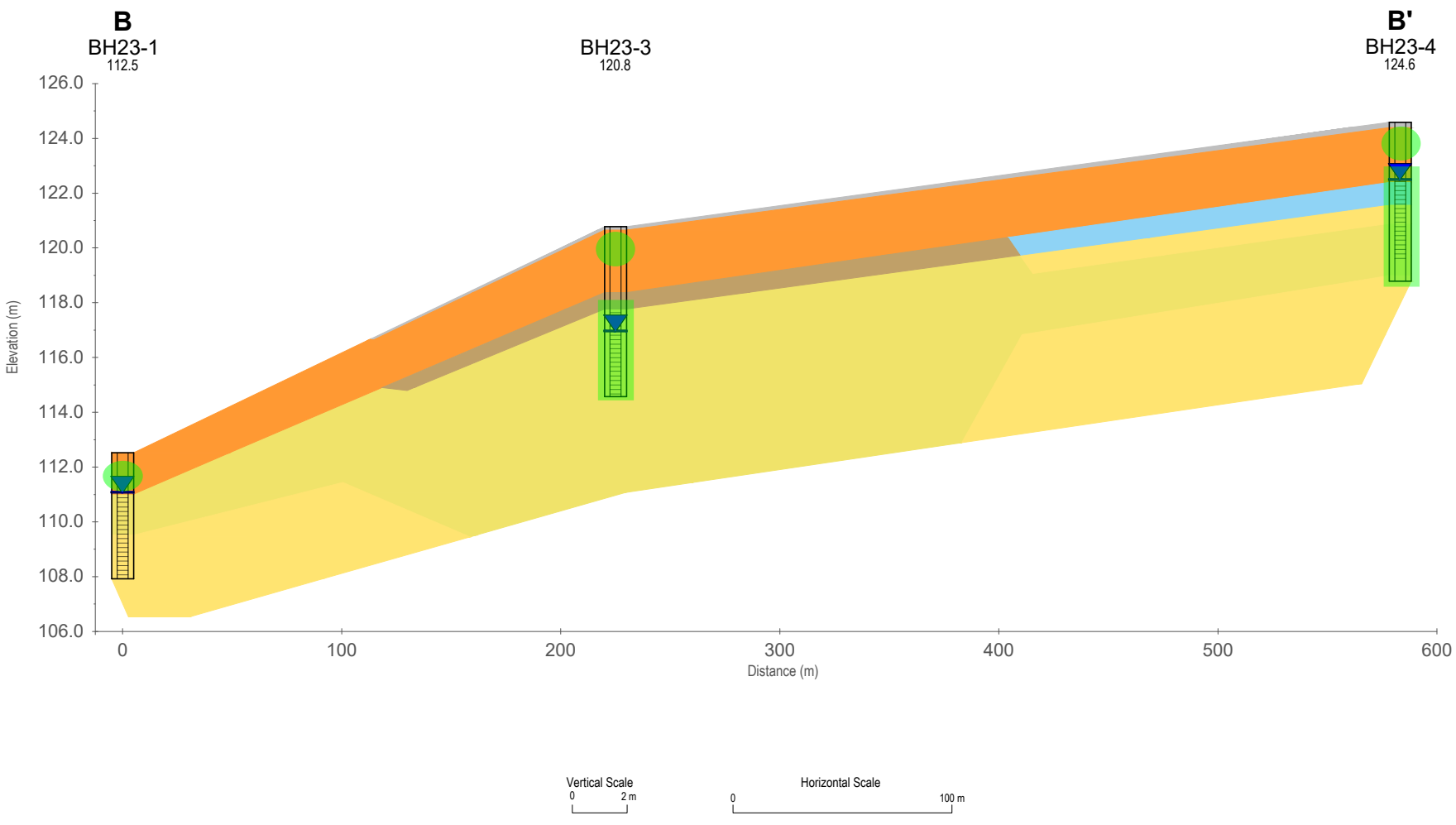
Soil Analytical Results: Organochlorine (OC) Pesticides

				OC Pesticides													
				DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	0.05	1.4	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date															
BH/MW23-1	23-1-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00021	<0.00042	<0.00021	<0.00042	<0.0005	<0.00021	<0.00021	<0.0005	<0.0005	<0.0005	<0.00021	<0.0005
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-4	23-4-2D	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02

Ground Water Analytical Results: Organochlorine (OC) Pesticides

			OC Pesticides														
			DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			1.8	10	0.05	0.01	0.06	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Date															
BH/MW23-3	23-3	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-4	23-4	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Bedrock Not Encountered. No Exceedances Identified in Soil or Ground Water



LEGEND:

SOILS

- Topsoil
- Fill
- Gravel
- Silty Sand
- Sandy Silt
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-1: OC Pesticides
BH23-3: OC Pesticides
BH23-4: OC Pesticides + duplicate

Ground Water:

MW23-3: OC Pesticides
MW23-4: OC Pesticides

DATE: 9/26/2023	FIGURE NO. XB		TITLE: **Cross Section B-B' - OC Pesticides**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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Oakville, ON
L6L 6L7

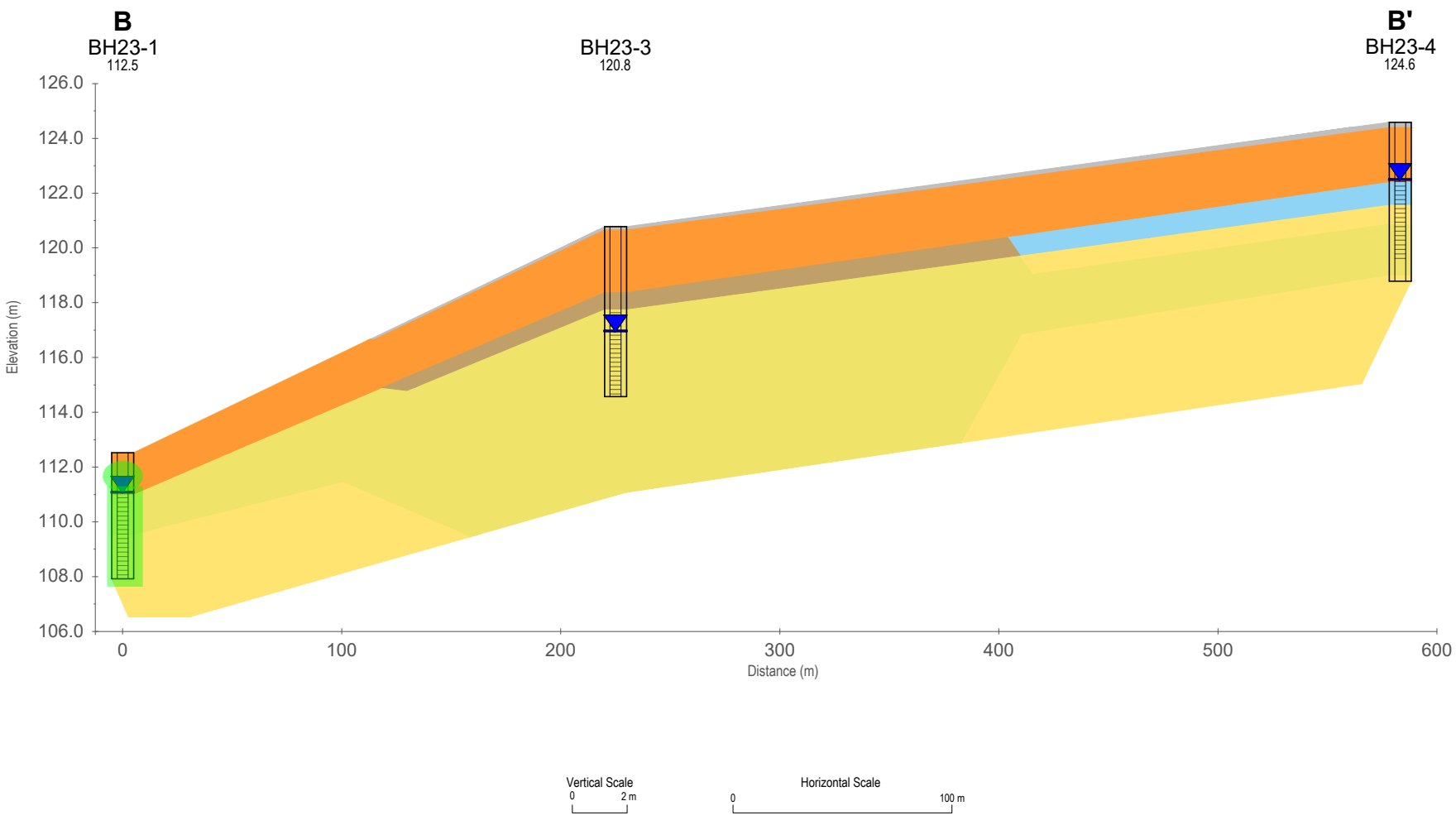
Soil Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

				PAHs																		
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.072	0.093	0.16	0.36	0.3	0.47	0.68	0.48	2.8	0.1	0.56	0.12	0.23	0.59	0.59	0.59	0.09	0.69	1
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																			
BH/MW23-1	23-1-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05

Ground Water Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

			PAHs																		
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			4.1	1	0.1	0.2	0.01	0.1	0.2	0.1	0.1	0.2	0.4	120	0.2	2	2	2	7	0.1	0.2
Sample Location	Sample ID	Sample Date																			
BH/MW23-1	23-1	07-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Gravel
- Silty Sand
- Sandy Silt
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-1: PAHs

Ground Water:

MW23-1: PAHs

DATE: 9/26/2023	FIGURE NO. XB		TITLE: **Cross Section B-B' - PAHs**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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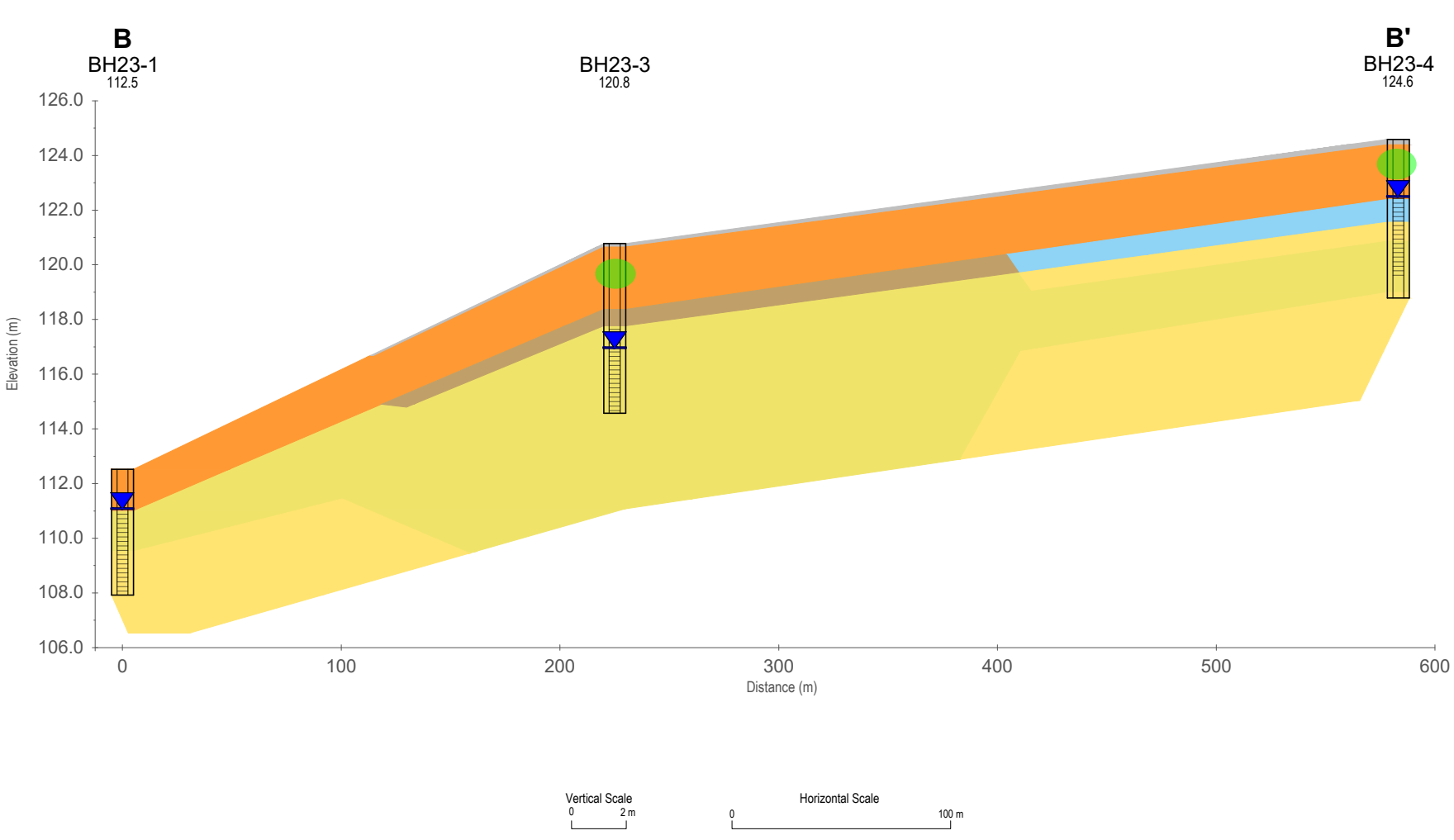
Soil Analytical Results: Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)

				PHCs					BTEX			
				F1 (C6-C10)	F1 (C6-C10) - BTEX*	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Benzene	Toluene	Ethylbenzene	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				25	25	10	240	120	0.02	0.2	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date									
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Gravel
- Silty Sand
- Sandy Silt
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-3: PHC/BTEX
BH23-4: PHC/BTEX + duplicate

DATE: 9/26/2023	FIGURE NO. XB		TITLE: **Cross Section B-B' - PHCs & BTEX**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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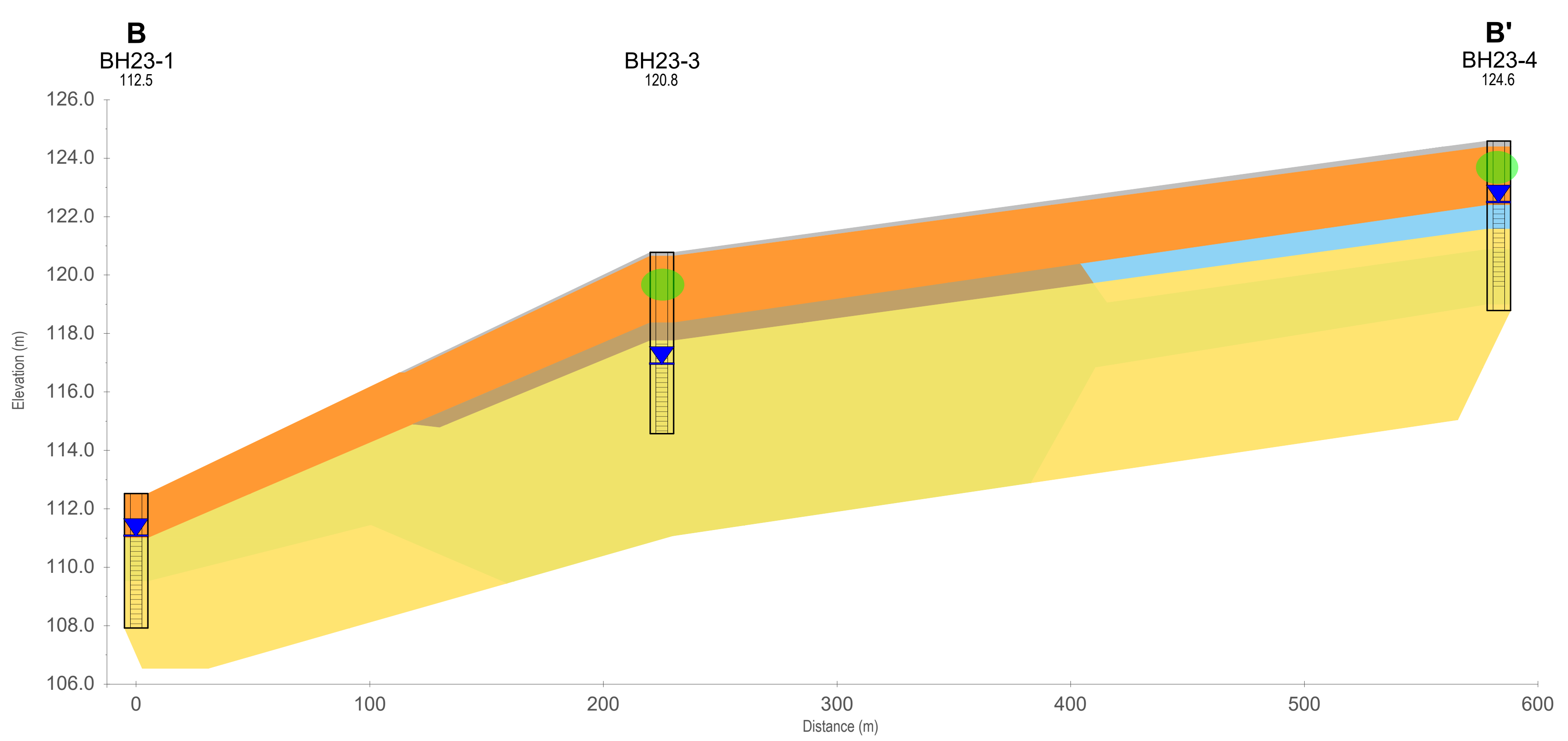
Soil Analytical Results: Volatile Organic Compounds (VOCs)

VOCs

Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroform	1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Methylene Chloride
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.5	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045

Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,3-Dichloropropene (cis) + (trans)	Ethylbenzene	Hexane (n)	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl tert-Butyl Ether (MTBE)	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	-	-	0.05	0.05	0.05	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.25	0.02	0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil



Vertical Scale 0 2 m

Horizontal Scale 0 100 m

LEGEND:

SOILS

- Topsoil
- Fill
- Gravel
- Silty Sand
- Sandy Silt
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

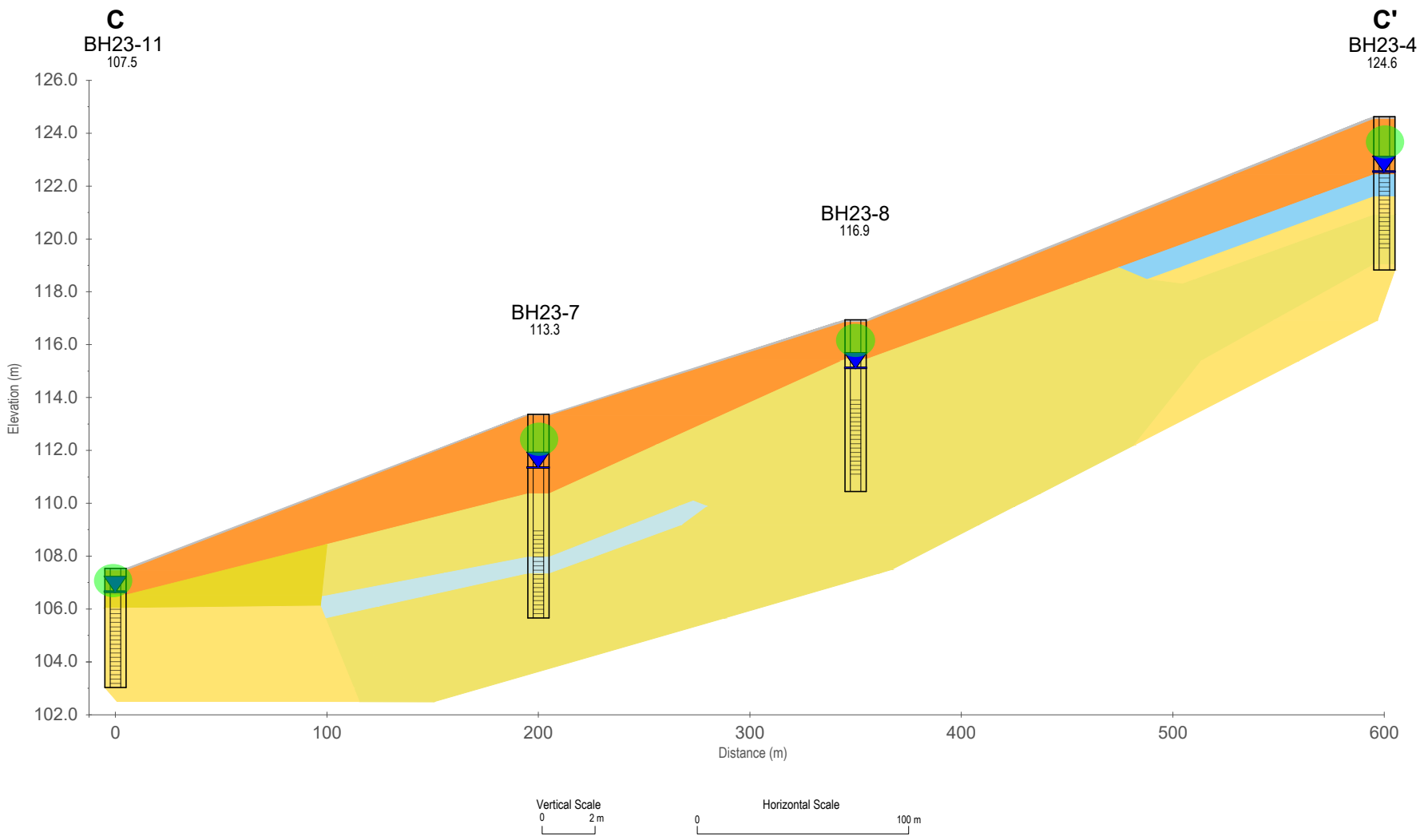
BH23-3: VOCs
BH23-4: VOCs + duplicate

DATE: 9/26/2023		FIGURE NO. **XB**		TITLE: **Cross Section B-B' - VOCs**	
CLIENT: Black Bear Ridge GP Inc				PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road	
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902		Palmer™	871 Equestrian Court, Unit 1 Oakville, ON L6L 6L7
DRAWN: CV	APPROVED: BF	REVISION: 1			

Soil Analytical Results: Metals and Inorganics

				Metals																						Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																										
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.1	1.54	33.1	0.18	5	<0.1	0.03	10.1	3.2	5.61	3.06	<0.005	0.28	5.68	<0.2	<0.1	0.09	0.526	19.1	13	0.8	<0.1	0.084	<0.05	0.13
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.1	2.91	122	0.63	10.4	0.13	0.115	34.8	7.57	14.6	7.97	0.016	0.4	19	<0.2	<0.1	0.218	0.701	38.2	37.6	2.63	0.12	0.17	<0.05	0.21
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.1	2.04	107	0.39	7.8	<0.1	0.044	30	6.22	12	4.59	<0.005	0.28	16.8	<0.2	<0.1	0.155	0.572	28.9	26.5	0.85	<0.1	0.107	<0.05	0.1
BH/MW23-8	23-8-2D	0.76 - 1.52	26-Jul-23	<0.1	1.87	96.1	0.34	7.6	<0.1	0.059	19.5	5.37	10.2	4.24	0.006	0.54	10.8	<0.2	<0.1	0.136	0.492	26.7	25	0.88	<0.1	0.109	<0.05	0.11
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.1	2.16	54.1	0.37	6.6	<0.1	0.027	39.1	5.06	9.54	4.63	0.006	0.6	19.8	<0.2	<0.1	0.095	0.483	26.7	23.2	2.07	0.12	0.117	<0.05	0.22

Bedrock Not Encounteredd. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-4: Metals & Inorganics
BH23-7: Metals & Inorganics
BH23-8: Metals& Inorganics + duplicate
BH23-11: Metals & Inorganics

DATE: 9/26/2023	FIGURE NO. XC	TITLE: **Cross Section C-C' - Metals & Inorganics**	
CLIENT: Black Bear Ridge GP Inc		PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road	
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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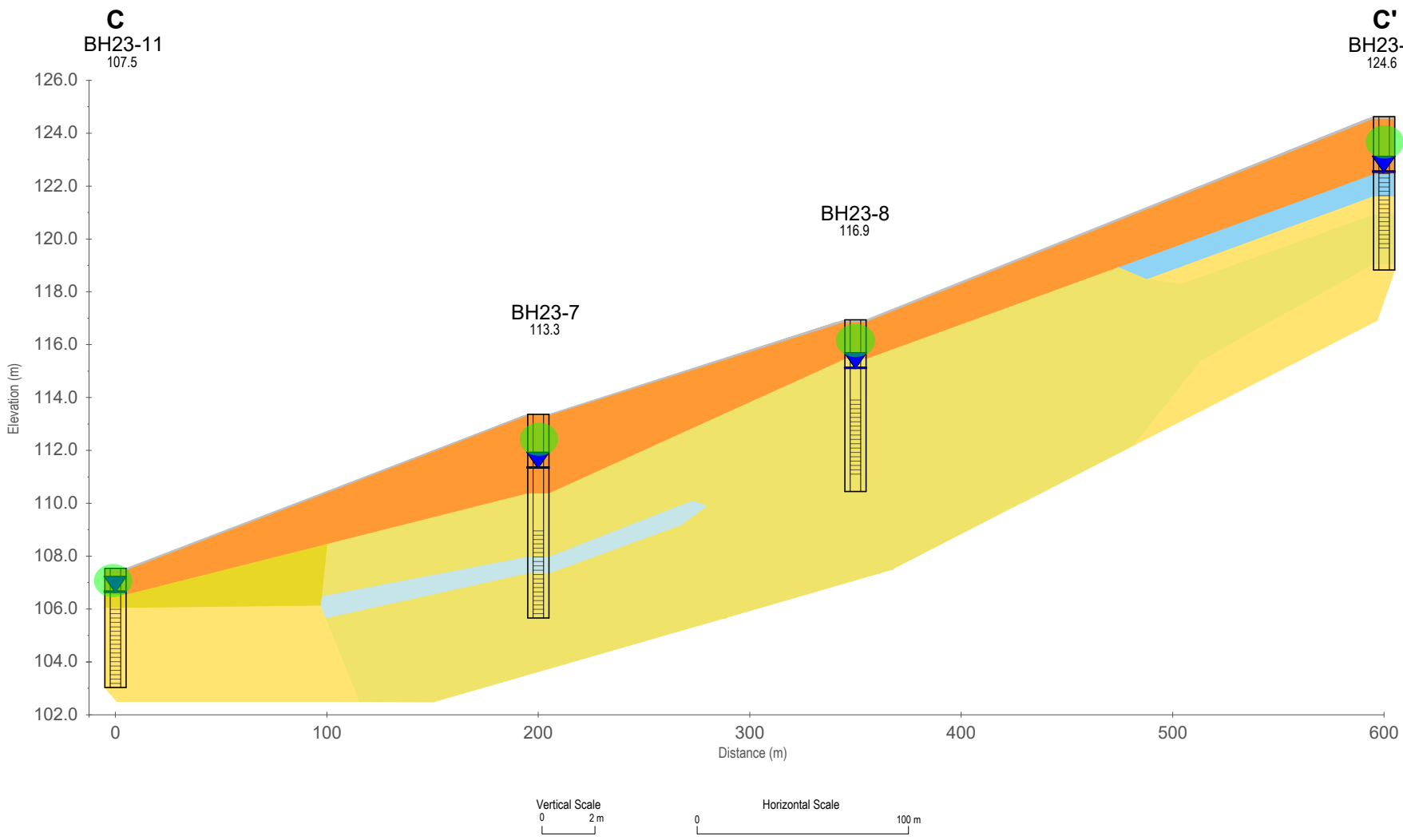
871 Equestrian Court, Unit 1
Oakville, ON
L6L 6L7

Soil Analytical Results: Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)

				PHCs					BTEX			
				F1 (C6-C10)	F1 (C6-C10) - BTEX*	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Benzene	Toluene	Ethylbenzene	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				25	25	10	240	120	0.02	0.2	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date									
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:
BH23-4: PHC/BTEX + duplicate
BH23-7: PHC/BTEX
BH23-8: PHC/BTEX
BH23-11: PHC/BTEX

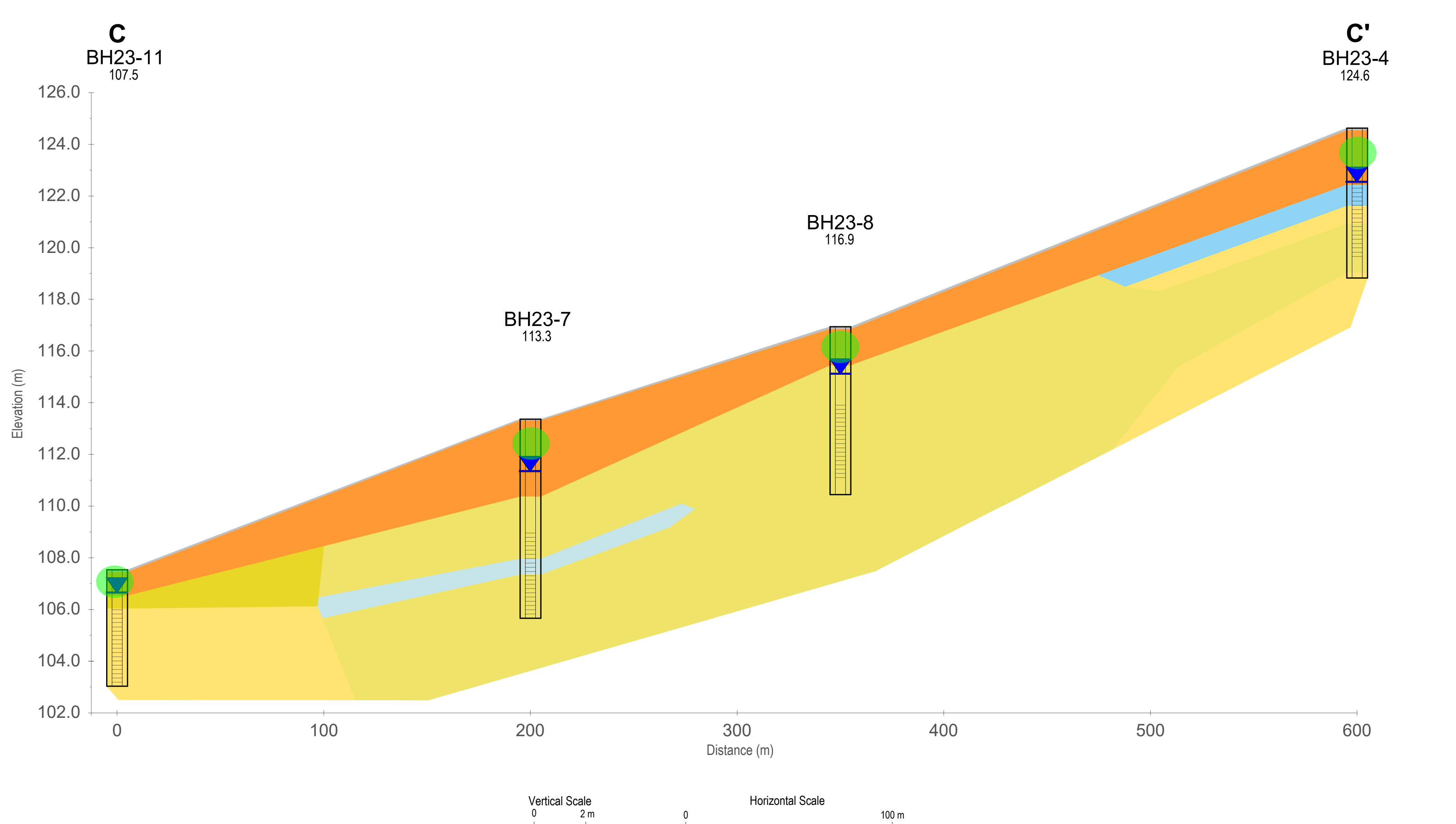
DATE: 9/26/2023	FIGURE NO. XC		TITLE: Cross Section C-C' - PHCs & BTEX
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	Palmer™ 871 Equestrian Court, Unit 1 Oakville, ON L6L 6L7
DRAWN: CV	APPROVED: BF	REVISION: 1	

Soil Analytical Results: Volatile Organic Compounds (VOCs)

Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroform	1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Methylene Chloride
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.5	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.045

Sample Location	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,3-Dichloropropene (cis) + (trans)	Ethylbenzene	Hexane (n)	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl tert-Butyl Ether (MTBE)	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total (Xylene Mixture)
	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition	0.05	-	-	0.05	0.05	0.05	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.25	0.02	0.05
BH/MW23-4	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-7	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-8	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-11	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-4: VOCs + duplicate
BH23-7: VOCs
BH23-8: VOCs
BH23-11: VOCs

DATE: 9/26/2023	FIGURE NO. XC	TITLE: **Cross Section C-C' - VOCs**
CLIENT: Black Bear Ridge GP Inc		PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902
DRAWN: CV	APPROVED: BF	REVISION: 1

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Oakville, ON
L6L 6L7

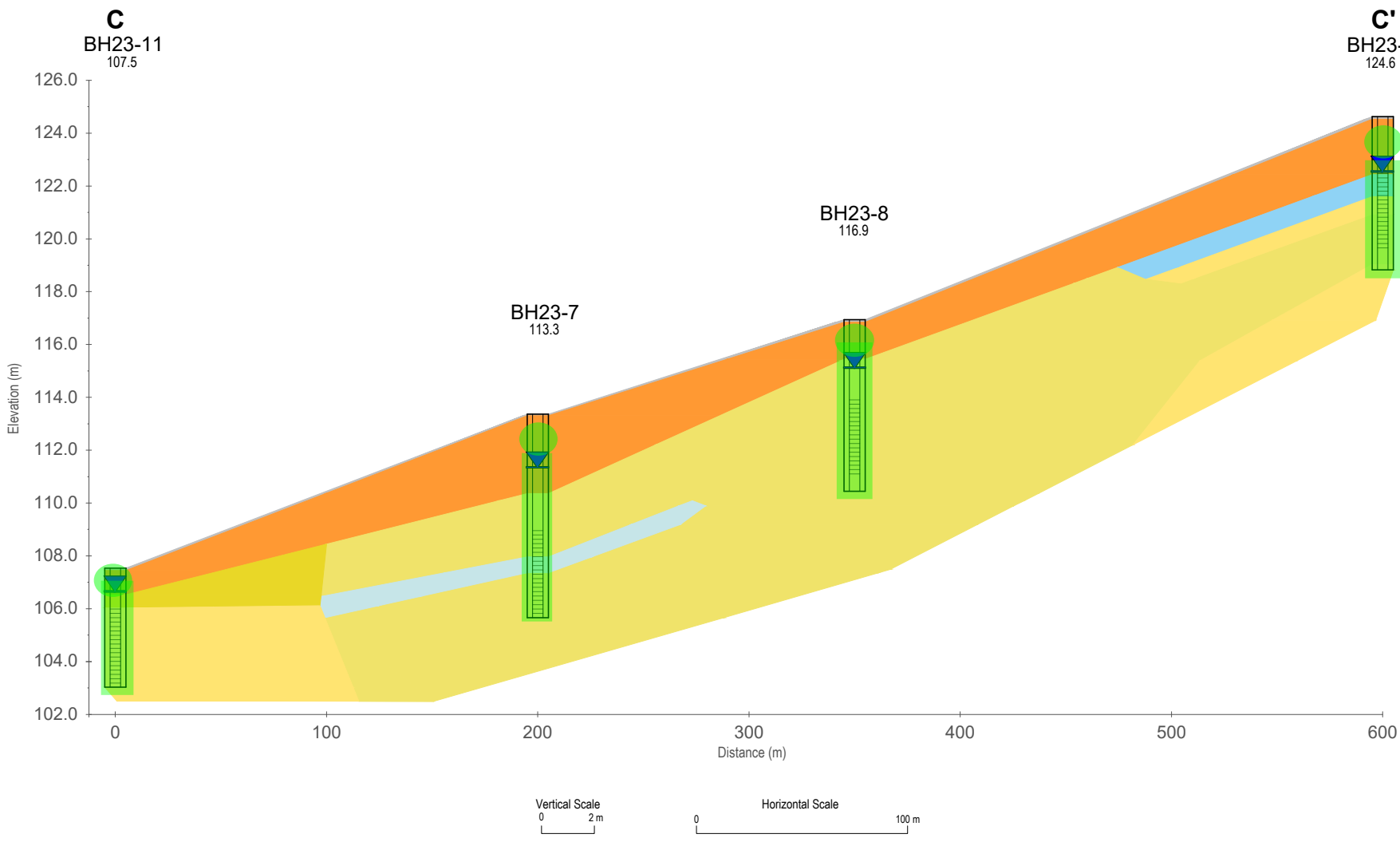
Soil Analytical Results: Organochlorine (OC) Pesticides

				OC Pesticides													
				DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	0.05	1.4	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date															
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-4	23-4-2D	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-7	23-7-1	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-8	23-8-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02
BH/MW23-11	23-11-2	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02

Ground Water Analytical Results: Organochlorine (OC) Pesticides

			OC Pesticides														
			DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			1.8	10	0.05	0.01	0.06	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Date															
BH/MW23-4	23-4	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7D	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-8	23-8	27-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-11	23-11	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-4: OC Pesticides+ duplicat e BH23-7: OC Pesticid es BH23-8: OC Pestici des BH23-11: OC Pestic

i

Ground Water:

MW23-4: OC Pesticides
MW23-7: OC Pesticides + duplicate
MW23-8: OC Pesticides
MW23-11: OC Pesticides

DATE: 9/26/2023	FIGURE NO. XC		TITLE: **Cross Section C-C' - OC Pesticides**
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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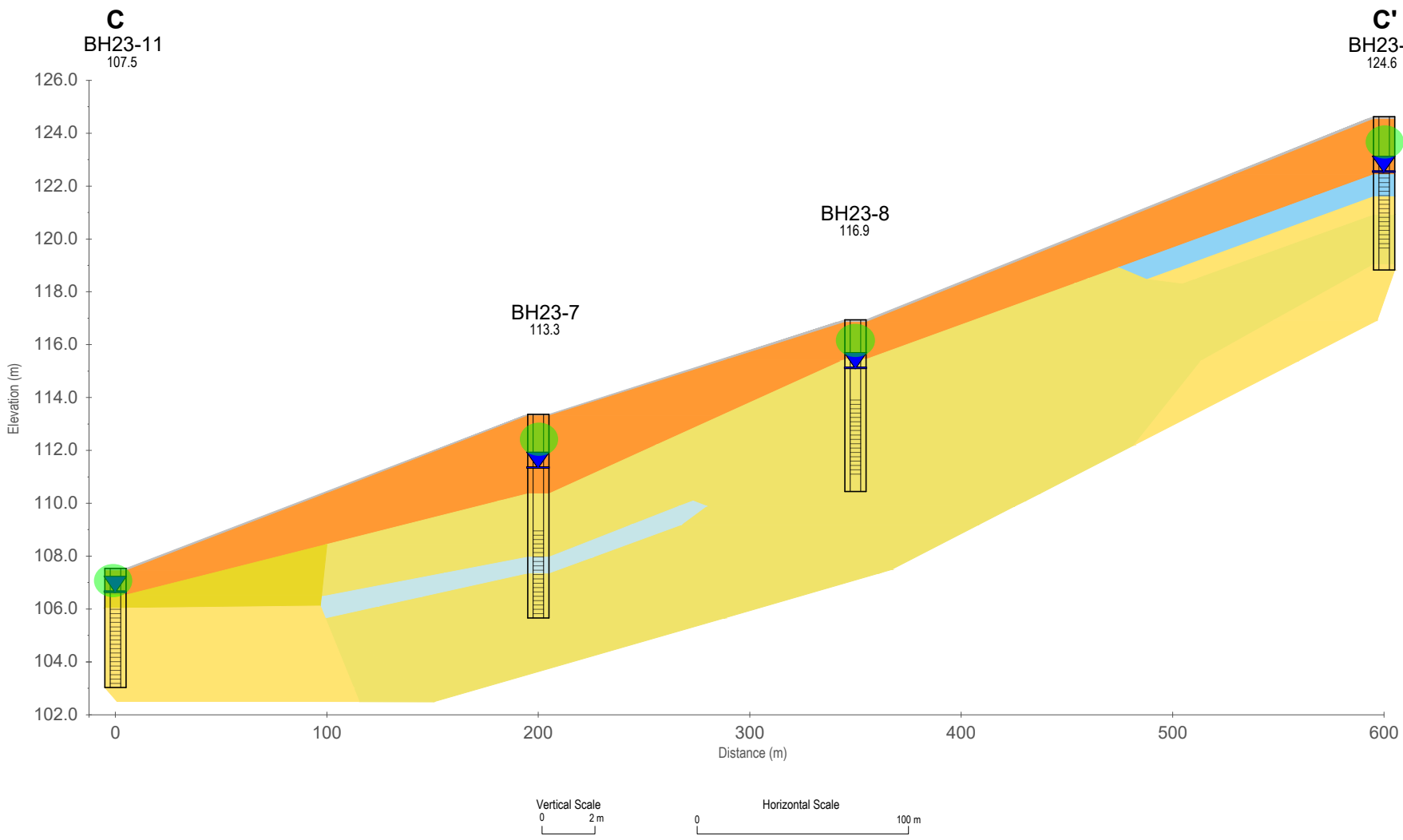
871 Equestrian Court, Unit 1
Oakville, ON
L6L 6L7

Soil Analytical Results: Metals and Inorganics

				Metals																						Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																										
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.1	1.54	33.1	0.18	5	<0.1	0.03	10.1	3.2	5.61	3.06	<0.005	0.28	5.68	<0.2	<0.1	0.09	0.526	19.1	13	0.8	<0.1	0.084	<0.05	0.13
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.1	2.91	122	0.63	10.4	0.13	0.115	34.8	7.57	14.6	7.97	0.016	0.4	19	<0.2	<0.1	0.218	0.701	38.2	37.6	2.63	0.12	0.17	<0.05	0.21
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.1	2.04	107	0.39	7.8	<0.1	0.044	30	6.22	12	4.59	<0.005	0.28	16.8	<0.2	<0.1	0.155	0.572	28.9	26.5	0.85	<0.1	0.107	<0.05	0.1
BH/MW23-8	23-8-2D	0.76 - 1.52	26-Jul-23	<0.1	1.87	96.1	0.34	7.6	<0.1	0.059	19.5	5.37	10.2	4.24	0.006	0.54	10.8	<0.2	<0.1	0.136	0.492	26.7	25	0.88	<0.1	0.109	<0.05	0.11
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.1	2.16	54.1	0.37	6.6	<0.1	0.027	39.1	5.06	9.54	4.63	0.006	0.6	19.8	<0.2	<0.1	0.095	0.483	26.7	23.2	2.07	0.12	0.117	<0.05	0.22

Bedrock Not Encountered. No Exceedances Identified in Soil



LEGEND:

SOILS

- Topsoil
- Fill
- Clayey Silt
- Silty Sand
- Sandy Silt
- Sand
- Sand and Gravel

WELL DETAILS

- Well Screen
- Water Level
- Meets Table 1 SCS

Soil:

BH23-11: Metals & Inorganics
BH23-7: Metals & Inorganics
BH23-8: Metals& Inorganics + duplicate
BH23-4: Metals & Inorganics

DATE: 9/26/2023	FIGURE NO. XC		TITLE: Cross Section C-C'
CLIENT: Black Bear Ridge GP Inc			PROJECT: Black Bear Ridge Golf Course, 501 Harmony Road
PRINT SIZE: 8.5" x 11"	SCALE: As shown	PROJECT NO. 2200902	
DRAWN: CV	APPROVED: BF	REVISION: 1	

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Oakville, ON
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Drawings

KEY MAP

LEGEND

- Phase Two Property
- Phase One Study Area
- Watercourse[1]

1. LIO/MNRF

0 50 100 150 200 250
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:6,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 22, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Site Location Map

Palmer

REF. NO. 2200902-MR-111-1

Drawing 1

Document Path: G:\Shared drives\Projects 2022\22009 - Black Bear Ridge GP Inc\2200901 - Black Bear Ridge Natural Heritage Review and Environmental Constraints Analysis\GIS\1_Workspace\Task 6 - EDD Figures 2200902\110-PhTwoDr\2200902-MR-111-1 (Dr 1 - Site Location Map).mxd

LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- Well Location
- Overhead Hydro Lines

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 26, 2023

NORTH

Source Notes:
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CLIENT
Black Bear Ridge GP Inc

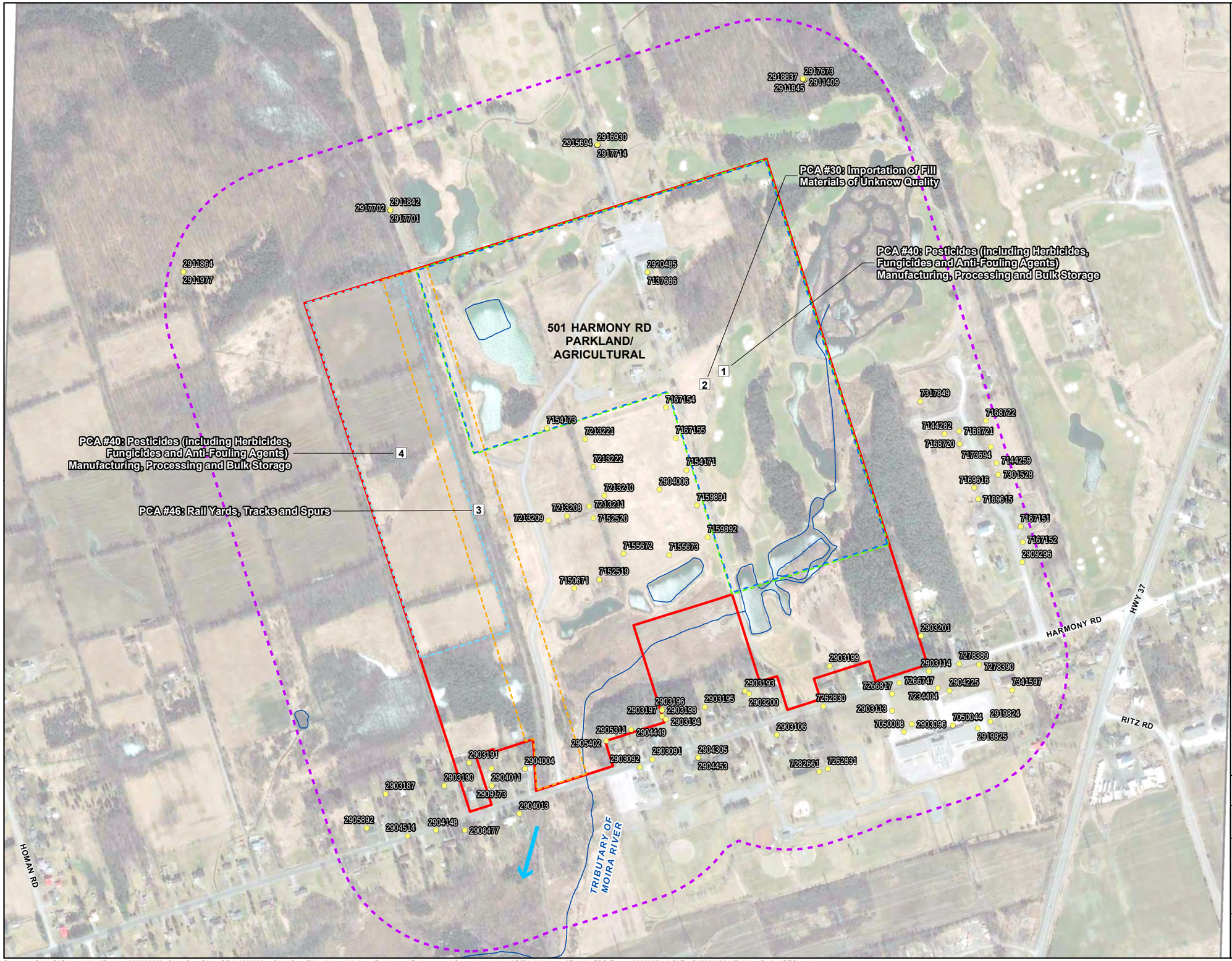
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Borehole Location Plan

Palmer™

REF. NO. 2200902-MR-112-1

Drawing 2



LEGEND

- Phase Two Property
- Phase One Study Area
- Regionally Inferred Ground Water Flow Direction
- Watercourse[1]
- MECP Well Record
- 4 PCA of Concern (On-site)
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land

1. LIO/MNRF

0 50 100 150 200 250

METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:6,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 22, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

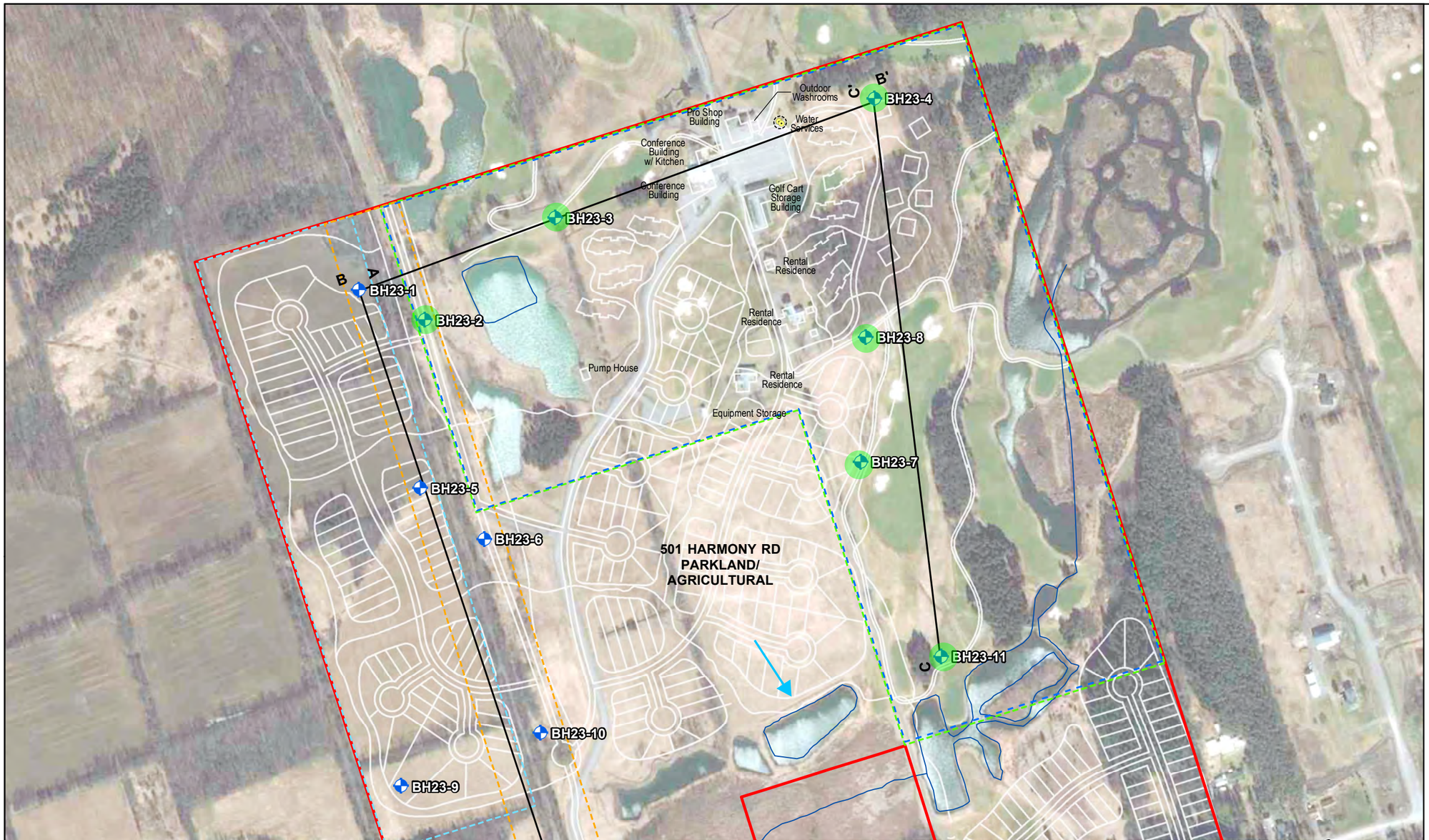
TITLE
On-Site and Off-Site Areas of Potential Environmental Concern

Palmer

REF. NO. 2200902-MR-113-1

Drawing 3

Document Path: G:\Shared drives\Projects 2022\22009 - Black Bear Ridge GP Inc\2200901 - Black Bear Ridge Natural Heritage Review and Environmental Constraints Analysis\GIS\1_Workspace\Task 6 - EDD Figures 2200902\110-PhTwoDr\2200902-MR-113-1 (Dr 3 - APEC).mxd



LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land
- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 26, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

Soil Analytical Results: Metals and Inorganics

				Metals																						Inorganics			
				Antimony	Arsenic	Barium	Beryllium	Boron (total)	Boron (Hot Water Soluble)*	Cadmium	Chromium Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	Sodium	Chromium VI	Electrical Conductivity (mS/cm)	Cyanide, Weak Acid Dissociable	Sodium Adsorption Ratio
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commun Property Use, Coarse and Medium-Fine Textured Soil Condition				1.3	18	220	2.5	36	-	1.2	70	21	92	120	0.27	2	82	1.5	0.5	1	2.5	86	200	-	0.66	0.57	0.051	2.4
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																										
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.1	1.4	32.2	0.19	<5.0	<0.1	0.024	8.76	3	5.76	3.6	<0.005	0.19	5.68	<0.2	<0.1	0.095	0.452	15.5	12.3	1.04	<0.1	0.104	<0.05	0.14
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.1	2.62	104	0.5	9.5	<0.1	0.072	36.6	7.31	14.3	6.8	0.008	0.41	20.3	<0.2	<0.1	0.19	0.704	35.4	33.1	0.93	0.15	0.115	<0.05	<0.1
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.1	1.54	33.1	0.18	5	<0.1	0.03	10.1	3.2	5.61	3.06	<0.005	0.28	5.68	<0.2	<0.1	0.09	0.526	19.1	13	0.8	<0.1	0.084	<0.05	0.13
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BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.1	2.04	107	0.39	7.8	<0.1	0.044	30	6.22	12	4.59	<0.005	0.28	16.8	<0.2	<0.1	0.155	0.572	28.9	26.5	0.85	<0.1	0.107	<0.05	0.1
BH/MW23-8	23-8-2D	0.76 - 1.52	26-Jul-23	<0.1	1.87	96.1	0.34	7.6	<0.1	0.059	19.5	5.37	10.2	4.24	0.006	0.54	10.8	<0.2	<0.1	0.136	0.492	26.7	25	0.88	<0.1	0.109	<0.05	0.11
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.1	2.16	54.1	0.37	6.6	<0.1	0.027	39.1	5.06	9.54	4.63	0.006	0.6	19.8	<0.2	<0.1	0.095	0.483	26.7	23.2	2.07	0.12	0.117	<0.05	0.22

Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

CLIENT
Black Bear Ridge GP Inc

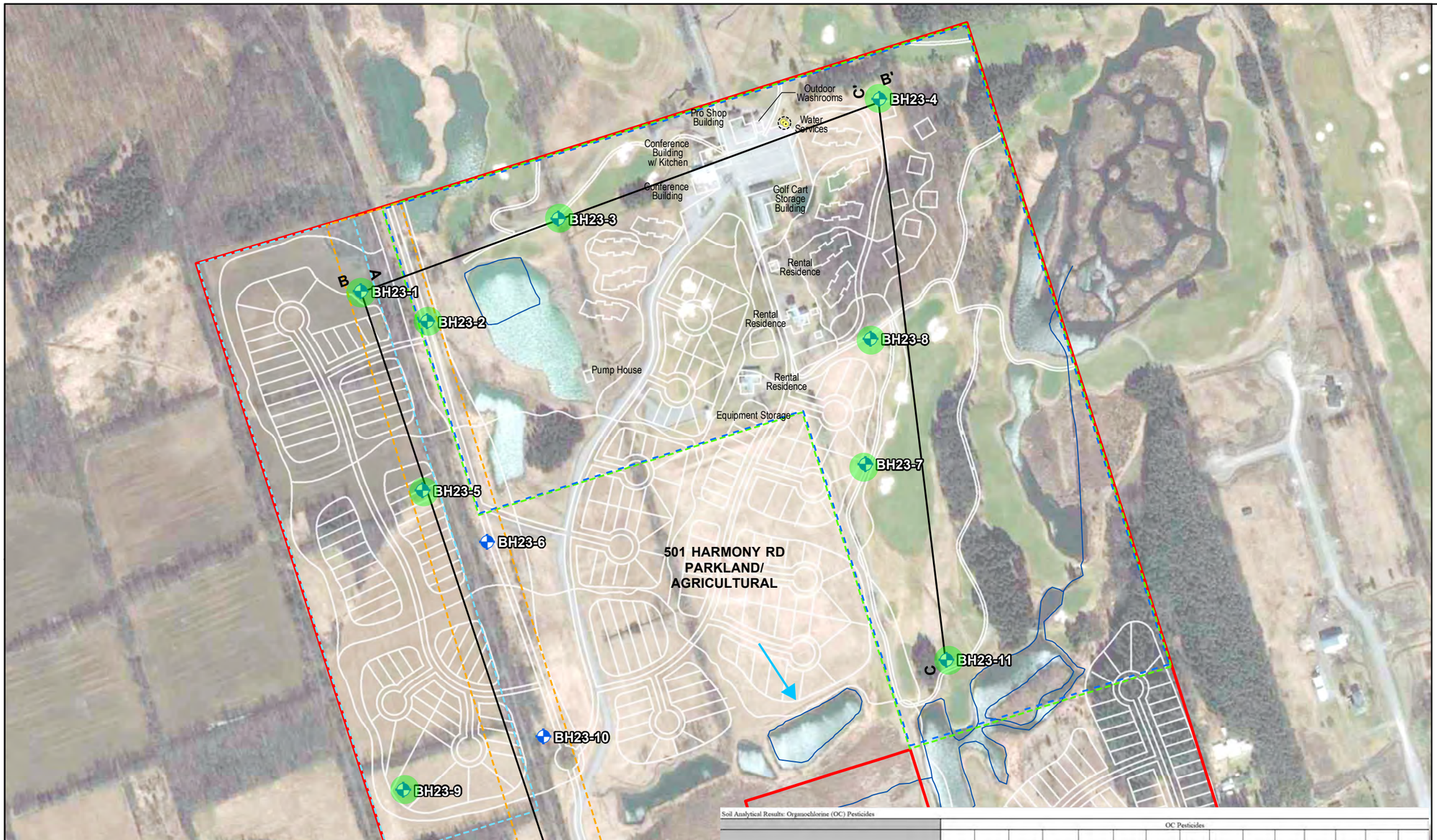
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Soil Sample Locations (Metals & Inorganics)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 4c



LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land
- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 26, 2023

NORTH

Source Notes:
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Soil Analytical Results: Organochlorine (OC) Pesticides

				OC Pesticides															
				DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor	
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.05	0.05	1.4	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05	
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																
BH/MW23-1	23-1-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00021	<0.00042	<0.00021	<0.00042	<0.0005	<0.00021	<0.00021	<0.0005	<0.0005	<0.0005	<0.00021	<0.0005	
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-4	23-4-2	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-4	23-4-2D	0.76 - 1.52	27-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-5	23-5-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00025	<0.00042	<0.00025	<0.00042	<0.0005	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.00025	<0.0005	
BH/MW23-7	23-7-1	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-8	23-8-1	0.00 - 0.76	26-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	
BH/MW23-9	23-9-1	0.00 - 0.76	01-Sep-23	<0.00042	<0.00042	<0.00042	<0.00022	<0.00042	<0.00022	<0.00042	<0.0005	<0.00022	<0.00022	<0.0005	<0.0005	<0.0005	<0.00022	<0.0005	
BH/MW23-11	23-11-2	0.00 - 0.76	25-Jul-23	<0.03	<0.03	<0.03	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	

Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

CLIENT
Black Bear Ridge GP Inc

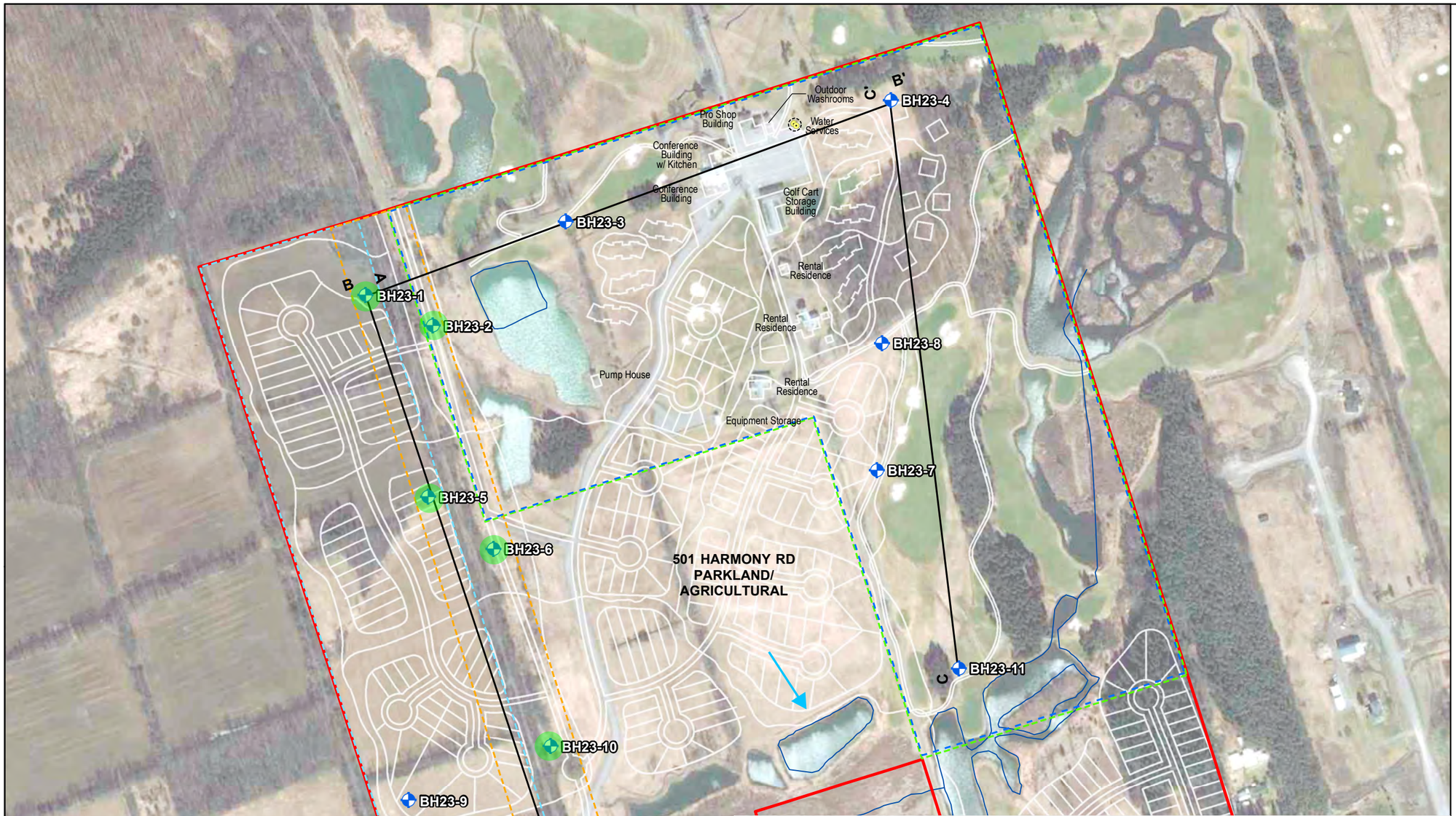
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Soil Sample Locations (OC Pesticides)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 4e



LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land
- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
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Date: Sep 26, 2023

NORTH

Source Notes:
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Soil Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

				PAHs																			
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.072	0.093	0.16	0.36	0.3	0.47	0.68	0.48	2.8	0.1	0.56	0.12	0.23	0.59	0.59	0.59	0.09	0.69	1
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																				
BH/MW23-1	23-1-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-2	23-2-1	0.00 - 0.76	26-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-5	23-5-2	0.76 - 1.52	01-Sep-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-6	23-6-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-10	23-10-2D	0.76 - 1.52	24-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05
BH/MW23-12	23-12-2	0.76 - 1.52	27-Jul-23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.01	<0.05	<0.05

Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse and Coarse Textured Soils

CLIENT
Black Bear Ridge GP Inc

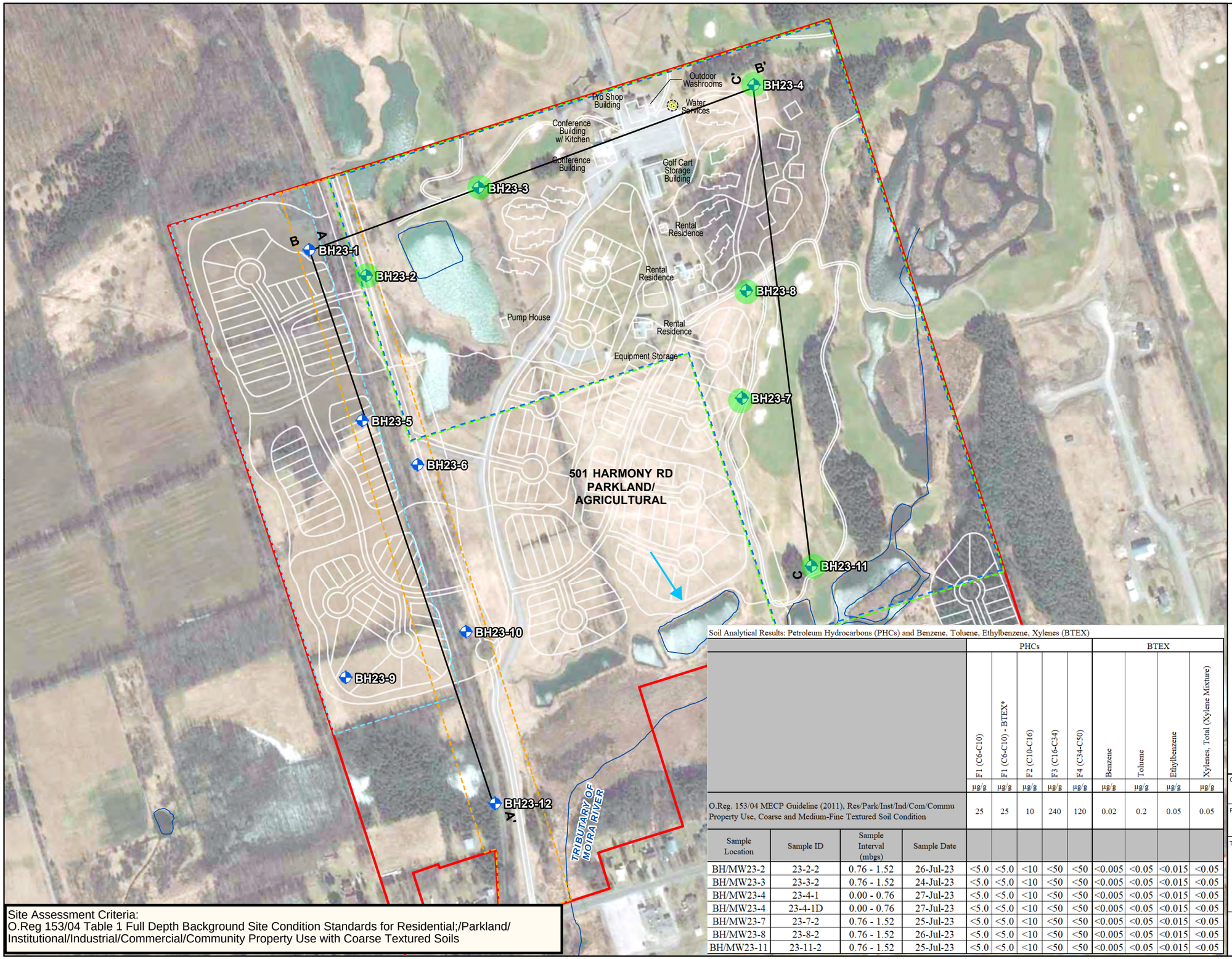
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Soil Sample Locations (PAHs)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 4d



Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land
- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

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Date: Sep 26, 2023

NORTH

Source Notes:
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Soil Analytical Results: Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)

				PHCs					BTEX			
				F1 (C6-C10)	F1 (C6-C10) - BTEX*	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Benzene	Toluene	Ethylbenzene	Xylenes, Total (Xylene Mixture)
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				25	25	10	240	120	0.02	0.2	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date									
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<5.0	<5.0	<10	<50	<50	<0.005	<0.05	<0.015	<0.05

CLIENT
Black Bear Ridge GP Inc

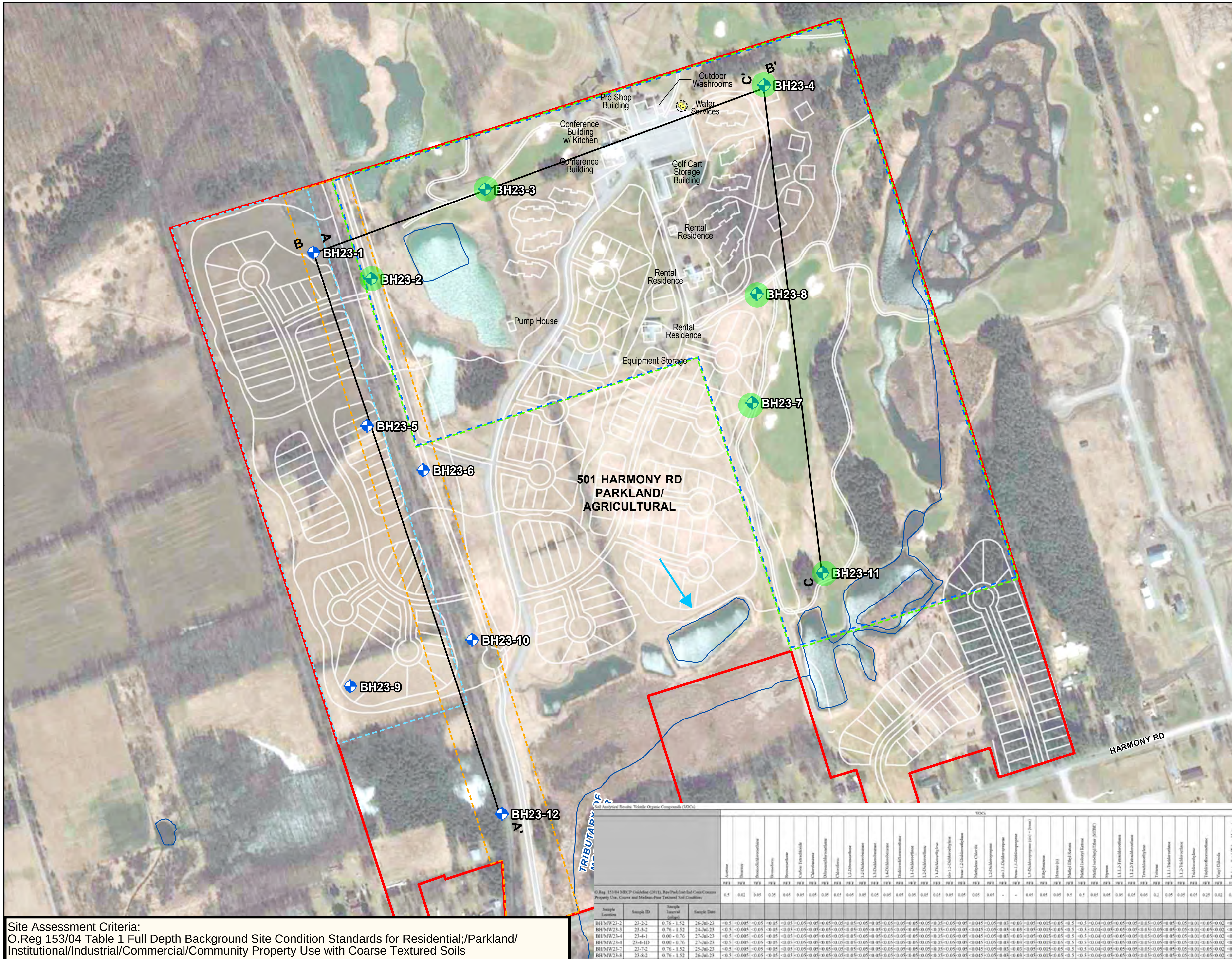
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Soil Sample Locations (PHC/BTEX)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 4a



Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

Soil Analytical Results: Volatile Organic Compounds (VOCs)

	VOCs																						
				Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Dibromochloromethane	Chloroform	1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene
				µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011), Res/Park/Inst/Ind/Com/Commu Property Use, Coarse and Medium-Fine Textured Soil Condition				0.5	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Sample Location	Sample ID	Sample Interval (mbgs)	Sample Date																			
BH/MW23-2	23-2-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-3	23-3-2	0.76 - 1.52	24-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-4	23-4-1	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-4	23-4-1D	0.00 - 0.76	27-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-7	23-7-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-8	23-8-2	0.76 - 1.52	26-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH/MW23-11	23-11-2	0.76 - 1.52	25-Jul-23	<0.5	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Location	Methylene Chloride	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,3-Dichloropropene (cis + trans)	Ethylbenzene	Hexane (n)	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl tert-Butyl Ether (MTBE)	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total (Xylene Mixture)
	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
O.Reg. 153/04 MECP Guideline (2011)	0.05	0.05	-	-	0.05	0.05	0.05	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.25	0.02	0.05
BH/MW23-2	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-3	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-4	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-7	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-8	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05
BH/MW23-11	<0.045	<0.05	<0.03	<0.03	<0.05	<0.015	<0.05	<0.5	<0.5	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05

LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
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- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

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CLIENT
Black Bear Ridge GP Inc

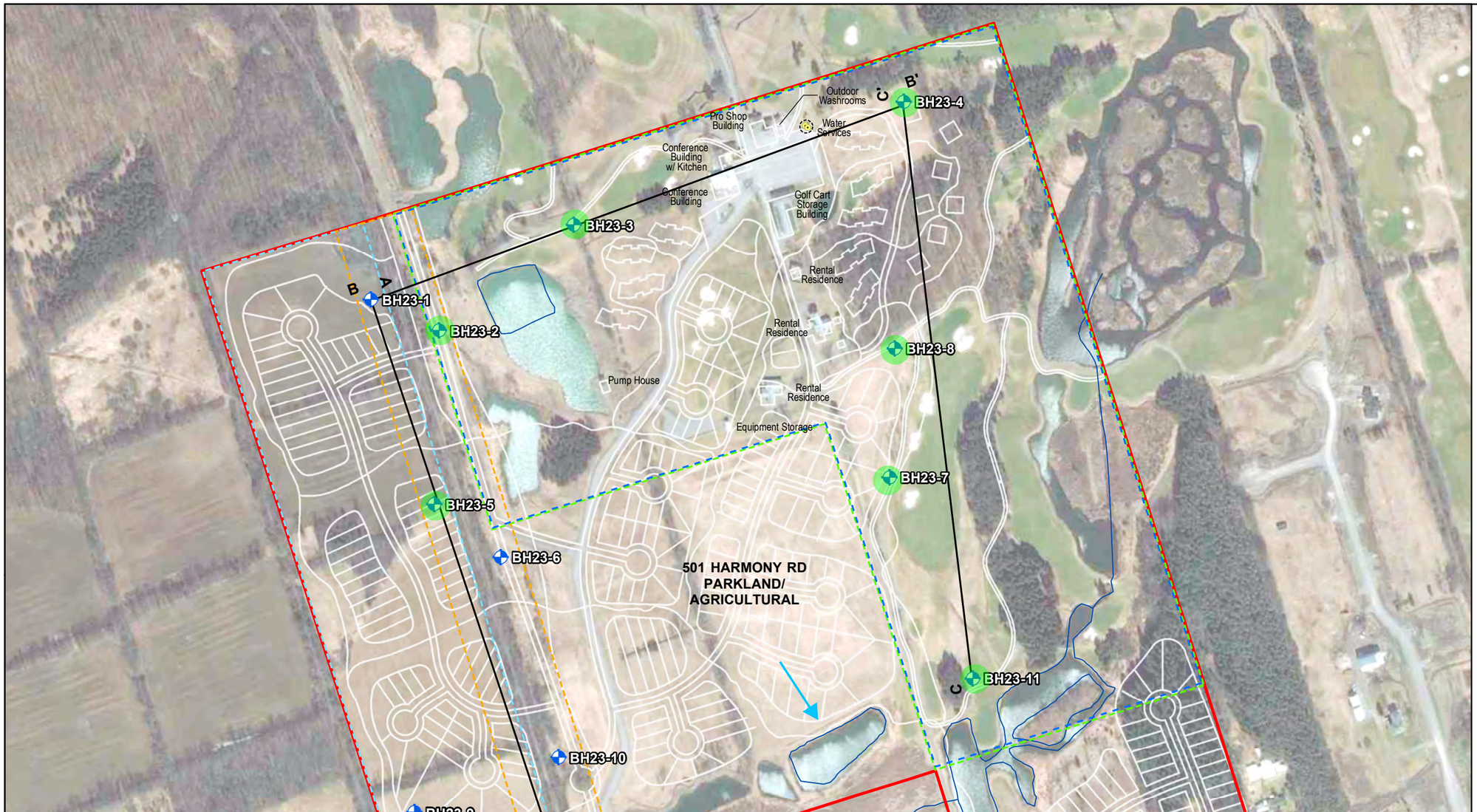
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Soil Sample Locations (VOCs)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 4b



Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

Ground Water Analytical Results: Organochlorine (OC) Pesticides

			OC Pesticides															
			DDD (Total)	DDE (Total)	DDT (Total)	Aldrin	Chlordane	Dieldrin	Endosulfan (Total)	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Hexachlorocyclohexane Gamma (Lindane or Gamma BHC)	Methoxychlor
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			1.8	10	0.05	0.01	0.06	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Sample Location	Sample ID	Sample Date															
BH/MW23-2	23-2	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-3	23-3	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-4	23-4	28-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-5	23-5	07-Sep-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-7	23-7D	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-8	23-8	27-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
BH/MW23-11	23-11	26-Jul-23	<0.006	<0.006	<0.006	<0.008	<0.011	<0.008	<0.01	<0.01	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
- APEC 3: Former Railway Tracks
- APEC 4: Agricultural Land
- Soil Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 26, 2023

NORTH

Source Notes:
Imagery (2020) provided by ERIS. Contains information licensed under the Open Government Licence – Ontario.

CLIENT
Black Bear Ridge GP Inc

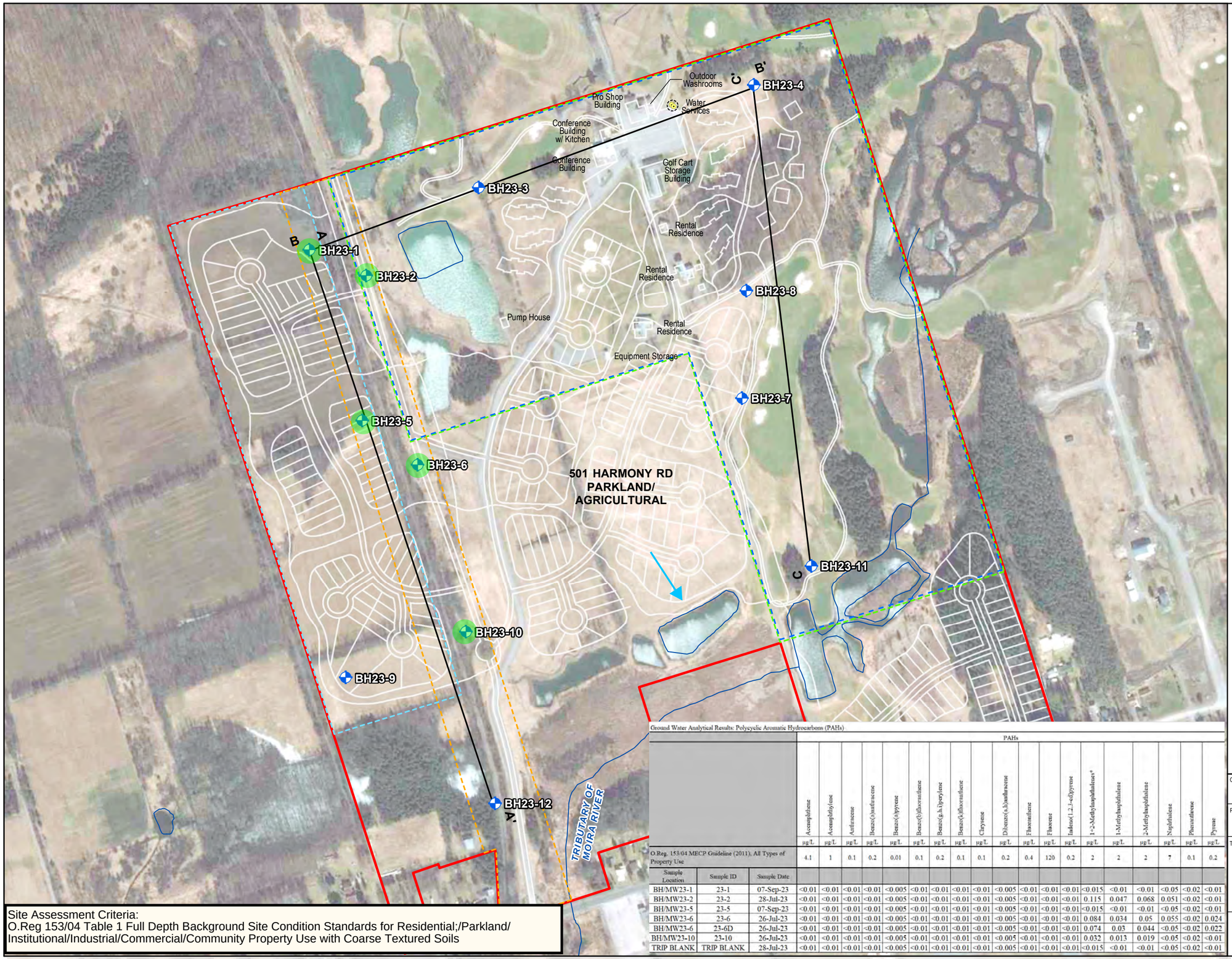
PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Ground Water Sample Locations (OC Pesticides)

Palmer

REF. NO. 2200902-MR-114-1

Drawing 5b



LEGEND

- Phase One Property
- Inferred Ground Water Flow Direction
- Watercourse[1]
- Cross Section Location
- Proposed Development Plan
- Plastic Water Storage Container
- Monitoring Well Location
- APEC 1: Golf Course Operations
- APEC 2: Fill Materials of Unknown Quality
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- APEC 4: Agricultural Land
- Ground Water Sample Met Table 1 SCS

1. LIO/MNRF

0 40 80 120 160 200
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 18

Scale: 1:4,600
Page Size: Tabloid (11 x 17 inches)

Drawn: CV
Checked: SB
Date: Sep 26, 2023

NORTH

Ground Water Analytical Results: Polycyclic Aromatic Hydrocarbons (PAHs)

			PAHs																			
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1+2-Methylnaphthalenes*	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
O.Reg. 153/04 MECP Guideline (2011), All Types of Property Use			4.1	1	0.1	0.2	0.01	0.1	0.2	0.1	0.1	0.2	0.4	120	0.2	2	2	2	7	0.1	0.2
Sample Location	Sample ID	Sample Date																			
BH/MW23-1	23-1	07-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-2	23-2	28-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.115	0.047	0.068	0.051	<0.02	<0.01
BH/MW23-5	23-5	07-Sep-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01
BH/MW23-6	23-6	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.084	0.034	0.05	0.055	<0.02	0.024
BH/MW23-6	23-6D	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.074	0.03	0.044	<0.05	<0.02	0.022
BH/MW23-10	23-10	26-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	0.032	0.013	0.019	<0.05	<0.02	<0.01
TRIP BLANK	TRIP BLANK	28-Jul-23	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.05	<0.02	<0.01

Site Assessment Criteria:
O.Reg 153/04 Table 1 Full Depth Background Site Condition Standards for Residential;/Parkland/ Institutional/Industrial/Commercial/Community Property Use with Coarse Textured Soils

CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

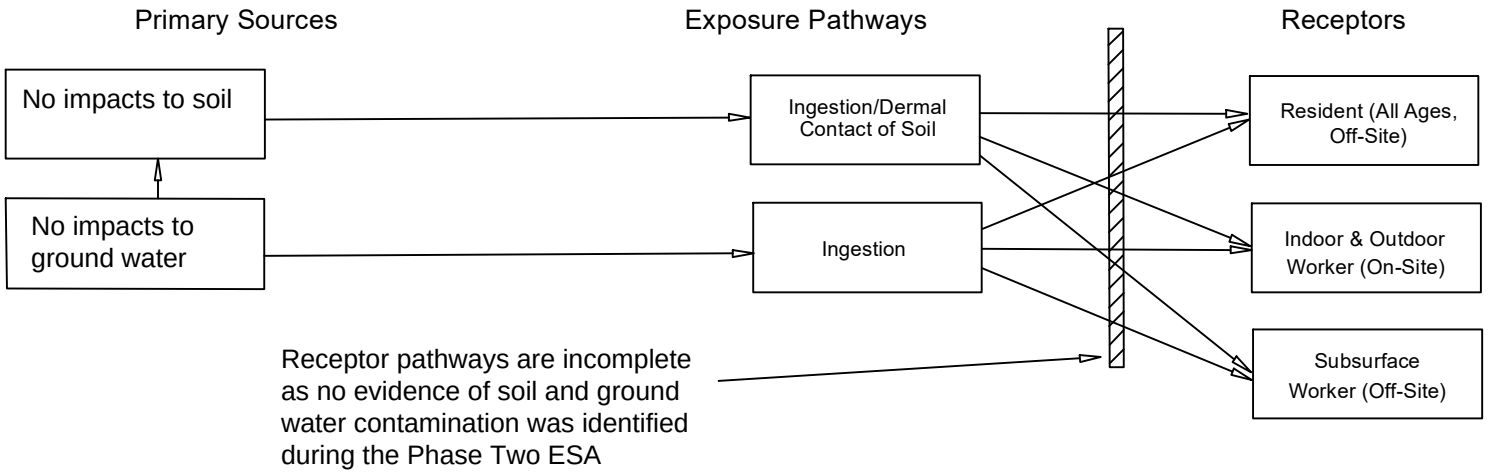
TITLE
Ground Water Sample Locations (PAHs)

Palmer

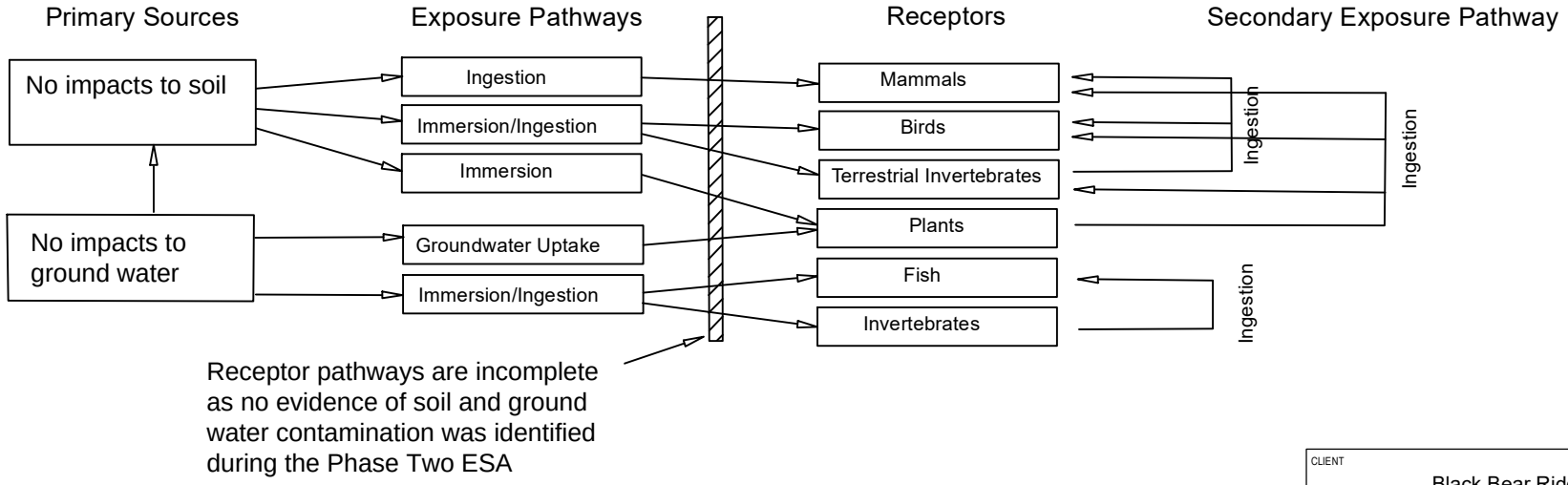
REF. NO. 2200902-MR-114-1

Drawing 5a

Human Receptors and Exposure Pathways



Ecological Receptors and Exposure Pathways



CLIENT
Black Bear Ridge GP Inc

PROJECT
Black Bear Ridge Golf Course, 501 Harmony Road

TITLE
Conceptual Model for Human and Ecological Receptors

Palmer

REF. NO. 2200902-MR-116-1

Drawing 6

Photographs

Photograph Log
Phase Two ESA
449-501 Harmony Road, Corbyville, ON
Project No.: 2200902

	
Photograph 1 Photo depicts the drilling of BH/MW23-6.	**Photograph 2** Photo depicts split spoon soil sample taken from BH23-3.
	
Photograph 3 Photo depicts the drilling of BH/MW23-3.	**Photograph 4** Photo depicts the drilling of BH/MW23-10.

Photograph Log
Phase Two ESA
449-501 Harmony Road, Corbyville, ON
Project No.: 2200902

	
Photograph 5 Photo depicts the drilling of BH/MW23-7.	**Photograph 6** Photo depicts the drilling of BH/MW23-8.
	
Photograph 7 Photo depicts the drilling of BH/MW23-2	**Photograph 8** Photo depicts split spoon soil sample taken from BH23-2.

Photograph Log
Phase Two ESA
449-501 Harmony Road, Corbyville, ON
Project No.: 2200902

	
Photograph 9 Photo depicts the location of MW23-2.	**Photograph 10** Photo depicts the drilling of BH/MW23-4.

Appendix A – General
A1 – Sampling and Analysis Plan

Site: Black Bear Ridge Golf & Resort, 449-501 Harmony Road, Corbyville, ON Project #: 2200902

Location ID	Media	Sample No.	Approximate Depth (m)	Date of Sample Collection	Date of Analysis	Chemical Analyses	Purpose and Justification
BH/MW23-1	Soil	23-1-1	0.00 – 0.76	September 1, 2023	September 7 and 11, 2023	OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #4.
	Soil	23-1-2	0.76 – 1.52	September 1, 2023	September 7 and 11, 2023	PAHs	Worst case soil sample. Collected to verify/refute APEC #3.
	Ground Water	23-1	N/A	September 7, 2023	September 12, 2023	PAHs	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #3.
BH/MW23-2	Soil	23-2-1	0.00 – 0.76	July 26, 2023	July 31, August 1 and 2, 2023	OC Pesticides, PAHs	Worst case soil sample. Collected to verify/refute APEC #1, 2 and 3.
	Soil	23-2-2	0.76 – 1.52	July 26, 2023	July 31 and August 1-4, 2023	PHC/VOCs, M&I	Worst case soil sample. Collected to verify/refute APEC #1, 2 and 3. Samples collected to characterize pH of soil.
	Ground Water	23-2	N/A	July 28, 2023	August 1 and 3, 2023	OC Pesticides, PAHs	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1 and 3.
BH/MW23-3	Soil	23-3-2	0.76 – 1.52	July 24, 2023	July 29, 31 and August 1-3, 2023	PHC/VOCs, M&I, OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #1 and 2. Samples collected to characterize pH of soil.
	Ground Water	23-3	N/A	July 26, 2023	August 1, 2023	OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1.
BH/MW23-4	Soil	23-4-1	0.00 – 0.76	July 27, 2023	July 31 and August 2 and 3, 2023	PHC/VOCs	Worst case soil sample. Collected to verify/refute APEC #1 and 2.
	Soil	23-4-1D	0.00 – 0.76	July 27, 2023	July 31 and August 2 and 3, 2023	PHC/VOCs	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-4-1.
	Soil	23-4-2	0.76 – 1.52	July 27, 2023	July 31 and August 1, 3 and 4, 2023	M&I, OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #1 and 2. Samples collected to characterize pH of soil.

Location ID	Media	Sample No.	Approximate Depth (m)	Date of Sample Collection	Date of Analysis	Chemical Analyses	Purpose and Justification
	Soil	23-4-2D	0.76 – 1.52	July 27, 2023	July 28 and August 1, 2023	OC Pesticides	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-4-2.
	Soil	23-4-4	2.29 – 3.05	July 27, 2023	August 2 and 4, 2023	Grain Size	Characterize soil texture across Phase Two Property.
	Ground Water	23-4	N/A	July 28, 2023	August 1, 2023	OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1.
BH/MW23-5	Soil	23-5-1	0.00 – 0.76	September 1, 2023	September 7 and 11, 2023	OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #4.
	Soil	23-5-2	0.76 – 1.52	September 1, 2023	September 7 and 11, 2023	PAHs	Worst case soil sample. Collected to verify/refute APEC #3.
	Ground Water	23-5	N/A	September 7, 2023	September 11 and 12, 2023	PAHs, OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #3 and 4.
BH/MW23-6	Soil	23-6-2	0.76 – 1.52	July 24, 2023	July 31 and August 2, 2023	PAHs	Worst case soil sample. Collected to verify/refute APEC #3.
	Ground Water	23-6	N/A	July 26, 2023	August 3, 2023	PAHs	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #3.
	Ground Water	23-6D	N/A	July 26, 2023	August 3, 2023	PAHs	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-6.
BH/MW23-7	Soil	23-7-1	0.00 – 0.76	July 25, 2023	July 28 and August 1, 2023	OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #1 and 2.
	Soil	23-7-2	0.76 – 1.52	July 25, 2023	July 29, 31 and August 1-3, 2023	PHC/VOCs, M&I	Worst case soil sample. Collected to verify/refute APEC #1 and 2. Samples collected to characterize pH of soil.
	Ground Water	23-7	N/A	July 26, 2023	August 1, 2023	OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1.
	Ground Water	23-7D	N/A	July 26, 2023	August 1, 2023	OC Pesticides	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-7.

Location ID	Media	Sample No.	Approximate Depth (m)	Date of Sample Collection	Date of Analysis	Chemical Analyses	Purpose and Justification
BH/MW23-8	Soil	23-8-1	0.00 – 0.76	July 26, 2023	July 28 and August 1, 2023	OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #1 and 2.
	Soil	23-8-2	0.76 – 1.52	July 26, 2023	July 29, 31 and August 1-3, 2023	PHC/VOCs, M&I	Worst case soil sample. Collected to verify/refute APEC #1 and 2. Samples collected to characterize pH of soil.
	Soil	23-8-2D	0.76 – 1.52	July 26, 2023	July 31 and August 1, 3 and 4, 2023	M&I	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-8-2.
	Ground Water	23-8	N/A	July 27, 2023	August 1, 2023	OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1.
BH/MW23-9	Soil	23-9-1	0.00 – 0.76	September 1, 2023	September 7 and 11, 2023	OC Pesticides	Worst case soil sample. Collected to verify/refute APEC #4.
BH/MW23-10	Soil	23-10-2	0.76 – 1.52	July 24, 2023	July 31 and August 2, 2023	PAHs	Worst case soil sample. Collected to verify/refute APEC #3.
	Soil	23-10-2D	0.76 – 1.52	July 24, 2023	July 31 and August 2, 2023	PAHs	Duplicate for Quality Assurance/Quality Control (QA/QC) purposes. Duplicate sample of 23-10-2.
	Ground Water	23-10	N/A	July 26, 2023	August 3, 2023	PAHs	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #3.
BH/MW23-11	Soil	23-11-2	0.76 – 1.52	July 25, 2023	July 29, 31 and August 1-3, 2023	PHC/VOCs, OC Pesticides, M&I	Worst case soil sample. Collected to verify/refute APEC #1 and 2. Samples collected to characterize pH of soil.
	Ground Water	23-11	N/A	July 26, 2023	August 1, 2023	OC Pesticides	Characterize ground water conditions from potential contamination sources. Collected to verify/refute APEC #1.
BH/MW23-12	Soil	23-12-2	0.76 – 1.52	July 27, 2023	July 31 and August 2, 2023	PAHs	Worst case soil sample. Collected to verify/refute APEC #3.

Appendix A – General
A2 – Finalized Field Logs

Palmer

LOG OF BOREHOLE BH/MW23-1

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 1
PROJECT LOCATION: Corbyville, ON
Diameter: 200 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Sep-01-2023
BH LOCATION: See Borehole Location Plan N 4902111.72 E 308623.04
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
112.5	Ground Surface								
0.0	**FILL:** sandy silt, some gravel, contains cobbles, trace to some sand, brown, moist, compact		1	SS			Analysis (Soil): OC Pesticides		Concrete; Sand
			2	SS			Analysis (Soil): PAHs		Bentonite
111.1								▽	Sand
1.5	**SANDY SILT:** some gravel, contains cobbles, brown, moist, compact		3	SS			Analysis (GW): PAHs		W. L. 111.1 m Sep 07, 2023
			4	SS					
109.6									
3.0	**SAND AND GRAVEL:** trace silt, contains cobbles, brown, wet, compact		5	SS					Screen
107.9									
4.6	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 1.41								Bentonite

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-2

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Hollow Stem Augers
ENCL NO.: 2
PROJECT LOCATION: Corbyville, ON
Diameter: 229 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-26-2023
BH LOCATION: See Borehole Location Plan N 4902043.94 E 308690.94
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
112.4	Ground Surface								
112.2 / 0.0	**TOPSOIL:** 125mm								Concrete
0.1 / 111.7	**FILL:** sandy silt, some gravel, trace clay, brown, moist, compact		1	SS			Analysis (Soil): PAHs, OC Pesticides		Sand
0.7 / 110.9	**SILTY SAND:** some gravel, trace clay, contains cobbles, brown, moist, dense		2	SS			Analysis (Soil): PHC/VOCs, Metals & Inorganics		W. L. 111.3 m Sep 07, 2023
1.5 / 109.4	**GRAVELY SAND:** trace silt, contains cobbles, grey, wet, compact to dense contains sand layers		3	SS			Analysis (GW): PAHs, OC Pesticides		Sand
			4	SS					
3.0	**SAND:** some gravel, trace silt, contains cobbles, grey, wet, very dense contains gravelly sand layer		5	SS					Screen
			6	SS					
5.3 / 107.0	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sep 7, 2023 1.05		7	SS					

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-3

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 3
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-24-2023
BH LOCATION: See Borehole Location Plan N 4902139.85 E 308856.49
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
120.8	Ground Surface								
120.7 / 0.0	**TOPSOIL:** 125mm								Concrete
0.1	**Fill:** sandy silt, trace gravel, contains rootlets, contains cobbles, brown to grey, moist, dense to compact		1	SS					Sand
			2	SS			Analysis (Soil): OC Pesticides, PHC/VOCs, Metals & Inorganics		Bentonite
			3	SS					
118.3									
2.4	**GRAVEL:** some sand, trace silt, grey, moist, dense		4	SS					
117.8									Sand
3.0	**SANDY SILT TILL:** some gravel, trace clay, grey, moist, compact to very dense		5	SS			Analysis (GW): OC Pesticides		
			6	SS					W. L. 117.0 m Sep 07, 2023
			7	SS					Screen
115.5									
5.3	**SANDY SILT:** some gravel, contains cobbles, brown, moist, very dense		8	SS					
114.6			9	SS					Bentonite
6.2	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date Sept 7, 2023 W. L. Depth (mBGS) 3.75								

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-4

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 4
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-27-2023
BH LOCATION: See Borehole Location Plan N 4902319.86 E 309150.04
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
124.6	Ground Surface								
0.0 / 124.4	**TOPSOIL:** 200mm								Concrete
0.2 / 123.9	**FILL:** silt, trace clay, trace sand, contains cobbles, brown, moist, compact		1	SS			Analysis (Soil): PHC/VOCs, Dup: PHC/VOCs		Sand
0.7 / 122.4	**FILL:** sand, some gravel, trace silt, contains cobbles, brown, moist, compact		2	SS			Analysis (Soil): OC Pesticides, Metals & Inorganics, Dup: OC Pesticides		Bentonite
			3	SS			Analysis (GW): OC Pesticides		Sand W. L. 122.6 m Sep 07, 2023
2.2 / 121.6	**SILTY SAND TILL:** some gravel, trace clay, contains cobbles, brown, moist, dense		4	SS			Analysis (Soil): Grain Size		
3.0 / 120.8	**SAND AND GRAVEL:** trace silt, contains cobbles, brown, moist, very dense		5	SS					Screen
3.7 / 118.9	**SANDY SILT TILL:** trace clay, trace gravel, brown to grey, moist, very dense		6	SS					
			7	SS					
			8	SS					Bentonite
5.7 / 118.8	**SAND AND GRAVEL:** trace silt,		9	SS					
5.8	grey, wet, very dense **END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 1.99								

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-5

PROJECT: Phase Two ESA_Black Bear Ridge
CLIENT: Black Bear Ridge GP Inc.
PROJECT LOCATION: Corbyville, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan N 4901919.43 E 308679.52

Method: Solid Stem Augers
Diameter: 200 mm
Date: Sep-01-2023

REF. NO.: 2200902
ENCL NO.: 5
ORIGINATED BY BF
CHECKED BY KN

ELEV (m) / DEPTH	SOIL PROFILE DESCRIPTION	SAMPLE NUMBER	TYPE	SAMPLE REMARKS	LABORATORY ANALYSIS AND REMARKS	WELL CONSTRUCTION DETAILS
110.4	Ground Surface					
0.0	**FILL:** clayey silt, trace sand, trace gravel, contains rootlets, brown, moist, loose to compact	1	SS		Analysis (Soil): OC Pesticides	Concrete; Sand; W. L. 109.8 m Sep 07, 2023
		2	SS		Analysis (Soil): PAHs	
108.9 / 1.5	**SANDY SILT:** some gravel, contains cobbles, brown, moist, compact	3	SS		Analysis (GW): PAHs, OC Pesticides	Sand
108.2 / 2.2	**CLAYEY SILT:** trace gravel, trace sand, contains weathered shale, grey, wet, hard	4	SS			Screen
107.4 / 3.0	**SANDY GRAVEL:** trace silt, trace clay, contains cobbles, brown, wet, dense					Bentonite
106.7 / 3.7	**END OF BOREHOLE:**					

Head Space Combustible Vapor Reading (ppm): scale 5, 10, 15, 20, 25

END OF BOREHOLE:
1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole.
2. Water Level Readings:

Date	W. L. Depth (mBGS)
Sept 7, 2023	0.56

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-6

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 6
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-24-2023
BH LOCATION: See Borehole Location Plan N 4901846.81 E 308764.83
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
112.2	Ground Surface								
112.0 / 0.0	**TOPSOIL:** 100mm								Concrete
0.1	**FILL:** silty clay, trace sand, trace gravel, trace organics, brown, moist, loose to very loose		1	SS					Sand
									Bentonite
1			2	SS			Analysis (Soil): PAHs		Sand
110.7									
1.5	**SILTY CLAY:** trace sand, trace gravel, brown to grey, moist, loose		3	SS					
2									
110.0									
2.2	**CLAYEY SILT:** some to trace sand, trace gravel, contains cobbles, grey, moist, very stiff		4	SS			Analysis (GW): PAHs, Dup: PAHs		Screen
3			5	SS					W. L. 109.4 m Sep 07, 2023
108.4									
3.7	**SAND AND GRAVEL:** trace silt, trace gravel, contains cobbles, grey, moist, very dense		6	SS					
4									
107.9									
4.3	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 2.75								

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

LOG OF BOREHOLE BH/MW23-7

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 7
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-25-2023
BH LOCATION: See Borehole Location Plan N 4901927.81 E 309160.36
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
113.3	Ground Surface								
113.2 / 0.1	**TOPSOIL:** 50mm								Concrete
	FILL: sandy silt, trace clay, trace gravel, contains rootlets, contains cobbles, brown, moist, compact		1	SS					Sand
	contains gravel layer		2	SS					
111.9 / 1.5	**SANDY SILT TILL:** some gravel, trace clay, contains cobbles, grey, moist, compact to very dense		3	SS			Analysis (Soil): OC Pesticides, PHC/VOCs, Metals & Inorganics		W. L. 111.5 m Sep 07, 2023
			4	SS			Analysis (GW): OC Pesticides, Dup: OC Pesticides		Bentonite
	contains gravelly sand layer		5	SS					
			6	SS					Sand
			7	SS					
107.9 / 5.4	**CLAYEY SILT:** some gravel, trace sand, contains cobbles, grey, moist, hard		8	SS					
107.3 / 6.0	**SANDT SILT:** trace clay, trace gravel, contains cobbles, grey, moist, very dense		9	SS					Screen
105.7 / 7.7	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date Sept 7, 2023 W. L. Depth (mBGS) 1.83								Bentonite

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-8

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 8
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-26-2023
BH LOCATION: See Borehole Location Plan N 4902062.26 E 309192.4
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
116.9 / 0.0	Ground Surface								
116.8 / 0.1	**TOPSOIL:** 100mm								Concrete
	FILL: sandy silt, trace to some gravel, trace clay, contains rootlets, contains cobbles, brown, moist to wet, compact to dense		1	SS			Analysis (Soil): OC Pesticides		Sand
			2	SS			Analysis (Soil): PHC/VOCs, Metals & Inorganics, Dup: PHC/VOCs		
115.5 / 1.5	**SANDY SILT:** trace to some gravel, trace clay, contains cobbles, contains boulders, brown, moist to wet, very dense								Bentonite
	contains sand layers		3	SS			Analysis (GW): OC Pesticides	▽	W. L. 115.1 m Sep 07, 2023
			4	SS					
			5	SS					Sand
			6	SS					
			7	SS					Screen
			8	SS					
110.5 / 6.5	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date (mBGS) W. L. Depth Sept 7, 2023 1.79		9	SS					Bentonite

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-9

PROJECT: Phase Two ESA_Black Bear Ridge | REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc. | Method: Solid Stem Augers | ENCL NO.: 9
PROJECT LOCATION: Corbyville, ON | Diameter: 200 mm | ORIGINATED BY BF
DATUM: Geodetic | Date: Sep-01-2023
BH LOCATION: See Borehole Location Plan N 4901558.25 E 308671.03 | CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
108.9 Ground Surface						5 10 15 20 25			
108.8 0.0	**TOPSOIL:** 50mm								Concrete
108.7 0.1	**FILL:** sandy silt, trace gravel, contains cobbles, brown, moist, loose to compact		1	SS			Analysis (Soil): OC Pesticides		Sand
1			2	SS					Bentonite
107.5 1.5	**SANDY SILT:** trace gravel, contains cobbles, brown, moist, compact to dense		3	SS					Sand
2			4	SS					Screen
106.0 3.0	**GRAVEL:** trace sand, grey, moist, very dense								
105.8 3.2	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 Dry								Bentonite

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-10

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 10
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-24-2023
BH LOCATION: See Borehole Location Plan N 4901584.2 E 308843.37
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
111.4	Ground Surface								
111.3	**TOPSOIL:** 100mm								Concrete
0.1	**FILL:** sandy silt, trace to some gravel, trace clay, contains rootlets, contains cobbles, brown, moist, compact to dense		1	SS					Sand
			2	SS			Analysis (Soil): PAHs, Dup: PAHs		Bentonite
			3	SS					
109.2									
2.2	**SILTY SAND:** some gravel, trace clay, contains cobbles, brown, moist, dense		4	SS			Analysis (GW): PAHs		W. L. 108.8 m Sep 07, 2023 Sand
108.4									
3.0	**SANDY SILT:** some gravel, contains cobbles, brown, moist, very dense		5	SS					
			6	SS					
			7	SS					Screen
			8	SS					
			9	SS					Bentonite
105.0									
6.4	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date Sept 7, 2023 W. L. Depth (mBGS) 2.61								

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

LOG OF BOREHOLE BH/MW23-11

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 11
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-25-2023
BH LOCATION: See Borehole Location Plan N 4901706.58 E 309240.53
CHECKED BY KN

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
107.5 / 0.0	Ground Surface								
107.4 / 0.1	**TOPSOIL:** 75mm								Concrete
	FILL: sandy silt, trace gravel, contains rootlets, brown, moist, very loose to compact		1	SS			Analysis (GW): OC Pesticides		Sand
106.5 / 1.0	**SAND :** trace silt, trace gravel, brown, moist to wet, compact		2	SS			Analysis (Soil): OC Pesticides, PHC/VOCs, Metals & Inorganics		Bentonite W. L. 106.7 m Sep 07, 2023 Sand
106.0 / 1.5	**GRAVELY SAND:** trace silt, brown, wet, compact to very dense		3	SS					
			4	SS					Screen
			5	SS					
103.0 / 4.5	**END OF BOREHOLE:** 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 0.76		6	SS					

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Palmer

LOG OF BOREHOLE BH/MW23-12

PROJECT: Phase Two ESA_Black Bear Ridge
REF. NO.: 2200902
CLIENT: Black Bear Ridge GP Inc.
Method: Solid Stem Augers
ENCL NO.: 12
PROJECT LOCATION: Corbyville, ON
Diameter: 150 mm
ORIGINATED BY BF
DATUM: Geodetic
Date: Aug-27-2023
BH LOCATION: See Borehole Location Plan N 4901359.31 E 308837.37
CHECKED BY KN

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLE REMARKS	Head Space Combustible Vapor Reading (ppm)	LABORATORY ANALYSIS AND REMARKS	GROUND WATER CONDITIONS	WELL CONSTRUCTION DETAILS
109.2	Ground Surface								
109.1 / 0.0	**TOPSOIL:** 125mm								Concrete
0.1	**FILL:** sandy silt, trace clay, trace gravel, contains rootlets, contains cobbles, brown, moist, loose		1	SS					Sand
108.5									Bentonite
0.7	**FILL:** trace to some gravel, trace clay, contains cobbles, brown, moist, compact to very dense		2	SS			Analysis (Soil): PAHs		Sand
1			3	SS					Screen
2									
106.8									
106.7 / 2.4	**SAND:** some silt, trace gravel,		4	SS					
2.5	contains cobbles, brown, moist, very dense								
	END OF BOREHOLE: 1. Upon completion of drilling, a 50mm diameter monitoring well was installed in the borehole. 2. Water Level Readings: Date W. L. Depth (mBGS) Sept 7, 2023 Dry								

Head Space Combustible Vapor Reading (ppm) scale: 5 10 15 20 25

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

Appendix A – General

A3 – Certificates of Analysis or Analytical Reports from Laboratories

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2323388**	Page	: 1 of 25
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 14:37
PO	: 2200902	Date Analysis Commenced	: 28-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023 15:29
Sampler	: BF		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 18		
No. of samples analysed	: 18		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	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
Xihua Yao	Laboratory Analyst	Sask Soils, Saskatoon, Saskatchewan

No Breaches Found

General Comments

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

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

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

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

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

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

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

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

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT			0.115	----	----	----	----	0.170	0.117
Moisture	----	E144/WT	%		7.33	25.8	10.7	21.6	15.8	11.4	10.9
pH (1:2 soil:CaCl2-aq)	----	E108A/WT			7.67	----	----	----	----	7.81	7.84
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT			6.69	----	----	----	----	12.3	6.83
Magnesium, soluble ion content	7439-95-4	E484/WT	mg/L		<0.50	----	----	----	----	<0.50	<0.50
Sodium, soluble ion content	17341-25-2	E484/WT			0.93	----	----	----	----	2.63	2.07
Sodium adsorption ratio [SAR]	----	E484/WT	-		<0.10	----	----	----	----	0.21	0.22
Metals											
Antimony	7440-36-0	E440C/WT			<0.10	----	----	----	----	<0.10	<0.10
Arsenic	7440-38-2	E440C/WT	mg/kg		2.62	----	----	----	----	2.91	2.16
Barium	7440-39-3	E440C/WT			104	----	----	----	----	122	54.1
Beryllium	7440-41-7	E440C/WT	mg/kg		0.50	----	----	----	----	0.63	0.37
Boron	7440-42-8	E440C/WT			9.5	----	----	----	----	10.4	6.6
Boron, hot water soluble	7440-42-8	E487/WT	mg/kg		<0.10	----	----	----	----	0.13	<0.10
Cadmium	7440-43-9	E440C/WT			0.072	----	----	----	----	0.115	0.027
Chromium	7440-47-3	E440C/WT	mg/kg		36.6	----	----	----	----	34.8	39.1
Cobalt	7440-48-4	E440C/WT			7.31	----	----	----	----	7.57	5.06
Copper	7440-50-8	E440C/WT	mg/kg		14.3	----	----	----	----	14.6	9.54
Lead	7439-92-1	E440C/WT			6.80	----	----	----	----	7.97	4.63
Mercury	7439-97-6	E510C/WT	mg/kg		0.0081	----	----	----	----	0.0156	0.0063
Molybdenum	7439-98-7	E440C/WT			0.41	----	----	----	----	0.40	0.60
Nickel	7440-02-0	E440C/WT	mg/kg		20.3	----	----	----	----	19.0	19.8
Selenium	7782-49-2	E440C/WT			<0.20	----	----	----	----	<0.20	<0.20
Silver	7440-22-4	E440C/WT	mg/kg		<0.10	----	----	----	----	<0.10	<0.10
Thallium	7440-28-0	E440C/WT			0.190	----	----	----	----	0.218	0.095

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Metals											
Uranium	7440-61-1	E440C/WT	mg/kg		0.704	----	----	----	----	0.701	0.483
Vanadium	7440-62-2	E440C/WT			35.4	----	----	----	----	38.2	26.7
Zinc	7440-66-6	E440C/WT	mg/kg		33.1	----	----	----	----	37.6	23.2
Speciated Metals											
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT			0.15	----	----	----	----	0.12	0.12
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT	mg/kg		<0.50	----	----	----	----	<0.50	<0.50
Benzene	71-43-2	E611D/WT			<0.0050	----	----	----	----	<0.0050	<0.0050
Bromodichloromethane	75-27-4	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Bromoform	75-25-2	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Bromomethane	74-83-9	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Carbon tetrachloride	56-23-5	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Chlorobenzene	108-90-7	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Chloroform	67-66-3	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dibromochloromethane	124-48-1	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dibromoethane, 1,2-	106-93-4	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichlorobenzene, 1,3-	541-73-1	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichlorodifluoromethane	75-71-8	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichloroethane, 1,1-	75-34-3	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichloroethane, 1,2-	107-06-2	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichloroethylene, 1,1-	75-35-4	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichloromethane	75-09-2	E611D/WT			<0.045	----	----	----	----	<0.045	<0.045
Dichloropropane, 1,2-	78-87-5	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	mg/kg		<0.030	----	----	----	----	<0.030	<0.030

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Volatile Organic Compounds											
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT			<0.030	----	----	----	----	<0.030	<0.030
Ethylbenzene	100-41-4	E611D/WT	mg/kg		<0.015	----	----	----	----	<0.015	<0.015
Hexane, n-	110-54-3	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	mg/kg		<0.50	----	----	----	----	<0.50	<0.50
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT			<0.50	----	----	----	----	<0.50	<0.50
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	mg/kg		<0.040	----	----	----	----	<0.040	<0.040
Styrene	100-42-5	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Tetrachloroethylene	127-18-4	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Toluene	108-88-3	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	mg/kg		<0.050	----	----	----	----	<0.050	<0.050
Trichloroethane, 1,1,2-	79-00-5	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Trichloroethylene	79-01-6	E611D/WT	mg/kg		<0.010	----	----	----	----	<0.010	<0.010
Trichlorofluoromethane	75-69-4	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
Vinyl chloride	75-01-4	E611D/WT	mg/kg		<0.020	----	----	----	----	<0.020	<0.020
Xylene, m+p-	179601-23-1	E611D/WT			<0.030	----	----	----	----	<0.030	<0.030
Xylene, o-	95-47-6	E611D/WT	mg/kg		<0.030	----	----	----	----	<0.030	<0.030
Xylenes, total	1330-20-7	E611D/WT			<0.050	----	----	----	----	<0.050	<0.050
BTEX, total	----	E611D/WT	mg/kg		<0.10	----	----	----	----	<0.10	<0.10
Hydrocarbons											
F1 (C6-C10)	----	E581.F1/WT			<5.0	----	----	----	----	<5.0	<5.0
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg		<10	----	----	----	----	<10	<10
F3 (C16-C34)	----	E601.SG-L/WT			<50	----	----	----	----	<50	<50
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg		<50	----	----	----	----	<50	<50
F1-BTEX	----	EC580/WT			<5.0	----	----	----	----	<5.0	<5.0
Hydrocarbons, total (C6-C50)	----	EC581/WT	mg/kg		<80	----	----	----	----	<80	<80
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT			YES	----	----	----	----	YES	YES
Hydrocarbons Surrogates											

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	%		94.0	----	----	----	----	93.8	93.3
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT			83.0	----	----	----	----	72.0	80.0
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%		81.9	----	----	----	----	90.8	78.5
Difluorobenzene, 1,4-	540-36-3	E611D/WT			89.6	----	----	----	----	99.9	86.4
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Acenaphthylene	208-96-8	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Anthracene	120-12-7	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Chrysene	218-01-9	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Fluoranthene	206-44-0	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Fluorene	86-73-7	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT			----	<0.030	<0.030	<0.030	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT			----	<0.030	<0.030	<0.030	----	----	----
Naphthalene	91-20-3	E641A/WT	mg/kg		----	<0.010	<0.010	<0.010	----	----	----
Phenanthrene	85-01-8	E641A/WT			----	<0.050	<0.050	<0.050	----	----	----
Pyrene	129-00-0	E641A/WT	mg/kg		----	<0.050	<0.050	<0.050	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Acridine-d9	34749-75-2	E641A/WT			----	85.3	77.4	73.6	----	----	----
Chrysene-d12	1719-03-5	E641A/WT	%		----	87.6	82.0	78.3	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT			----	94.3	85.6	80.0	----	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Polycyclic Aromatic Hydrocarbons Surrogates											
Phenanthrene-d10	1517-22-2	E641A/WT	%		----	90.6	83.0	78.5	----	----	----
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
Chlordane, cis- (alpha)	5103-71-9	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
Chlordane, total	57-74-9	E660F/WT			<0.030	----	----	----	<0.030	----	<0.030
Chlordane, trans- (gamma)	5103-74-2	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
DDD, 2,4'-	53-19-0	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
DDD, 4,4'-	72-54-8	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
DDD, total	----	E660F/WT			<0.030	----	----	----	<0.030	----	<0.030
DDE, 2,4'-	3424-82-6	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
DDE, 4,4'-	72-55-9	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
DDE, total	----	E660F/WT	mg/kg		<0.030	----	----	----	<0.030	----	<0.030
DDT, 2,4'-	789-02-6	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
DDT, 4,4'-	50-29-3	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
DDT, total	----	E660F/WT			<0.030	----	----	----	<0.030	----	<0.030
Dieldrin	60-57-1	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
Endosulfan, alpha-	959-98-8	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
Endosulfan, beta-	33213-65-9	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
Endosulfan, total	----	E660F/WT			<0.030	----	----	----	<0.030	----	<0.030
Endrin	72-20-8	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
Heptachlor	76-44-8	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
Heptachlor epoxide	1024-57-3	E660F/WT	mg/kg		<0.020	----	----	----	<0.020	----	<0.020
Hexachlorobenzene	118-74-1	E660F/WT			<0.010	----	----	----	<0.010	----	<0.010
Hexachlorobutadiene	87-68-3	E660F/WT	mg/kg		<0.010	----	----	----	<0.010	----	<0.010
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT			<0.010	----	----	----	<0.010	----	<0.010
Hexachloroethane	67-72-1	E660F/WT	mg/kg		<0.010	----	----	----	<0.010	----	<0.010
Methoxychlor	72-43-5	E660F/WT			<0.020	----	----	----	<0.020	----	<0.020
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT	%		102	----	----	----	102	----	118

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-3-2	23-6-2	23-10-2	23-10-2D	23-7-1	23-7-2	23-11-2
				Sampling date/time	24-Jul-2023 12:00	24-Jul-2023 09:30	24-Jul-2023 15:00	24-Jul-2023 15:00	25-Jul-2023 12:00	25-Jul-2023 12:15	25-Jul-2023 09:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-001	WT2323388-002	WT2323388-003	WT2323388-004	WT2323388-005	WT2323388-006	WT2323388-007
Organochlorine Pesticides Surrogates											
Tetrachloro-m-xylene	877-09-8	E660F/WT			96.2	----	----	----	99.5	----	104

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 Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8-1	23-8-2	23-8-2D	23-2-1	23-2-2	23-12-2	23-4-1
				Sampling date/time	26-Jul-2023 10:30	26-Jul-2023 10:40	26-Jul-2023 10:40	26-Jul-2023 12:30	26-Jul-2023 13:00	27-Jul-2023 09:30	27-Jul-2023 12:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-008	WT2323388-009	WT2323388-010	WT2323388-011	WT2323388-012	WT2323388-013	WT2323388-014
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT	mS/cm		----	0.107	0.109	----	0.104	----	----
Moisture	----	E144/WT			10.9	7.98	7.94	22.9	17.2	16.8	33.0
pH (1:2 soil:CaCl2-aq)	----	E108A/WT	pH units		----	7.77	7.77	----	7.86	----	----
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT			----	<0.050	<0.050	----	<0.050	----	----
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT	mg/L		----	5.31	4.78	----	4.31	----	----
Magnesium, soluble ion content	7439-95-4	E484/WT			----	<0.50	<0.50	----	<0.50	----	----
Sodium, soluble ion content	17341-25-2	E484/WT	mg/L		----	0.85	0.88	----	1.04	----	----
Sodium adsorption ratio [SAR]	----	E484/WT			----	0.10	0.11	----	0.14	----	----
Metals											
Antimony	7440-36-0	E440C/WT	mg/kg		----	<0.10	<0.10	----	<0.10	----	----
Arsenic	7440-38-2	E440C/WT			----	2.04	1.87	----	1.40	----	----
Barium	7440-39-3	E440C/WT	mg/kg		----	107	96.1	----	32.2	----	----
Beryllium	7440-41-7	E440C/WT			----	0.39	0.34	----	0.19	----	----
Boron	7440-42-8	E440C/WT	mg/kg		----	7.8	7.6	----	<5.0	----	----
Boron, hot water soluble	7440-42-8	E487/WT			----	<0.10	<0.10	----	<0.10	----	----
Cadmium	7440-43-9	E440C/WT	mg/kg		----	0.044	0.059	----	0.024	----	----
Chromium	7440-47-3	E440C/WT			----	30.0	19.5	----	8.76	----	----
Cobalt	7440-48-4	E440C/WT	mg/kg		----	6.22	5.37	----	3.00	----	----
Copper	7440-50-8	E440C/WT			----	12.0	10.2	----	5.76	----	----
Lead	7439-92-1	E440C/WT	mg/kg		----	4.59	4.24	----	3.60	----	----
Mercury	7439-97-6	E510C/WT			----	<0.0050	0.0056	----	<0.0050	----	----
Molybdenum	7439-98-7	E440C/WT	mg/kg		----	0.28	0.54	----	0.19	----	----
Nickel	7440-02-0	E440C/WT			----	16.8	10.8	----	5.68	----	----
Selenium	7782-49-2	E440C/WT	mg/kg		----	<0.20	<0.20	----	<0.20	----	----
Silver	7440-22-4	E440C/WT			----	<0.10	<0.10	----	<0.10	----	----
Thallium	7440-28-0	E440C/WT	mg/kg		----	0.155	0.136	----	0.095	----	----
Uranium	7440-61-1	E440C/WT			----	0.572	0.492	----	0.452	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8-1	23-8-2	23-8-2D	23-2-1	23-2-2	23-12-2	23-4-1
				Sampling date/time	26-Jul-2023 10:30	26-Jul-2023 10:40	26-Jul-2023 10:40	26-Jul-2023 12:30	26-Jul-2023 13:00	27-Jul-2023 09:30	27-Jul-2023 12:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-008	WT2323388-009	WT2323388-010	WT2323388-011	WT2323388-012	WT2323388-013	WT2323388-014
Metals											
Vanadium	7440-62-2	E440C/WT	mg/kg	----	28.9	26.7	----	15.5	----	----	
Zinc	7440-66-6	E440C/WT		----	26.5	25.0	----	12.3	----	----	
Speciated Metals											
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT	mg/kg	----	<0.10	<0.10	----	<0.10	----	----	
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT		----	<0.50	----	----	<0.50	----	<0.50	
Benzene	71-43-2	E611D/WT	mg/kg	----	<0.0050	----	----	<0.0050	----	<0.0050	
Bromodichloromethane	75-27-4	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Bromoform	75-25-2	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Bromomethane	74-83-9	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Carbon tetrachloride	56-23-5	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Chlorobenzene	108-90-7	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Chloroform	67-66-3	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dibromochloromethane	124-48-1	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dibromoethane, 1,2-	106-93-4	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichlorobenzene, 1,2-	95-50-1	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichlorobenzene, 1,4-	106-46-7	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichlorodifluoromethane	75-71-8	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichloroethane, 1,1-	75-34-3	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichloroethane, 1,2-	107-06-2	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichloroethylene, 1,1-	75-35-4	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichloromethane	75-09-2	E611D/WT	mg/kg	----	<0.045	----	----	<0.045	----	<0.045	
Dichloropropane, 1,2-	78-87-5	E611D/WT		----	<0.050	----	----	<0.050	----	<0.050	
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT		----	<0.030	----	----	<0.030	----	<0.030	
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	mg/kg	----	<0.030	----	----	<0.030	----	<0.030	

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8-1	23-8-2	23-8-2D	23-2-1	23-2-2	23-12-2	23-4-1
				Sampling date/time	26-Jul-2023 10:30	26-Jul-2023 10:40	26-Jul-2023 10:40	26-Jul-2023 12:30	26-Jul-2023 13:00	27-Jul-2023 09:30	27-Jul-2023 12:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-008	WT2323388-009	WT2323388-010	WT2323388-011	WT2323388-012	WT2323388-013	WT2323388-014
Volatile Organic Compounds											
Ethylbenzene	100-41-4	E611D/WT	mg/kg	----	<0.015	----	----	<0.015	----	<0.015	
Hexane, n-	110-54-3	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	mg/kg	----	<0.50	----	----	<0.50	----	<0.50	
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	mg/kg	----	<0.50	----	----	<0.50	----	<0.50	
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	mg/kg	----	<0.040	----	----	<0.040	----	<0.040	
Styrene	100-42-5	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Tetrachloroethylene	127-18-4	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Toluene	108-88-3	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Trichloroethylene	79-01-6	E611D/WT	mg/kg	----	<0.010	----	----	<0.010	----	<0.010	
Trichlorofluoromethane	75-69-4	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
Vinyl chloride	75-01-4	E611D/WT	mg/kg	----	<0.020	----	----	<0.020	----	<0.020	
Xylene, m+p-	179601-23-1	E611D/WT	mg/kg	----	<0.030	----	----	<0.030	----	<0.030	
Xylene, o-	95-47-6	E611D/WT	mg/kg	----	<0.030	----	----	<0.030	----	<0.030	
Xylenes, total	1330-20-7	E611D/WT	mg/kg	----	<0.050	----	----	<0.050	----	<0.050	
BTEX, total	----	E611D/WT	mg/kg	----	<0.10	----	----	<0.10	----	<0.10	
Hydrocarbons											
F1 (C6-C10)	----	E581.F1/WT	mg/kg	----	<5.0	----	----	<5.0	----	<5.0	
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg	----	<10	----	----	<10	----	<10	
F3 (C16-C34)	----	E601.SG-L/WT	mg/kg	----	<50	----	----	<50	----	<50	
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg	----	<50	----	----	<50	----	<50	
F1-BTEX	----	EC580/WT	mg/kg	----	<5.0	----	----	<5.0	----	<5.0	
Hydrocarbons, total (C6-C50)	----	EC581/WT	mg/kg	----	<80	----	----	<80	----	<80	
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT	-	----	YES	----	----	YES	----	YES	
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	mg/kg	----	92.5	----	----	92.7	----	92.6	

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8-1	23-8-2	23-8-2D	23-2-1	23-2-2	23-12-2	23-4-1
				Sampling date/time	26-Jul-2023 10:30	26-Jul-2023 10:40	26-Jul-2023 10:40	26-Jul-2023 12:30	26-Jul-2023 13:00	27-Jul-2023 09:30	27-Jul-2023 12:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-008	WT2323388-009	WT2323388-010	WT2323388-011	WT2323388-012	WT2323388-013	WT2323388-014
Hydrocarbons Surrogates											
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT	%		----	102	----	----	77.1	----	88.3
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT			----	105	----	----	93.2	----	108
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%		----	115	----	----	103	----	114
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT			----	----	----	<0.050	----	<0.050	----
Acenaphthylene	208-96-8	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Anthracene	120-12-7	E641A/WT			----	----	----	<0.050	----	<0.050	----
Benz(a)anthracene	56-55-3	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Benzo(a)pyrene	50-32-8	E641A/WT			----	----	----	<0.050	----	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT			----	----	----	<0.050	----	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Chrysene	218-01-9	E641A/WT			----	----	----	<0.050	----	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Fluoranthene	206-44-0	E641A/WT			----	----	----	<0.050	----	<0.050	----
Fluorene	86-73-7	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT			----	----	----	<0.050	----	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	mg/kg		----	----	----	<0.030	----	<0.030	----
Methylnaphthalene, 1+2-	----	E641A/WT			----	----	----	<0.050	----	<0.050	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	mg/kg		----	----	----	<0.030	----	<0.030	----
Naphthalene	91-20-3	E641A/WT			----	----	----	<0.010	----	<0.010	----
Phenanthrene	85-01-8	E641A/WT	mg/kg		----	----	----	<0.050	----	<0.050	----
Pyrene	129-00-0	E641A/WT			----	----	----	<0.050	----	<0.050	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Acridine-d9	34749-75-2	E641A/WT	%		----	----	----	84.7	----	72.4	----
Chrysene-d12	1719-03-5	E641A/WT			----	----	----	84.2	----	76.1	----
Naphthalene-d8	1146-65-2	E641A/WT	%		----	----	----	93.8	----	72.0	----
Phenanthrene-d10	1517-22-2	E641A/WT			----	----	----	88.1	----	76.6	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8-1	23-8-2	23-8-2D	23-2-1	23-2-2	23-12-2	23-4-1
				Sampling date/time	26-Jul-2023 10:30	26-Jul-2023 10:40	26-Jul-2023 10:40	26-Jul-2023 12:30	26-Jul-2023 13:00	27-Jul-2023 09:30	27-Jul-2023 12:30
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					WT2323388-008	WT2323388-009	WT2323388-010	WT2323388-011	WT2323388-012	WT2323388-013	WT2323388-014
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
Chlordane, cis- (alpha)	5103-71-9	E660F/WT			<0.020	----	----	<0.020	----	----	----
Chlordane, total	57-74-9	E660F/WT	mg/kg		<0.030	----	----	<0.030	----	----	----
Chlordane, trans- (gamma)	5103-74-2	E660F/WT			<0.020	----	----	<0.020	----	----	----
DDD, 2,4'-	53-19-0	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
DDD, 4,4'-	72-54-8	E660F/WT			<0.020	----	----	<0.020	----	----	----
DDD, total	----	E660F/WT	mg/kg		<0.030	----	----	<0.030	----	----	----
DDE, 2,4'-	3424-82-6	E660F/WT			<0.020	----	----	<0.020	----	----	----
DDE, 4,4'-	72-55-9	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
DDE, total	----	E660F/WT			<0.030	----	----	<0.030	----	----	----
DDT, 2,4'-	789-02-6	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
DDT, 4,4'-	50-29-3	E660F/WT			<0.020	----	----	<0.020	----	----	----
DDT, total	----	E660F/WT	mg/kg		<0.030	----	----	<0.030	----	----	----
Dieldrin	60-57-1	E660F/WT			<0.020	----	----	<0.020	----	----	----
Endosulfan, alpha-	959-98-8	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
Endosulfan, beta-	33213-65-9	E660F/WT			<0.020	----	----	<0.020	----	----	----
Endosulfan, total	----	E660F/WT	mg/kg		<0.030	----	----	<0.030	----	----	----
Endrin	72-20-8	E660F/WT			<0.020	----	----	<0.020	----	----	----
Heptachlor	76-44-8	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
Heptachlor epoxide	1024-57-3	E660F/WT			<0.020	----	----	<0.020	----	----	----
Hexachlorobenzene	118-74-1	E660F/WT	mg/kg		<0.010	----	----	<0.010	----	----	----
Hexachlorobutadiene	87-68-3	E660F/WT			<0.010	----	----	<0.010	----	----	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	mg/kg		<0.010	----	----	<0.010	----	----	----
Hexachloroethane	67-72-1	E660F/WT			<0.010	----	----	<0.010	----	----	----
Methoxychlor	72-43-5	E660F/WT	mg/kg		<0.020	----	----	<0.020	----	----	----
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT			97.0	----	----	99.0	----	----	----
Tetrachloro-m-xylene	877-09-8	E660F/WT	%		107	----	----	100	----	----	----

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

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

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-4-1D	23-4-2	23-4-2D	23-4-4	----	----	----
				Sampling date/time	27-Jul-2023 12:30	27-Jul-2023 12:40	27-Jul-2023 12:40	27-Jul-2023 13:00	----	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	----	----	----
					WT2323388-015	WT2323388-016	WT2323388-017	WT2323388-018	--------	--------	--------
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT			----	0.0842	----	----	----	----	----
Moisture	----	E144/WT	%		39.3	8.10	9.80	----	----	----	----
pH (1:2 soil:CaCl2-aq)	----	E108A/WT			----	7.90	----	----	----	----	----
Particle Size											
Grain size curve	----	E185/SK	-		----	----	----	See Attached	----	----	----
Percent Passing											
Passing (9.5mm)	----	E181/SK			----	----	----	98.9	----	----	----
Passing (4.75mm)	----	E181/SK	%		----	----	----	89.3	----	----	----
Passing (19mm)	----	E181/SK			----	----	----	100	----	----	----
Passing (25.4mm)	----	E181/SK	%		----	----	----	100	----	----	----
Passing (38.1mm)	----	E181/SK			----	----	----	100	----	----	----
Passing (50.8mm)	----	E181/SK	%		----	----	----	100	----	----	----
Passing (76.2mm)	----	E181/SK			----	----	----	100	----	----	----
Passing (1.0mm)	----	E182/SK	%		----	----	----	65.2	----	----	----
Passing (0.841mm)	----	E182/SK			----	----	----	63.2	----	----	----
Passing (0.50mm)	----	E182/SK	%		----	----	----	54.6	----	----	----
Passing (0.420mm)	----	E182/SK			----	----	----	52.5	----	----	----
Passing (0.250mm)	----	E182/SK	%		----	----	----	43.7	----	----	----
Passing (0.149mm)	----	E182/SK			----	----	----	36.2	----	----	----
Passing (0.125mm)	----	E182/SK	%		----	----	----	33.5	----	----	----
Passing (0.075mm)	----	E182/SK			----	----	----	27.7	----	----	----
Passing (0.063mm)	----	E182/SK	%		----	----	----	24.9	----	----	----
Passing (0.05mm)	----	E182/SK			----	----	----	21.8	----	----	----
Passing (0.0312mm)	----	E183/SK	%		----	----	----	18.4	----	----	----
Passing (0.020mm)	----	E183/SK			----	----	----	15.9	----	----	----
Passing (0.005mm)	----	E183/SK	%		----	----	----	9.5	----	----	----
Passing (0.004mm)	----	E183/SK			----	----	----	8.5	----	----	----
Passing (0.002mm)	----	E183/SK	%		----	----	----	5.9	----	----	----
Passing (2.0mm)	----	E181/SK			----	----	----	77.4	----	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-4-1D	23-4-2	23-4-2D	23-4-4	----	----	----
				Sampling date/time	27-Jul-2023 12:30	27-Jul-2023 12:40	27-Jul-2023 12:40	27-Jul-2023 13:00	----	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	----	----	----
					WT2323388-015	WT2323388-016	WT2323388-017	WT2323388-018	--------	--------	--------
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT	mg/kg		----	<0.050	----	----	----	----	----
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT			----	3.03	----	----	----	----	----
Magnesium, soluble ion content	7439-95-4	E484/WT	mg/L		----	<0.50	----	----	----	----	----
Sodium, soluble ion content	17341-25-2	E484/WT			----	0.80	----	----	----	----	----
Sodium adsorption ratio [SAR]	----	E484/WT	-		----	0.13	----	----	----	----	----
Metals											
Antimony	7440-36-0	E440C/WT			----	<0.10	----	----	----	----	----
Arsenic	7440-38-2	E440C/WT	mg/kg		----	1.54	----	----	----	----	----
Barium	7440-39-3	E440C/WT			----	33.1	----	----	----	----	----
Beryllium	7440-41-7	E440C/WT	mg/kg		----	0.18	----	----	----	----	----
Boron	7440-42-8	E440C/WT			----	5.0	----	----	----	----	----
Boron, hot water soluble	7440-42-8	E487/WT	mg/kg		----	<0.10	----	----	----	----	----
Cadmium	7440-43-9	E440C/WT			----	0.030	----	----	----	----	----
Chromium	7440-47-3	E440C/WT	mg/kg		----	10.1	----	----	----	----	----
Cobalt	7440-48-4	E440C/WT			----	3.20	----	----	----	----	----
Copper	7440-50-8	E440C/WT	mg/kg		----	5.61	----	----	----	----	----
Lead	7439-92-1	E440C/WT			----	3.06	----	----	----	----	----
Mercury	7439-97-6	E510C/WT	mg/kg		----	<0.0050	----	----	----	----	----
Molybdenum	7439-98-7	E440C/WT			----	0.28	----	----	----	----	----
Nickel	7440-02-0	E440C/WT	mg/kg		----	5.68	----	----	----	----	----
Selenium	7782-49-2	E440C/WT			----	<0.20	----	----	----	----	----
Silver	7440-22-4	E440C/WT	mg/kg		----	<0.10	----	----	----	----	----
Thallium	7440-28-0	E440C/WT			----	0.090	----	----	----	----	----
Uranium	7440-61-1	E440C/WT	mg/kg		----	0.526	----	----	----	----	----
Vanadium	7440-62-2	E440C/WT			----	19.1	----	----	----	----	----
Zinc	7440-66-6	E440C/WT	mg/kg		----	13.0	----	----	----	----	----
Speciated Metals											
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT			----	<0.10	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-4-1D	23-4-2	23-4-2D	23-4-4	----	----	----
				Sampling date/time	27-Jul-2023 12:30	27-Jul-2023 12:40	27-Jul-2023 12:40	27-Jul-2023 13:00	----	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	----	----	----
					WT2323388-015	WT2323388-016	WT2323388-017	WT2323388-018	--------	--------	--------
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT	mg/kg		<0.50	----	----	----	----	----	----
Benzene	71-43-2	E611D/WT			<0.0050	----	----	----	----	----	----
Bromodichloromethane	75-27-4	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Bromoform	75-25-2	E611D/WT			<0.050	----	----	----	----	----	----
Bromomethane	74-83-9	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Carbon tetrachloride	56-23-5	E611D/WT			<0.050	----	----	----	----	----	----
Chlorobenzene	108-90-7	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Chloroform	67-66-3	E611D/WT			<0.050	----	----	----	----	----	----
Dibromochloromethane	124-48-1	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT			<0.050	----	----	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT			<0.050	----	----	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT			<0.050	----	----	----	----	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT			<0.050	----	----	----	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT			<0.050	----	----	----	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichloromethane	75-09-2	E611D/WT			<0.045	----	----	----	----	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT			<0.050	----	----	----	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	mg/kg		<0.030	----	----	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT			<0.030	----	----	----	----	----	----
Ethylbenzene	100-41-4	E611D/WT	mg/kg		<0.015	----	----	----	----	----	----
Hexane, n-	110-54-3	E611D/WT			<0.050	----	----	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	mg/kg		<0.50	----	----	----	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT			<0.50	----	----	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	mg/kg		<0.040	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-4-1D	23-4-2	23-4-2D	23-4-4	----	----	----
				Sampling date/time	27-Jul-2023 12:30	27-Jul-2023 12:40	27-Jul-2023 12:40	27-Jul-2023 13:00	----	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	----	----	----
					WT2323388-015	WT2323388-016	WT2323388-017	WT2323388-018	--------	--------	--------
Volatile Organic Compounds											
Styrene	100-42-5	E611D/WT			<0.050	----	----	----	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT			<0.050	----	----	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Toluene	108-88-3	E611D/WT			<0.050	----	----	----	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	mg/kg		<0.050	----	----	----	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT			<0.050	----	----	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT	mg/kg		<0.010	----	----	----	----	----	----
Trichlorofluoromethane	75-69-4	E611D/WT			<0.050	----	----	----	----	----	----
Vinyl chloride	75-01-4	E611D/WT	mg/kg		<0.020	----	----	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT			<0.030	----	----	----	----	----	----
Xylene, o-	95-47-6	E611D/WT	mg/kg		<0.030	----	----	----	----	----	----
Xylenes, total	1330-20-7	E611D/WT			<0.050	----	----	----	----	----	----
BTEX, total	----	E611D/WT	mg/kg		<0.10	----	----	----	----	----	----
Hydrocarbons											
F1 (C6-C10)	----	E581.F1/WT			<5.0	----	----	----	----	----	----
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg		<10	----	----	----	----	----	----
F3 (C16-C34)	----	E601.SG-L/WT			<50	----	----	----	----	----	----
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg		<50	----	----	----	----	----	----
F1-BTEX	----	EC580/WT			<5.0	----	----	----	----	----	----
Hydrocarbons, total (C6-C50)	----	EC581/WT	mg/kg		<80	----	----	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT			YES	----	----	----	----	----	----
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	%		92.4	----	----	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT			77.2	----	----	----	----	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%		86.1	----	----	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT			87.9	----	----	----	----	----	----
Organochlorine Pesticides											

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-4-1D	23-4-2	23-4-2D	23-4-4	----	----	----
				Sampling date/time	27-Jul-2023 12:30	27-Jul-2023 12:40	27-Jul-2023 12:40	27-Jul-2023 13:00	----	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	----	----	----
					WT2323388-015	WT2323388-016	WT2323388-017	WT2323388-018	--------	--------	--------
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
Chlordane, cis- (alpha)	5103-71-9	E660F/WT		----	<0.020	<0.020	----	----	----	----	
Chlordane, total	57-74-9	E660F/WT	mg/kg	----	<0.030	<0.030	----	----	----	----	
Chlordane, trans- (gamma)	5103-74-2	E660F/WT		----	<0.020	<0.020	----	----	----	----	
DDD, 2,4'-	53-19-0	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
DDD, 4,4'-	72-54-8	E660F/WT		----	<0.020	<0.020	----	----	----	----	
DDD, total	----	E660F/WT	mg/kg	----	<0.030	<0.030	----	----	----	----	
DDE, 2,4'-	3424-82-6	E660F/WT		----	<0.020	<0.020	----	----	----	----	
DDE, 4,4'-	72-55-9	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
DDE, total	----	E660F/WT		----	<0.030	<0.030	----	----	----	----	
DDT, 2,4'-	789-02-6	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
DDT, 4,4'-	50-29-3	E660F/WT		----	<0.020	<0.020	----	----	----	----	
DDT, total	----	E660F/WT	mg/kg	----	<0.030	<0.030	----	----	----	----	
Dieldrin	60-57-1	E660F/WT		----	<0.020	<0.020	----	----	----	----	
Endosulfan, alpha-	959-98-8	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
Endosulfan, beta-	33213-65-9	E660F/WT		----	<0.020	<0.020	----	----	----	----	
Endosulfan, total	----	E660F/WT	mg/kg	----	<0.030	<0.030	----	----	----	----	
Endrin	72-20-8	E660F/WT		----	<0.020	<0.020	----	----	----	----	
Heptachlor	76-44-8	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
Heptachlor epoxide	1024-57-3	E660F/WT		----	<0.020	<0.020	----	----	----	----	
Hexachlorobenzene	118-74-1	E660F/WT	mg/kg	----	<0.010	<0.010	----	----	----	----	
Hexachlorobutadiene	87-68-3	E660F/WT		----	<0.010	<0.010	----	----	----	----	
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	mg/kg	----	<0.010	<0.010	----	----	----	----	
Hexachloroethane	67-72-1	E660F/WT		----	<0.010	<0.010	----	----	----	----	
Methoxychlor	72-43-5	E660F/WT	mg/kg	----	<0.020	<0.020	----	----	----	----	
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT		----	115	100	----	----	----	----	
Tetrachloro-m-xylene	877-09-8	E660F/WT	%	----	102	99.6	----	----	----	----	

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

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

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC						
Physical Tests									
Conductivity (1:2 leachate)	----	mS/cm	**0.57 mS/cm**						
Moisture	----	%	**--**						
pH (1:2 soil:CaCl2-aq)	----	pH units	**--**						
Particle Size									
Grain size curve	----	-							
Percent Passing									
Passing (0.002mm)	----	%							
Passing (0.004mm)	----	%							
Passing (0.005mm)	----	%							
Passing (0.020mm)	----	%							
Passing (0.0312mm)	----	%							
Passing (0.05mm)	----	%							
Passing (0.063mm)	----	%							
Passing (0.075mm)	----	%							
Passing (0.125mm)	----	%							
Passing (0.149mm)	----	%							
Passing (0.250mm)	----	%							
Passing (0.420mm)	----	%							
Passing (0.50mm)	----	%							
Passing (0.841mm)	----	%							
Passing (1.0mm)	----	%							
Passing (19mm)	----	%							
Passing (2.0mm)	----	%							
Passing (25.4mm)	----	%							
Passing (38.1mm)	----	%							
Passing (4.75mm)	----	%							
Passing (50.8mm)	----	%							
Passing (76.2mm)	----	%							
Passing (9.5mm)	----	%							
Cyanides									
Cyanide, weak acid dissociable	----	mg/kg	**0.051 mg/kg**						
Fixed-Ratio Extractables									
Calcium, soluble ion content	7440-70-2	mg/L	**--**						
Magnesium, soluble ion content	7439-95-4	mg/L	**--**						
Sodium adsorption ratio [SAR]	----	-	**2.4 -**						
Sodium, soluble ion content	17341-25-2	mg/L	**--**						
Metals									

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Metals - Continued			
Antimony	7440-36-0	mg/kg	**1.3 mg/kg**
Arsenic	7440-38-2	mg/kg	**18 mg/kg**
Barium	7440-39-3	mg/kg	**220 mg/kg**
Beryllium	7440-41-7	mg/kg	**2.5 mg/kg**
Boron, hot water soluble	7440-42-8	mg/kg	**--**
Boron	7440-42-8	mg/kg	**36 mg/kg**
Cadmium	7440-43-9	mg/kg	**1.2 mg/kg**
Chromium	7440-47-3	mg/kg	**70 mg/kg**
Cobalt	7440-48-4	mg/kg	**21 mg/kg**
Copper	7440-50-8	mg/kg	**92 mg/kg**
Lead	7439-92-1	mg/kg	**120 mg/kg**
Mercury	7439-97-6	mg/kg	**0.27 mg/kg**
Molybdenum	7439-98-7	mg/kg	**2 mg/kg**
Nickel	7440-02-0	mg/kg	**82 mg/kg**
Selenium	7782-49-2	mg/kg	**1.5 mg/kg**
Silver	7440-22-4	mg/kg	**0.5 mg/kg**
Thallium	7440-28-0	mg/kg	**1 mg/kg**
Uranium	7440-61-1	mg/kg	**2.5 mg/kg**
Vanadium	7440-62-2	mg/kg	**86 mg/kg**
Zinc	7440-66-6	mg/kg	**290 mg/kg**
Speciated Metals			
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg	**0.66 mg/kg**
Volatile Organic Compounds			
Acetone	67-64-1	mg/kg	**0.5 mg/kg**
Benzene	71-43-2	mg/kg	**0.02 mg/kg**
Bromodichloromethane	75-27-4	mg/kg	**0.05 mg/kg**
Bromoform	75-25-2	mg/kg	**0.05 mg/kg**
Bromomethane	74-83-9	mg/kg	**0.05 mg/kg**
BTEX, total	----	mg/kg	**--**
Carbon tetrachloride	56-23-5	mg/kg	**0.05 mg/kg**
Chlorobenzene	108-90-7	mg/kg	**0.05 mg/kg**
Chloroform	67-66-3	mg/kg	**0.05 mg/kg**
Dibromochloromethane	124-48-1	mg/kg	**0.05 mg/kg**
Dibromoethane, 1,2-	106-93-4	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,2-	95-50-1	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,3-	541-73-1	mg/kg	**0.05 mg/kg**
Dichlorobenzene, 1,4-	106-46-7	mg/kg	**0.05 mg/kg**
Dichlorodifluoromethane	75-71-8	mg/kg	**0.05 mg/kg**
Dichloroethane, 1,1-	75-34-3	mg/kg	**0.05 mg/kg**

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Volatile Organic Compounds - Continued			
Dichloroethane, 1,2-	107-06-2	mg/kg	**0.05 mg/kg**
Dichloroethylene, 1,1-	75-35-4	mg/kg	**0.05 mg/kg**
Dichloroethylene, cis-1,2-	156-59-2	mg/kg	**0.05 mg/kg**
Dichloroethylene, trans-1,2-	156-60-5	mg/kg	**0.05 mg/kg**
Dichloromethane	75-09-2	mg/kg	**0.05 mg/kg**
Dichloropropane, 1,2-	78-87-5	mg/kg	**0.05 mg/kg**
Dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg	**0.05 mg/kg**
Dichloropropylene, cis-1,3-	10061-01-5	mg/kg	--
Dichloropropylene, trans-1,3-	10061-02-6	mg/kg	--
Ethylbenzene	100-41-4	mg/kg	**0.05 mg/kg**
Hexane, n-	110-54-3	mg/kg	**0.05 mg/kg**
Methyl ethyl ketone [MEK]	78-93-3	mg/kg	**0.5 mg/kg**
Methyl isobutyl ketone [MIBK]	108-10-1	mg/kg	**0.5 mg/kg**
Methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg	**0.05 mg/kg**
Styrene	100-42-5	mg/kg	**0.05 mg/kg**
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	**0.05 mg/kg**
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg	**0.05 mg/kg**
Tetrachloroethylene	127-18-4	mg/kg	**0.05 mg/kg**
Toluene	108-88-3	mg/kg	**0.2 mg/kg**
Trichloroethane, 1,1,1-	71-55-6	mg/kg	**0.05 mg/kg**
Trichloroethane, 1,1,2-	79-00-5	mg/kg	**0.05 mg/kg**
Trichloroethylene	79-01-6	mg/kg	**0.05 mg/kg**
Trichlorofluoromethane	75-69-4	mg/kg	**0.25 mg/kg**
Vinyl chloride	75-01-4	mg/kg	**0.02 mg/kg**
Xylene, m+p-	179601-23-1	mg/kg	--
Xylene, o-	95-47-6	mg/kg	--
Xylenes, total	1330-20-7	mg/kg	**0.05 mg/kg**
Hydrocarbons			
Chromatogram to baseline at nC50	n/a	-	--
F1 (C6-C10)	----	mg/kg	**25 mg/kg**
F1-BTEX	----	mg/kg	**25 mg/kg**
F2 (C10-C16)	----	mg/kg	**10 mg/kg**
F3 (C16-C34)	----	mg/kg	**240 mg/kg**
F4 (C34-C50)	----	mg/kg	**120 mg/kg**
Hydrocarbons, total (C6-C50)	----	mg/kg	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%	
Dichlorotoluene, 3,4-	95-75-0	%	
Bromofluorobenzene, 4-	460-00-4	%	
Difluorobenzene, 1,4-	540-36-3	%	

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	83-32-9	mg/kg	**0.072 mg/kg**
Acenaphthylene	208-96-8	mg/kg	**0.093 mg/kg**
Anthracene	120-12-7	mg/kg	**0.16 mg/kg**
Benz(a)anthracene	56-55-3	mg/kg	**0.36 mg/kg**
Benzo(a)pyrene	50-32-8	mg/kg	**0.3 mg/kg**
Benzo(b+j)fluoranthene	n/a	mg/kg	**0.47 mg/kg**
Benzo(g,h,i)perylene	191-24-2	mg/kg	**0.68 mg/kg**
Benzo(k)fluoranthene	207-08-9	mg/kg	**0.48 mg/kg**
Chrysene	218-01-9	mg/kg	**2.8 mg/kg**
Dibenz(a,h)anthracene	53-70-3	mg/kg	**0.1 mg/kg**
Fluoranthene	206-44-0	mg/kg	**0.56 mg/kg**
Fluorene	86-73-7	mg/kg	**0.12 mg/kg**
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	**0.23 mg/kg**
Methylnaphthalene, 1+2-	----	mg/kg	**0.59 mg/kg**
Methylnaphthalene, 1-	90-12-0	mg/kg	**0.59 mg/kg**
Methylnaphthalene, 2-	91-57-6	mg/kg	**0.59 mg/kg**
Naphthalene	91-20-3	mg/kg	**0.09 mg/kg**
Phenanthrene	85-01-8	mg/kg	**0.69 mg/kg**
Pyrene	129-00-0	mg/kg	**1 mg/kg**
Acridine-d9	34749-75-2	%	
Chrysene-d12	1719-03-5	%	
Naphthalene-d8	1146-65-2	%	
Phenanthrene-d10	1517-22-2	%	
Organochlorine Pesticides			
Aldrin	309-00-2	mg/kg	**0.05 mg/kg**
Chlordane, cis- (alpha)	5103-71-9	mg/kg	--
Chlordane, total	57-74-9	mg/kg	**0.05 mg/kg**
Chlordane, trans- (gamma)	5103-74-2	mg/kg	--
DDD, 2,4'-	53-19-0	mg/kg	--
DDD, 4,4'-	72-54-8	mg/kg	--
DDD, total	----	mg/kg	**0.05 mg/kg**
DDE, 2,4'-	3424-82-6	mg/kg	--
DDE, 4,4'-	72-55-9	mg/kg	--
DDE, total	----	mg/kg	**0.05 mg/kg**
DDT, 2,4'-	789-02-6	mg/kg	--
DDT, 4,4'-	50-29-3	mg/kg	--
DDT, total	----	mg/kg	**1.4 mg/kg**
Dieldrin	60-57-1	mg/kg	**0.05 mg/kg**
Endosulfan, alpha-	959-98-8	mg/kg	--

Analyte	CAS Number	Unit	ON153/04 T1-RPIICC						
Organochlorine Pesticides - Continued									
Endosulfan, beta-	33213-65-9	mg/kg	--						
Endosulfan, total	----	mg/kg	**0.04 mg/kg**						
Endrin	72-20-8	mg/kg	**0.04 mg/kg**						
Heptachlor epoxide	1024-57-3	mg/kg	**0.05 mg/kg**						
Heptachlor	76-44-8	mg/kg	**0.05 mg/kg**						
Hexachlorobenzene	118-74-1	mg/kg	**0.01 mg/kg**						
Hexachlorobutadiene	87-68-3	mg/kg	**0.01 mg/kg**						
Hexachlorocyclohexane, gamma-	58-89-9	mg/kg	**0.01 mg/kg**						
Hexachloroethane	67-72-1	mg/kg	**0.01 mg/kg**						
Methoxychlor	72-43-5	mg/kg	**0.05 mg/kg**						
Decachlorobiphenyl	2051-24-3	%							
Tetrachloro-m-xylene	877-09-8	%							

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

Key:

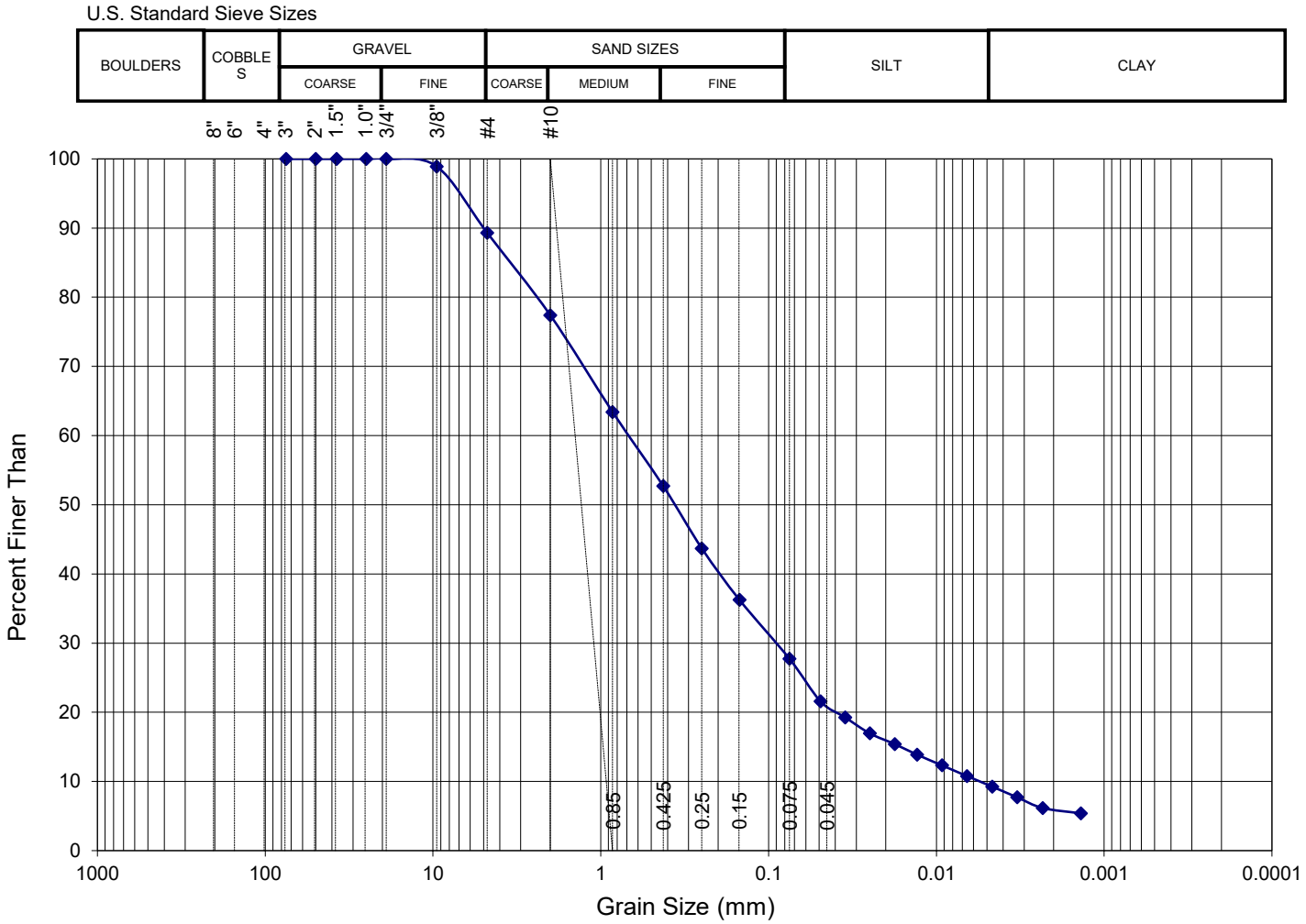
ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

ALS Laboratory Group

819-58th Street, Saskatoon,SK

PARTICLE SIZE DISTRIBUTION CURVE

Client Name:	WT2323388018
Project Number:	
Client Sample ID	23-4-4
Lab Sample ID	WT2323388018
Date Sample Received:	00-Jan-00
Test Completion Date:	02-Aug-23
Analyst:	SHCH



METHOD DESCRIPTION

Method Reference: ASTM D6913 & D7928

Dispersion method: Mechanical

Dispesion period: 1 minute cm/s

DESCRIPTION OF SAND AND GRAVEL PARTICLES

Shape: Angular

Hardness: Hard

SUMMARY OF RESULTS

GRAIN SIZE	WT %	DIA. RANGE (mm)
% GRAVEL :	10.69	> 4.75
% COARSE SAND :	11.90	2.0 - 4.75
% MEDIUM SAND :	24.68	0.425 - 2.0
% FINE SAND :	25.01	0.075 - 0.425
% SILT :	18.17	0.075 - 0.005
% CLAY :	9.55	< 0.005

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2323388**	Page	: 1 of 22
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 14:37
PO	: 2200902	Issue Date	: 04-Aug-2023 15:34
C-O-C number	: ----		
Sampler	: BF		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 18		
No. of samples analysed	: 18		

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

Key

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

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- 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
Laboratory Control Sample (LCS) Recoveries								
Organochlorine Pesticides	QC-MRG2-1061799 002	----	Heptachlor epoxide	1024-57-3	E660F	156 % LCS-H	50.0-150%	Recovery greater than upper control limit
Organochlorine Pesticides	QC-MRG2-1061799 002	----	Methoxychlor	72-43-5	E660F	159 % LCS-H	50.0-150%	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.*

Matrix Spike (MS) Recoveries								
Volatile Organic Compounds	Anonymous	Anonymous	Acetone	67-64-1	E611D	154 % K	50.0-140%	Recovery greater than upper data quality objective
Volatile Organic Compounds	Anonymous	Anonymous	Dichloroethane, 1,1-	75-34-3	E611D	142 % MES	50.0-140%	Recovery greater than upper data quality objective
Volatile Organic Compounds	Anonymous	Anonymous	Methyl ethyl ketone [MEK]	78-93-3	E611D	149 % MES	50.0-140%	Recovery greater than upper data quality objective
Volatile Organic Compounds	Anonymous	Anonymous	Methyl isobutyl ketone [MIBK]	108-10-1	E611D	162 % K	50.0-140%	Recovery greater than upper data quality objective

Result Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*
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: **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]										
23-4-2	E336A	27-Jul-2023	31-Jul-2023	14 days	4 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E336A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E336A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E336A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E336A	25-Jul-2023	31-Jul-2023	14 days	6 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E336A	25-Jul-2023	31-Jul-2023	14 days	6 days	✓	01-Aug-2023	14 days	1 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E336A	24-Jul-2023	31-Jul-2023	14 days	7 days	✓	01-Aug-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
Fixed-Ratio Extractables : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E484	27-Jul-2023	03-Aug-2023	180 days	7 days	✓	03-Aug-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]										
23-8-2	E484	26-Jul-2023	02-Aug-2023	180 days	7 days	✓	02-Aug-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]										
23-11-2	E484	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	02-Aug-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]										
23-2-2	E484	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-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]										
23-7-2	E484	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	02-Aug-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]										
23-8-2D	E484	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-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]										
23-3-2	E484	24-Jul-2023	02-Aug-2023	180 days	9 days	✓	02-Aug-2023	180 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
23-4-1	E581.F1	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	02-Aug-2023	40 days	1 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
23-4-1D	E581.F1	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	02-Aug-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] 23-2-2	E581.F1	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	02-Aug-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] 23-8-2	E581.F1	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	02-Aug-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] 23-11-2	E581.F1	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	02-Aug-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] 23-7-2	E581.F1	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	02-Aug-2023	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] 23-3-2	E581.F1	24-Jul-2023	01-Aug-2023	14 days	8 days	✓	02-Aug-2023	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-4-1	E601.SG-L	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	03-Aug-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-4-1D	E601.SG-L	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	03-Aug-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-2-2	E601.SG-L	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	03-Aug-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-8-2	E601.SG-L	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	03-Aug-2023	40 days	2 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E601.SG-L	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	03-Aug-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E601.SG-L	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	03-Aug-2023	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E601.SG-L	24-Jul-2023	01-Aug-2023	14 days	8 days	✓	03-Aug-2023	40 days	2 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E487	27-Jul-2023	03-Aug-2023	180 days	7 days	✓	03-Aug-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E487	26-Jul-2023	02-Aug-2023	180 days	7 days	✓	03-Aug-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E487	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E487	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-2023	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E487	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	03-Aug-2023	180 days	1 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E487	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	03-Aug-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]										
23-3-2	E487	24-Jul-2023	02-Aug-2023	180 days	9 days	✓	03-Aug-2023	180 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E510C	27-Jul-2023	03-Aug-2023	28 days	7 days	✓	03-Aug-2023	21 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E510C	26-Jul-2023	02-Aug-2023	28 days	7 days	✓	03-Aug-2023	21 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E510C	26-Jul-2023	03-Aug-2023	28 days	8 days	✓	03-Aug-2023	20 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E510C	26-Jul-2023	03-Aug-2023	28 days	8 days	✓	03-Aug-2023	20 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E510C	25-Jul-2023	02-Aug-2023	28 days	8 days	✓	03-Aug-2023	20 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E510C	25-Jul-2023	02-Aug-2023	28 days	8 days	✓	03-Aug-2023	20 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E510C	24-Jul-2023	02-Aug-2023	28 days	9 days	✓	03-Aug-2023	19 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E440C	27-Jul-2023	03-Aug-2023	180 days	7 days	✓	03-Aug-2023	173 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 : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E440C	26-Jul-2023	02-Aug-2023	180 days	7 days	✓	02-Aug-2023	173 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E440C	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	02-Aug-2023	172 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E440C	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-2023	172 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E440C	25-Jul-2023	02-Aug-2023	180 days	8 days	✓	02-Aug-2023	172 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E440C	26-Jul-2023	03-Aug-2023	180 days	8 days	✓	03-Aug-2023	172 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E440C	24-Jul-2023	02-Aug-2023	180 days	9 days	✓	02-Aug-2023	171 days	0 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2D	E660F	27-Jul-2023	30-Jul-2023	60 days	3 days	✓	01-Aug-2023	40 days	2 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E660F	27-Jul-2023	31-Jul-2023	60 days	4 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-1	E660F	26-Jul-2023	31-Jul-2023	60 days	5 days	✓	01-Aug-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
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-1	E660F	25-Jul-2023	30-Jul-2023	60 days	5 days	✓	01-Aug-2023	40 days	2 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-1	E660F	26-Jul-2023	30-Jul-2023	60 days	5 days	✓	01-Aug-2023	40 days	2 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E660F	25-Jul-2023	31-Jul-2023	60 days	6 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS or GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E660F	24-Jul-2023	31-Jul-2023	60 days	7 days	✓	01-Aug-2023	40 days	1 days	✓
Particle Size : Grain Size Report (Attachment) Hydrometer/Sieve Method										
Paper Bag (Brown)										
23-4-4	E185	27-Jul-2023	----	----	----		04-Aug-2023	----	----	
Percent Passing : Particle Size Analysis - Hydrometer										
Paper Bag (Brown)										
23-4-4	E183	27-Jul-2023	02-Aug-2023	365 days	6 days	✓	02-Aug-2023	359 days	0 days	✓
Percent Passing : Particle Size Analysis - Sieve <2mm										
Paper Bag (Brown)										
23-4-4	E182	27-Jul-2023	02-Aug-2023	365 days	6 days	✓	02-Aug-2023	359 days	0 days	✓
Percent Passing : Particle Size Analysis - Sieve >2mm										
Paper Bag (Brown)										
23-4-4	E181	27-Jul-2023	02-Aug-2023	365 days	6 days	✓	02-Aug-2023	359 days	0 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E100-L	27-Jul-2023	03-Aug-2023	30 days	7 days	✓	04-Aug-2023	23 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] 23-8-2	E100-L	26-Jul-2023	02-Aug-2023	30 days	7 days	✓	03-Aug-2023	23 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-11-2	E100-L	25-Jul-2023	02-Aug-2023	30 days	8 days	✓	03-Aug-2023	22 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-2-2	E100-L	26-Jul-2023	03-Aug-2023	30 days	8 days	✓	04-Aug-2023	22 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-7-2	E100-L	25-Jul-2023	02-Aug-2023	30 days	8 days	✓	03-Aug-2023	22 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-8-2D	E100-L	26-Jul-2023	03-Aug-2023	30 days	8 days	✓	04-Aug-2023	22 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] 23-3-2	E100-L	24-Jul-2023	02-Aug-2023	30 days	9 days	✓	03-Aug-2023	21 days	1 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] 23-10-2	E144	24-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] 23-10-2D	E144	24-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] 23-11-2	E144	25-Jul-2023	----	----	----		29-Jul-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]										
23-12-2	E144	27-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-1	E144	26-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E144	26-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E144	24-Jul-2023	----	----	----		29-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-1	E144	27-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-1D	E144	27-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E144	27-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2D	E144	27-Jul-2023	----	----	----		28-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-6-2	E144	24-Jul-2023	----	----	----		31-Jul-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]										
23-7-1	E144	25-Jul-2023	----	----	----		28-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E144	25-Jul-2023	----	----	----		29-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-1	E144	26-Jul-2023	----	----	----		28-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E144	26-Jul-2023	----	----	----		29-Jul-2023	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E144	26-Jul-2023	----	----	----		31-Jul-2023	----	----	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E108A	27-Jul-2023	31-Jul-2023	30 days	4 days	✓	31-Jul-2023	26 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-2	E108A	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	31-Jul-2023	25 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E108A	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	31-Jul-2023	25 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E108A	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	31-Jul-2023	25 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
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E108A	25-Jul-2023	31-Jul-2023	30 days	6 days	✓	31-Jul-2023	24 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E108A	25-Jul-2023	31-Jul-2023	30 days	6 days	✓	31-Jul-2023	24 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E108A	24-Jul-2023	31-Jul-2023	30 days	7 days	✓	31-Jul-2023	23 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-12-2	E641A	27-Jul-2023	01-Aug-2023	60 days	5 days	✓	02-Aug-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-2-1	E641A	26-Jul-2023	01-Aug-2023	60 days	6 days	✓	02-Aug-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-10-2	E641A	24-Jul-2023	01-Aug-2023	60 days	8 days	✓	02-Aug-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-10-2D	E641A	24-Jul-2023	01-Aug-2023	60 days	8 days	✓	02-Aug-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-6-2	E641A	24-Jul-2023	01-Aug-2023	60 days	8 days	✓	02-Aug-2023	40 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-4-2	E532	27-Jul-2023	31-Jul-2023	30 days	4 days	✓	01-Aug-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]										
23-2-2	E532	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	01-Aug-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2	E532	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	01-Aug-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-8-2D	E532	26-Jul-2023	31-Jul-2023	30 days	5 days	✓	01-Aug-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-11-2	E532	25-Jul-2023	31-Jul-2023	30 days	6 days	✓	01-Aug-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-7-2	E532	25-Jul-2023	31-Jul-2023	30 days	6 days	✓	01-Aug-2023	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP]										
23-3-2	E532	24-Jul-2023	31-Jul-2023	30 days	7 days	✓	01-Aug-2023	7 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
23-4-1	E611D	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	02-Aug-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
23-4-1D	E611D	27-Jul-2023	01-Aug-2023	14 days	5 days	✓	02-Aug-2023	40 days	1 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
23-2-2	E611D	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	02-Aug-2023	40 days	0 days	✓

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] 23-8-2	E611D	26-Jul-2023	01-Aug-2023	14 days	6 days	✓	02-Aug-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] 23-11-2	E611D	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	02-Aug-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] 23-7-2	E611D	25-Jul-2023	01-Aug-2023	14 days	7 days	✓	02-Aug-2023	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] 23-3-2	E611D	24-Jul-2023	01-Aug-2023	14 days	8 days	✓	02-Aug-2023	40 days	0 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1062431	2	26	7.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1065719	2	38	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1064577	1	15	6.6	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1062434	2	26	7.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1063183	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1062427	2	31	6.4	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1062428	2	28	7.1	5.0	✓
Moisture Content by Gravimetry	E144	1061812	4	57	7.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	1061799	2	12	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1064578	1	11	9.0	5.0	✓
Particle Size Analysis - Hydrometer	E183	1067436	1	1	100.0	5.0	✓
Particle Size Analysis - Sieve <2mm	E182	1067435	1	1	100.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1063182	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1062435	2	26	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1065720	2	40	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1063184	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1062431	4	26	15.3	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1065719	2	38	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1064577	1	15	6.6	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1062434	4	26	15.3	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1063183	2	20	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1062427	4	31	12.9	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1062428	4	28	14.2	10.0	✓
Moisture Content by Gravimetry	E144	1061812	4	57	7.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	1061799	2	12	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1064578	1	11	9.0	5.0	✓
Particle Size Analysis - Hydrometer	E183	1067436	1	1	100.0	5.0	✓
Particle Size Analysis - Sieve <2mm	E182	1067435	1	1	100.0	5.0	✓
Particle Size Analysis - Sieve >2mm	E181	1067434	1	1	100.0	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1063182	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1062435	4	26	15.3	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1065720	2	40	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1063184	1	20	5.0	5.0	✓
Method Blanks (MB)							

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							
Boron-Hot Water Extractable by ICPOES	E487	1062431	2	26	7.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1065719	2	38	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1064577	1	15	6.6	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1062434	2	26	7.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1063183	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1062427	2	31	6.4	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1062428	2	28	7.1	5.0	✓
Moisture Content by Gravimetry	E144	1061812	4	57	7.0	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	1061799	2	12	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1064578	1	11	9.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1062435	2	26	7.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1065720	2	40	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1063184	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	1065719	2	38	5.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1064577	1	15	6.6	5.0	✓
OCPs by GC-MS-MS or GC-MS	E660F	1061799	2	12	16.6	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1064578	1	11	9.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1065720	2	40	5.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1063184	1	20	5.0	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L ALS Environmental - Waterloo	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A ALS Environmental - Waterloo	Soil/Solid	MECP E3137A	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode.
Moisture Content by Gravimetry	E144 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Particle Size Analysis - Sieve >2mm	E181 ALS Environmental - Saskatoon	Soil/Solid	ASTM D6913-17 (mod)	Soil samples are disaggregated and sieved through a 2mm sieve. Material retained on the sieve is then further sieved through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Sieve <2mm	E182 ALS Environmental - Saskatoon	Soil/Solid	ASTM D6913-17 (mod)	Soil samples are disaggregated and sieved through a 2mm sieve. Material passed through the sieve is then further disaggregated using calgon solution and passed through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Hydrometer	E183 ALS Environmental - Saskatoon	Soil/Solid	ASTM D7928-21 (mod)	Soil material is separated from coarse material (>2mm). A specimen is then disaggregated through mixing with Calgon solution. The material is then suspended in solution wherein regular hydrometer readings are taken at specific time intervals. The principles of Stokes' Law are applied to determine the amount of material remaining in solution as well as the maximum particle size remaining in solution at the specified time.
Grain Size Report (Attachment) Hydrometer/Sieve Method	E185 ALS Environmental - Saskatoon	Soil/Solid	ASTM D6913/D7928	A grain size curve is a graphical representation of the particle sizing of a sample representing the percent passing against the effective particle size.
WAD Cyanide (0.01M NaOH Extraction)	E336A ALS Environmental - Waterloo	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C ALS Environmental - Waterloo	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 355 µm sieve, and digested with HNO3 and 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.
Boron-Hot Water Extractable by ICPOES	E487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
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.
OCPs by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	OCPs are analyzed by GC-MS-MS or GC-MS
F1-BTEX	EC580 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Waterloo	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A ALS Environmental - Waterloo	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling or decanting and then analyzed using a pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A ALS Environmental - Waterloo	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with weak calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011)
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 ALS Environmental - Waterloo	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
VOCs Methanol Extraction for Headspace Analysis	EP581 ALS Environmental - Waterloo	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.
Pesticides, PCB, PAH, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Soil/Solid	EPA 3570 (mod)	A homogenized subsample is extracted with organic solvents using a mechanical shaker.
Dry and Grind in Soil/Solid <60°C	EPP442 ALS Environmental - Waterloo	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2323388**	Page	: 1 of 32
Client	: Palmer Environmental Consulting Group Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 14:37
PO	: 2200902	Date Analysis Commenced	: 28-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023 15:28
Sampler	: BF ----		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 18		
No. of samples analysed	: 18		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
Xihua Yao	Laboratory Analyst	Saskatoon Sask Soils, Saskatoon, Saskatchewan

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: 1061812)											
WT2322985-021	Anonymous	Moisture	----	E144	0.25	%	5.06	4.85	4.23%	20%	----
Physical Tests (QC Lot: 1062434)											
WT2323328-001	Anonymous	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.330 mS/cm	306	7.55%	20%	----
Physical Tests (QC Lot: 1062436)											
-------		Moisture	----	E144	0.25	%	----	13.8	3.69%	20%	----
Physical Tests (QC Lot: 1063182)											
WT2323328-001	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	7.84	7.80	0.512%	5%	----
Physical Tests (QC Lot: 1063185)											
WT2323375-021	Anonymous	Moisture	----	E144	0.25	%	11.1	11.2	0.958%	20%	----
Physical Tests (QC Lot: 1064584)											
WT2323170-001	Anonymous	Moisture	----	E144	0.25	%	12.7	13.5	5.74%	20%	----
Physical Tests (QC Lot: 1064598)											
WT2323388-010	23-8-2D	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.109 mS/cm	109	0.275%	20%	----
Percent Passing (QC Lot: 1067435)											
WT2323388-018	23-4-4	Passing (0.05mm)	----	E182	1.0	%	21.8	21.8	0.0413%	15%	----
		Passing (0.063mm)	----	E182	1.0	%	24.9	24.9	0.217%	15%	----
		Passing (0.075mm)	----	E182	1.0	%	27.7	27.8	0.345%	15%	----
		Passing (0.125mm)	----	E182	1.0	%	33.5	33.6	0.531%	15%	----
		Passing (0.149mm)	----	E182	1.0	%	36.2	36.5	0.600%	15%	----
		Passing (0.250mm)	----	E182	1.0	%	43.7	44.0	0.749%	15%	----
		Passing (0.420mm)	----	E182	1.0	%	52.5	52.9	0.782%	15%	----
		Passing (0.50mm)	----	E182	1.0	%	54.6	55.1	0.836%	15%	----
		Passing (0.841mm)	----	E182	1.0	%	63.2	63.8	1.04%	15%	----
		Passing (1.0mm)	----	E182	1.0	%	65.2	65.8	0.882%	15%	----
Percent Passing (QC Lot: 1067436)											
WT2323388-018	23-4-4	Passing (0.002mm)	----	E183	1.0	%	5.9	5.4	0.5	Diff <2x LOR	----
		Passing (0.004mm)	----	E183	1.0	%	8.5	8.5	0.002	Diff <2x LOR	----
		Passing (0.005mm)	----	E183	1.0	%	9.5	9.5	0.06	Diff <2x LOR	----
		Passing (0.020mm)	----	E183	1.0	%	15.9	15.9	0.0252%	15%	----
		Passing (0.0312mm)	----	E183	1.0	%	18.4	18.1	1.60%	15%	----

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*
Cyanides (QC Lot: 1063184)											
WT2323328-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 1062427)											
WT2323328-001	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0193	0.0173	0.0020	Diff <2x LOR	----
Metals (QC Lot: 1062428)											
WT2323328-001	Anonymous	Antimony	7440-36-0	E440C	0.10	mg/kg	0.10	0.11	0.004	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	3.24	3.45	6.46%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	74.7	83.6	11.3%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.56	0.58	0.02	Diff <2x LOR	----
		Boron	7440-42-8	E440C	5.0	mg/kg	7.8	8.4	0.6	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.104	0.112	0.008	Diff <2x LOR	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	28.5	29.9	4.69%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	8.10	8.73	7.47%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	19.4	20.9	7.55%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	10.0	12.1	18.6%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.42	0.44	0.02	Diff <2x LOR	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	21.8	23.2	6.37%	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	0.133	0.147	0.014	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.574	0.615	7.03%	30%	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	30.0	32.5	8.07%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	48.4	52.8	8.67%	30%	----
Metals (QC Lot: 1062431)											
WT2323328-001	Anonymous	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.32	0.32	0.006	Diff <2x LOR	----
Metals (QC Lot: 1062435)											
WT2323328-001	Anonymous	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	28.1	24.8	12.5%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	1.51	1.28	0.23	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	23.1	21.7	6.25%	30%	----
Metals (QC Lot: 1064597)											
WT2323388-010	23-8-2D	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	4.78	4.85	1.45%	30%	----
		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	0.88	0.86	0.02	Diff <2x LOR	----
Metals (QC Lot: 1064599)											
WT2323388-012	23-2-2	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	<0.10	<0.10	0.00002	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: 1064600)											
WT2323388-010	23-8-2D	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0056	<0.0050	0.0006	Diff <2x LOR	----
Metals (QC Lot: 1064601)											
WT2323388-010	23-8-2D	Antimony	7440-36-0	E440C	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	1.87	1.78	4.62%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	96.1	105	8.62%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.34	0.30	0.03	Diff <2x LOR	----
		Boron	7440-42-8	E440C	5.0	mg/kg	7.6	6.7	0.9	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.059	0.060	0.0007	Diff <2x LOR	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	19.5	17.8	9.37%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	5.37	4.95	8.27%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	10.2	9.75	4.88%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	4.24	4.21	0.828%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.54	0.52	4.64%	40%	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	10.8	10.1	6.48%	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	0.136	0.130	0.006	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.492	0.469	4.91%	30%	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	26.7	24.7	7.80%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	25.0	23.4	6.80%	30%	----
Speciated Metals (QC Lot: 1063183)											
WT2323328-001	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	0.16	0.20	0.04	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1065720)											
WT2322863-005	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	0.196	0.210	7.18%	40%	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

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: 1065720) - continued											
WT2322863-005	Anonymous	Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	0.230	0.244	6.05%	40%	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	1.98	2.10	6.11%	40%	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	0.526	0.557	5.74%	40%	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	0.138	0.145	0.008	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1065896)											
WT2323375-001	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	----

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: 1065896) - continued											
WT2323375-001	Anonymous	Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		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	----

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: 1065896) - continued											
WT2323375-001	Anonymous	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: 1064577)											
WT2323504-001	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: 1065719)											
WT2322863-005	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1065897)											
WT2323375-001	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1064578)											
WT2323504-001	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	----
Organochlorine Pesticides (QC Lot: 1061799)											
WT2322985-014	Anonymous	Aldrin	309-00-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg	<0.020	<0.020	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: 1061799) - continued											
WT2322985-014	Anonymous	DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Dieldrin	60-57-1	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endrin	72-20-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor	76-44-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachloroethane	67-72-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Methoxychlor	72-43-5	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
Organochlorine Pesticides (QC Lot: 1063255)											
WT2323410-022	Anonymous	Aldrin	309-00-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDD, 2,4'-	53-19-0	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDD, 4,4'-	72-54-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 2,4'-	3424-82-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDE, 4,4'-	72-55-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 2,4'-	789-02-6	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		DDT, 4,4'-	50-29-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Dieldrin	60-57-1	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, alpha-	959-98-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endosulfan, beta-	33213-65-9	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Endrin	72-20-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor	76-44-8	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Heptachlor epoxide	1024-57-3	E660F	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Hexachlorobenzene	118-74-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachlorobutadiene	87-68-3	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Organochlorine Pesticides (QC Lot: 1063255) - continued											
WT2323410-022	Anonymous	Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Hexachloroethane	67-72-1	E660F	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Methoxychlor	72-43-5	E660F	0.020	mg/kg	<0.020	<0.020	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: 1061812)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1062434)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 1062436)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1063185)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1064584)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1064598)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Cyanides (QCLot: 1063184)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 1062427)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1062428)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1062428) - continued						
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----
Metals (QCLot: 1062431)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 1062435)						
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: 1064597)						
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: 1064599)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Metals (QCLot: 1064600)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1064601)						
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: 1063183)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 1065720)						
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: 1065720) - continued						
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Volatile Organic Compounds (QCLot: 1065896)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1065896) - continued						
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 1064577)						
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: 1065719)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 1065897)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1064578)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1064578) - continued						
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	----
Organochlorine Pesticides (QCLot: 1061799)						
Aldrin	309-00-2	E660F	0.02	mg/kg	<0.020	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	<0.020	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	<0.020	----
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	<0.020	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	<0.020	----
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	<0.020	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	<0.020	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	<0.020	----
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	<0.020	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	<0.020	----
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	<0.020	----
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	<0.020	----
Endrin	72-20-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	<0.020	----
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	<0.010	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	<0.010	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	<0.010	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	<0.010	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	<0.020	----
Organochlorine Pesticides (QCLot: 1063255)						
Aldrin	309-00-2	E660F	0.02	mg/kg	<0.020	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	<0.020	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	<0.020	----
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	<0.020	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	<0.020	----
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	<0.020	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	<0.020	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	<0.020	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1063255) - continued						
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	<0.020	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	<0.020	----
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	<0.020	----
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	<0.020	----
Endrin	72-20-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	<0.020	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	<0.020	----
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	<0.010	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	<0.010	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	<0.010	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	<0.010	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	<0.020	----

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: 1061812)									
Moisture	----	E144	0.25	%	50 %	99.2	90.0	110	----
Physical Tests (QCLot: 1062434)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	93.3	90.0	110	----
Physical Tests (QCLot: 1062436)									
Moisture	----	E144	0.25	%	50 %	98.7	90.0	110	----
Physical Tests (QCLot: 1063182)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	99.7	98.0	102	----
Physical Tests (QCLot: 1063185)									
Moisture	----	E144	0.25	%	50 %	99.4	90.0	110	----
Physical Tests (QCLot: 1064584)									
Moisture	----	E144	0.25	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 1064598)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1409 µS/cm	96.9	90.0	110	----
Cyanides (QCLot: 1063184)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	1.25 mg/kg	92.6	80.0	120	----
Metals (QCLot: 1062427)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	111	80.0	120	----
Metals (QCLot: 1062428)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	91.9	80.0	120	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	92.8	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	90.1	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	93.0	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	91.8	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	85.7	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	88.5	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	87.4	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	85.9	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	91.0	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	91.6	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	86.3	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: 1062428) - continued									
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	91.2	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	89.3	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	89.1	80.0	120	----
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	90.0	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	90.6	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	85.0	80.0	120	----
Metals (QCLot: 1062431)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	98.6	70.0	130	----
Metals (QCLot: 1062435)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	102	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	97.4	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	99.8	80.0	120	----
Metals (QCLot: 1064597)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	104	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	100	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	98.0	80.0	120	----
Metals (QCLot: 1064599)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	1.33333 mg/kg	103	70.0	130	----
Metals (QCLot: 1064600)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	100	80.0	120	----
Metals (QCLot: 1064601)									
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	101	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	98.6	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	89.1	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	90.8	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	96.0	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	96.1	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	94.9	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	94.7	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	98.4	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	95.0	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	99.0	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	94.6	80.0	120	----
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	93.1	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: 1064601) - continued									
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	92.6	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	97.3	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	91.9	80.0	120	----
Speciated Metals (QCLot: 1063183)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	96.0	80.0	120	----
Volatile Organic Compounds (QCLot: 1065720)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	133	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	108	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	111	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	111	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	111	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	106	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	110	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	110	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	118	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	99.8	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	99.3	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.475 mg/kg	67.0	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.475 mg/kg	117	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	109	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	102	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	112	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	106	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	118	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	115	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	115	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	110	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	99.1	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	112	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	136	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	139	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	103	70.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1065720) - continued									
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	106	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	118	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	98.0	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	103	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	116	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	105	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	95.2	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	100.0	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	98.8	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	101	70.0	130	----
Volatile Organic Compounds (QCLot: 1065896)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.475 mg/kg	110	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.475 mg/kg	111	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.475 mg/kg	113	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.475 mg/kg	101	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.475 mg/kg	116	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.475 mg/kg	119	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.475 mg/kg	109	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.475 mg/kg	113	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.475 mg/kg	103	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.475 mg/kg	107	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.475 mg/kg	108	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	103	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.475 mg/kg	112	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.475 mg/kg	105	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.475 mg/kg	119	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.475 mg/kg	104	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.475 mg/kg	112	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.475 mg/kg	108	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.475 mg/kg	96.3	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: 1065896) - continued									
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.475 mg/kg	104	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.475 mg/kg	97.0	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.475 mg/kg	115	60.0	140	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.475 mg/kg	103	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.475 mg/kg	104	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.475 mg/kg	107	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.475 mg/kg	109	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.475 mg/kg	111	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.475 mg/kg	108	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.475 mg/kg	112	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.475 mg/kg	108	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.475 mg/kg	117	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.475 mg/kg	108	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.475 mg/kg	101	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	106	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.475 mg/kg	104	70.0	130	----
Hydrocarbons (QCLot: 1064577)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	656.4125 mg/kg	105	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1332.613 mg/kg	106	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	761.4625 mg/kg	106	70.0	130	----
Hydrocarbons (QCLot: 1065719)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	99.4	80.0	120	----
Hydrocarbons (QCLot: 1065897)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	96.4	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1064578)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	85.7	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	85.2	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	85.7	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	87.2	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	88.1	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	81.8	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	85.3	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1064578) - continued									
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	81.5	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	86.6	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	86.9	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	89.3	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	80.3	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	89.0	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	80.9	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	85.1	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	86.0	60.0	130	----
Organochlorine Pesticides (QCLot: 1061799)									
Aldrin	309-00-2	E660F	0.02	mg/kg	0.005 mg/kg	91.7	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	0.005 mg/kg	113	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	0.005 mg/kg	130	50.0	150	----
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	0.005 mg/kg	99.6	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	0.005 mg/kg	105	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	0.005 mg/kg	98.5	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	0.005 mg/kg	92.9	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	0.005 mg/kg	150	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	0.005 mg/kg	145	50.0	150	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	0.005 mg/kg	111	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	0.005 mg/kg	87.2	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	0.005 mg/kg	92.4	50.0	150	----
Endrin	72-20-8	E660F	0.02	mg/kg	0.005 mg/kg	98.7	50.0	150	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	0.005 mg/kg	103	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	0.005 mg/kg	# 156	50.0	150	LCS-H
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	0.005 mg/kg	99.4	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	0.005 mg/kg	71.7	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	0.005 mg/kg	95.9	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	0.005 mg/kg	61.5	50.0	150	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	0.005 mg/kg	# 159	50.0	150	LCS-H
Organochlorine Pesticides (QCLot: 1063255)									
Aldrin	309-00-2	E660F	0.02	mg/kg	0.005 mg/kg	110	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.02	mg/kg	0.005 mg/kg	111	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.02	mg/kg	0.005 mg/kg	145	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: 1063255) - continued									
DDD, 2,4'-	53-19-0	E660F	0.02	mg/kg	0.005 mg/kg	113	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.02	mg/kg	0.005 mg/kg	117	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F	0.02	mg/kg	0.005 mg/kg	106	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.02	mg/kg	0.005 mg/kg	103	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.02	mg/kg	0.005 mg/kg	118	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.02	mg/kg	0.005 mg/kg	103	50.0	150	----
Dieldrin	60-57-1	E660F	0.02	mg/kg	0.005 mg/kg	118	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F	0.02	mg/kg	0.005 mg/kg	110	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.02	mg/kg	0.005 mg/kg	102	50.0	150	----
Endrin	72-20-8	E660F	0.02	mg/kg	0.005 mg/kg	96.2	50.0	150	----
Heptachlor	76-44-8	E660F	0.02	mg/kg	0.005 mg/kg	119	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.02	mg/kg	0.005 mg/kg	128	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.01	mg/kg	0.005 mg/kg	106	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.01	mg/kg	0.005 mg/kg	101	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.01	mg/kg	0.005 mg/kg	100	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.01	mg/kg	0.005 mg/kg	72.3	50.0	150	----
Methoxychlor	72-43-5	E660F	0.02	mg/kg	0.005 mg/kg	130	50.0	150	----

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: 1063184)										
WT2323328-001	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.18 mg/kg	1.25 mg/kg	96.0	70.0	130	----
Volatile Organic Compounds (QCLot: 1065720)										
WT2322863-005	Anonymous	Acetone	67-64-1	E611D	3.28 mg/kg	3.125 mg/kg	154	50.0	140	K
		Benzene	71-43-2	E611D	2.64 mg/kg	3.125 mg/kg	124	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.84 mg/kg	3.125 mg/kg	133	50.0	140	----
		Bromoform	75-25-2	E611D	2.63 mg/kg	3.125 mg/kg	123	50.0	140	----
		Bromomethane	74-83-9	E611D	2.81 mg/kg	3.125 mg/kg	132	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	2.45 mg/kg	3.125 mg/kg	115	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.59 mg/kg	3.125 mg/kg	122	50.0	140	----
		Chloroform	67-66-3	E611D	2.75 mg/kg	3.125 mg/kg	129	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.62 mg/kg	3.125 mg/kg	123	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.88 mg/kg	3.125 mg/kg	135	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.46 mg/kg	3.125 mg/kg	115	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.35 mg/kg	3.125 mg/kg	110	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.36 mg/kg	3.125 mg/kg	111	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.07 mg/kg	3.125 mg/kg	97.0	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	3.03 mg/kg	3.125 mg/kg	142	50.0	140	MES
		Dichloroethane, 1,2-	107-06-2	E611D	2.76 mg/kg	3.125 mg/kg	129	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.50 mg/kg	3.125 mg/kg	117	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.82 mg/kg	3.125 mg/kg	132	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.63 mg/kg	3.125 mg/kg	123	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.85 mg/kg	3.125 mg/kg	134	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.87 mg/kg	3.125 mg/kg	135	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.82 mg/kg	3.125 mg/kg	132	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.66 mg/kg	3.125 mg/kg	125	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.45 mg/kg	3.125 mg/kg	115	50.0	140	----
		Hexane, n-	110-54-3	E611D	2.72 mg/kg	3.125 mg/kg	127	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	3.19 mg/kg	3.125 mg/kg	149	50.0	140	MES
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	3.45 mg/kg	3.125 mg/kg	162	50.0	140	K
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.37 mg/kg	3.125 mg/kg	111	50.0	140	----
		Styrene	100-42-5	E611D	2.50 mg/kg	3.125 mg/kg	117	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: 1065720) - continued										
WT2322863-005	Anonymous	Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.60 mg/kg	3.125 mg/kg	122	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.79 mg/kg	3.125 mg/kg	131	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.30 mg/kg	3.125 mg/kg	108	50.0	140	----
		Toluene	108-88-3	E611D	2.38 mg/kg	3.125 mg/kg	111	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	2.53 mg/kg	3.125 mg/kg	119	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.82 mg/kg	3.125 mg/kg	132	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.62 mg/kg	3.125 mg/kg	123	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	2.31 mg/kg	3.125 mg/kg	108	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.38 mg/kg	3.125 mg/kg	112	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	4.95 mg/kg	6.25 mg/kg	116	50.0	140	----
		Xylene, o-	95-47-6	E611D	2.52 mg/kg	3.125 mg/kg	118	50.0	140	----
Volatile Organic Compounds (QCLot: 1065896)										
WT2323375-001	Anonymous	Acetone	67-64-1	E611D	2.36 mg/kg	3.125 mg/kg	113	50.0	140	----
		Benzene	71-43-2	E611D	1.82 mg/kg	3.125 mg/kg	86.9	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.04 mg/kg	3.125 mg/kg	97.4	50.0	140	----
		Bromoform	75-25-2	E611D	1.99 mg/kg	3.125 mg/kg	95.1	50.0	140	----
		Bromomethane	74-83-9	E611D	2.05 mg/kg	3.125 mg/kg	97.9	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	1.76 mg/kg	3.125 mg/kg	84.2	50.0	140	----
		Chlorobenzene	108-90-7	E611D	1.89 mg/kg	3.125 mg/kg	90.3	50.0	140	----
		Chloroform	67-66-3	E611D	1.93 mg/kg	3.125 mg/kg	92.0	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	1.88 mg/kg	3.125 mg/kg	89.7	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.12 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	1.95 mg/kg	3.125 mg/kg	93.1	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	1.87 mg/kg	3.125 mg/kg	89.2	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	1.88 mg/kg	3.125 mg/kg	89.8	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	1.34 mg/kg	3.125 mg/kg	64.2	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	1.78 mg/kg	3.125 mg/kg	84.7	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	2.12 mg/kg	3.125 mg/kg	101	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	1.70 mg/kg	3.125 mg/kg	80.9	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.06 mg/kg	3.125 mg/kg	98.5	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	1.73 mg/kg	3.125 mg/kg	82.4	50.0	140	----
		Dichloromethane	75-09-2	E611D	1.96 mg/kg	3.125 mg/kg	93.6	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	1.89 mg/kg	3.125 mg/kg	90.1	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	1.90 mg/kg	3.125 mg/kg	90.6	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	1.83 mg/kg	3.125 mg/kg	87.5	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: 1065896) - continued										
WT2323375-001	Anonymous	Ethylbenzene	100-41-4	E611D	1.75 mg/kg	3.125 mg/kg	83.4	50.0	140	----
		Hexane, n-	110-54-3	E611D	1.58 mg/kg	3.125 mg/kg	75.5	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.49 mg/kg	3.125 mg/kg	119	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	2.10 mg/kg	3.125 mg/kg	100	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	1.92 mg/kg	3.125 mg/kg	91.8	50.0	140	----
		Styrene	100-42-5	E611D	1.80 mg/kg	3.125 mg/kg	85.9	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	1.90 mg/kg	3.125 mg/kg	90.7	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.12 mg/kg	3.125 mg/kg	101	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	1.76 mg/kg	3.125 mg/kg	83.8	50.0	140	----
		Toluene	108-88-3	E611D	1.82 mg/kg	3.125 mg/kg	86.9	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	1.82 mg/kg	3.125 mg/kg	86.7	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.07 mg/kg	3.125 mg/kg	98.7	50.0	140	----
		Trichloroethylene	79-01-6	E611D	1.90 mg/kg	3.125 mg/kg	90.5	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	1.76 mg/kg	3.125 mg/kg	84.0	50.0	140	----
		Vinyl chloride	75-01-4	E611D	1.62 mg/kg	3.125 mg/kg	77.2	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	3.59 mg/kg	6.25 mg/kg	85.6	50.0	140	----
		Xylene, o-	95-47-6	E611D	1.80 mg/kg	3.125 mg/kg	85.9	50.0	140	----
Hydrocarbons (QCLot: 1064577)										
WT2323504-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	585 mg/kg	656.4125 mg/kg	107	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1200 mg/kg	1332.613 mg/kg	108	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	686 mg/kg	761.4625 mg/kg	108	60.0	140	----
Hydrocarbons (QCLot: 1065719)										
WT2322863-005	Anonymous	F1 (C6-C10)	----	E581.F1	43.6 mg/kg	62.5 mg/kg	102	60.0	140	----
Hydrocarbons (QCLot: 1065897)										
WT2323375-001	Anonymous	F1 (C6-C10)	----	E581.F1	38.9 mg/kg	62.5 mg/kg	92.8	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1064578)										
WT2323504-001	Anonymous	Acenaphthene	83-32-9	E641A	0.344 mg/kg	0.5 mg/kg	86.7	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.347 mg/kg	0.5 mg/kg	87.5	50.0	140	----
		Anthracene	120-12-7	E641A	0.347 mg/kg	0.5 mg/kg	87.6	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.344 mg/kg	0.5 mg/kg	86.7	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.338 mg/kg	0.5 mg/kg	85.2	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.352 mg/kg	0.5 mg/kg	88.7	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.324 mg/kg	0.5 mg/kg	81.8	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.352 mg/kg	0.5 mg/kg	88.8	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: 1064578) - continued										
WT2323504-001	Anonymous	Chrysene	218-01-9	E641A	0.324 mg/kg	0.5 mg/kg	81.6	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.340 mg/kg	0.5 mg/kg	85.8	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.345 mg/kg	0.5 mg/kg	87.0	50.0	140	----
		Fluorene	86-73-7	E641A	0.352 mg/kg	0.5 mg/kg	88.7	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.351 mg/kg	0.5 mg/kg	88.5	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.322 mg/kg	0.5 mg/kg	81.2	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.357 mg/kg	0.5 mg/kg	90.1	50.0	140	----
		Naphthalene	91-20-3	E641A	0.322 mg/kg	0.5 mg/kg	81.2	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.345 mg/kg	0.5 mg/kg	87.0	50.0	140	----
		Pyrene	129-00-0	E641A	0.349 mg/kg	0.5 mg/kg	87.9	50.0	140	----
Organochlorine Pesticides (QCLot: 1061799)										
WT2322985-014	Anonymous	Aldrin	309-00-2	E660F	0.011 mg/kg	0.005 mg/kg	109	50.0	150	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.008 mg/kg	0.005 mg/kg	79.6	50.0	150	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.010 mg/kg	0.005 mg/kg	106	50.0	150	----
		DDD, 2,4'-	53-19-0	E660F	0.009 mg/kg	0.005 mg/kg	92.1	50.0	150	----
		DDD, 4,4'-	72-54-8	E660F	0.010 mg/kg	0.005 mg/kg	107	50.0	150	----
		DDE, 2,4'-	3424-82-6	E660F	0.007 mg/kg	0.005 mg/kg	74.7	50.0	150	----
		DDE, 4,4'-	72-55-9	E660F	0.007 mg/kg	0.005 mg/kg	67.3	50.0	150	----
		DDT, 2,4'-	789-02-6	E660F	0.008 mg/kg	0.005 mg/kg	76.9	50.0	150	----
		DDT, 4,4'-	50-29-3	E660F	0.006 mg/kg	0.005 mg/kg	61.0	50.0	150	----
		Dieldrin	60-57-1	E660F	0.008 mg/kg	0.005 mg/kg	77.6	50.0	150	----
		Endosulfan, alpha-	959-98-8	E660F	0.007 mg/kg	0.005 mg/kg	70.2	50.0	150	----
		Endosulfan, beta-	33213-65-9	E660F	0.008 mg/kg	0.005 mg/kg	80.2	50.0	150	----
		Endrin	72-20-8	E660F	0.013 mg/kg	0.005 mg/kg	128	50.0	150	----
		Heptachlor	76-44-8	E660F	0.011 mg/kg	0.005 mg/kg	112	50.0	150	----
		Heptachlor epoxide	1024-57-3	E660F	0.010 mg/kg	0.005 mg/kg	96.2	50.0	150	----
		Hexachlorobenzene	118-74-1	E660F	0.010 mg/kg	0.005 mg/kg	98.9	50.0	150	----
		Hexachlorobutadiene	87-68-3	E660F	0.009 mg/kg	0.005 mg/kg	86.9	50.0	150	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010 mg/kg	0.005 mg/kg	102	50.0	150	----
		Hexachloroethane	67-72-1	E660F	0.008 mg/kg	0.005 mg/kg	81.8	50.0	150	----
		Methoxychlor	72-43-5	E660F	0.010 mg/kg	0.005 mg/kg	96.2	50.0	150	----
Organochlorine Pesticides (QCLot: 1063255)										
WT2323410-022	Anonymous	Aldrin	309-00-2	E660F	0.012 mg/kg	0.005 mg/kg	118	50.0	150	----
		Chlordane, cis- (alpha)	5103-71-9	E660F	0.012 mg/kg	0.005 mg/kg	114	50.0	150	----
		Chlordane, trans- (gamma)	5103-74-2	E660F	0.014 mg/kg	0.005 mg/kg	140	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: 1063255) - continued										
WT2323410-022	Anonymous	DDD, 2,4'-	53-19-0	E660F	0.012 mg/kg	0.005 mg/kg	121	50.0	150	----
		DDD, 4,4'-	72-54-8	E660F	0.014 mg/kg	0.005 mg/kg	144	50.0	150	----
		DDE, 2,4'-	3424-82-6	E660F	0.012 mg/kg	0.005 mg/kg	116	50.0	150	----
		DDE, 4,4'-	72-55-9	E660F	0.014 mg/kg	0.005 mg/kg	134	50.0	150	----
		DDT, 2,4'-	789-02-6	E660F	0.011 mg/kg	0.005 mg/kg	109	50.0	150	----
		DDT, 4,4'-	50-29-3	E660F	0.008 mg/kg	0.005 mg/kg	83.1	50.0	150	----
		Dieldrin	60-57-1	E660F	0.011 mg/kg	0.005 mg/kg	112	50.0	150	----
		Endosulfan, alpha-	959-98-8	E660F	0.011 mg/kg	0.005 mg/kg	106	50.0	150	----
		Endosulfan, beta-	33213-65-9	E660F	0.009 mg/kg	0.005 mg/kg	88.8	50.0	150	----
		Endrin	72-20-8	E660F	0.014 mg/kg	0.005 mg/kg	140	50.0	150	----
		Heptachlor	76-44-8	E660F	0.011 mg/kg	0.005 mg/kg	112	50.0	150	----
		Heptachlor epoxide	1024-57-3	E660F	0.012 mg/kg	0.005 mg/kg	114	50.0	150	----
		Hexachlorobenzene	118-74-1	E660F	0.011 mg/kg	0.005 mg/kg	110	50.0	150	----
		Hexachlorobutadiene	87-68-3	E660F	0.010 mg/kg	0.005 mg/kg	104	50.0	150	----
		Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.010 mg/kg	0.005 mg/kg	97.3	50.0	150	----
		Hexachloroethane	67-72-1	E660F	0.007 mg/kg	0.005 mg/kg	73.4	50.0	150	----
		Methoxychlor	72-43-5	E660F	0.009 mg/kg	0.005 mg/kg	91.6	50.0	150	----

Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*
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).*

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: 1062434)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1725.6 µS/cm	100	70.0	130	----
Physical Tests (QCLot: 1064598)									
	RM	Conductivity (1:2 leachate)	----	E100-L	1725.6 µS/cm	102	70.0	130	----
Percent Passing (QCLot: 1067434)									
	RM	Passing (19mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (2.0mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (25.4mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (38.1mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (4.75mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (50.8mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (76.2mm)	----	E181	100 %	100	90.0	110	----
	RM	Passing (9.5mm)	----	E181	100 %	100	90.0	110	----
Percent Passing (QCLot: 1067435)									
	RM	Passing (0.05mm)	----	E182	54.08 %	102	90.0	110	----
	RM	Passing (0.063mm)	----	E182	57.14 %	102	90.8	109	----
	RM	Passing (0.075mm)	----	E182	60.15 %	102	91.4	109	----
	RM	Passing (0.125mm)	----	E182	68.19 %	102	92.7	107	----
	RM	Passing (0.149mm)	----	E182	72.05 %	102	93.1	107	----
	RM	Passing (0.250mm)	----	E182	82.27 %	100	94.1	106	----
	RM	Passing (0.420mm)	----	E182	89.94 %	100	94.6	105	----
	RM	Passing (0.50mm)	----	E182	91.15 %	100	94.7	105	----
	RM	Passing (0.841mm)	----	E182	95.64 %	100	94.9	105	----
	RM	Passing (1.0mm)	----	E182	96.31 %	100	94.9	105	----
Percent Passing (QCLot: 1067436)									
	RM	Passing (0.002mm)	----	E183	24.64 %	87.6	76.0	124	----
	RM	Passing (0.004mm)	----	E183	29.3 %	93.7	80.0	120	----
	RM	Passing (0.005mm)	----	E183	31.16 %	95.4	82.0	118	----
	RM	Passing (0.020mm)	----	E183	43.27 %	99.2	87.0	113	----

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
Percent Passing (QCLot: 1067436) - continued									
	RM	Passing (0.0312mm)	----	E183	48.23 %	103	88.0	112	----
Metals (QCLot: 1062427)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	111	70.0	130	----
Metals (QCLot: 1062428)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	95.9	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	97.4	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	106	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	95.9	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	108	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	92.4	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	92.8	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	97.9	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	99.7	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	99.1	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	100	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	98.2	70.0	130	----
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	117	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	89.2	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	91.2	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	97.0	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	94.6	70.0	130	----
Metals (QCLot: 1062431)									
	RM	Boron, hot water soluble	7440-42-8	E487	1.6542 mg/kg	99.0	60.0	140	----
Metals (QCLot: 1062435)									
	RM	Calcium, soluble ion content	7440-70-2	E484	78.94 mg/L	110	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	24.16 mg/L	107	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	72.46 mg/L	99.0	70.0	130	----
Metals (QCLot: 1064597)									
	RM	Calcium, soluble ion content	7440-70-2	E484	78.94 mg/L	92.3	70.0	130	----
	RM	Magnesium, soluble ion content	7439-95-4	E484	24.16 mg/L	92.3	70.0	130	----
	RM	Sodium, soluble ion content	17341-25-2	E484	72.46 mg/L	89.0	70.0	130	----
Metals (QCLot: 1064599)									

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
Metals (QCLot: 1064599) - continued									
	RM	Boron, hot water soluble	7440-42-8	E487	1.6542 mg/kg	102	60.0	140	----
Metals (QCLot: 1064600)									
	RM	Mercury	7439-97-6	E510C	0.0585 mg/kg	97.4	70.0	130	----
Metals (QCLot: 1064601)									
	RM	Antimony	7440-36-0	E440C	3.99 mg/kg	100	70.0	130	----
	RM	Arsenic	7440-38-2	E440C	3.73 mg/kg	103	70.0	130	----
	RM	Barium	7440-39-3	E440C	105 mg/kg	106	70.0	130	----
	RM	Beryllium	7440-41-7	E440C	0.349 mg/kg	93.6	70.0	130	----
	RM	Boron	7440-42-8	E440C	8.5 mg/kg	101	70.0	130	----
	RM	Cadmium	7440-43-9	E440C	0.91 mg/kg	97.4	70.0	130	----
	RM	Chromium	7440-47-3	E440C	101 mg/kg	94.6	70.0	130	----
	RM	Cobalt	7440-48-4	E440C	6.9 mg/kg	96.1	70.0	130	----
	RM	Copper	7440-50-8	E440C	123 mg/kg	102	70.0	130	----
	RM	Lead	7439-92-1	E440C	267 mg/kg	94.1	70.0	130	----
	RM	Molybdenum	7439-98-7	E440C	1.03 mg/kg	100	70.0	130	----
	RM	Nickel	7440-02-0	E440C	26.7 mg/kg	97.8	70.0	130	----
	RM	Silver	7440-22-4	E440C	4.06 mg/kg	87.2	70.0	130	----
	RM	Thallium	7440-28-0	E440C	0.0786 mg/kg	95.7	70.0	130	----
	RM	Uranium	7440-61-1	E440C	0.52 mg/kg	94.4	70.0	130	----
	RM	Vanadium	7440-62-2	E440C	32.7 mg/kg	95.0	70.0	130	----
	RM	Zinc	7440-66-6	E440C	297 mg/kg	94.8	70.0	130	----
Speciated Metals (QCLot: 1063183)									
	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	172 mg/kg	88.3	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

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Canada Toll Free: 1 800 668 9878

COC Number: 2

Page

Environmental Division Waterloo

Work Order Reference WT2323388

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Bailey Fleet
Phone:	905-708-7299
	Company address below will appear on the final report
Street:	1-871 Equestrian Court
City/Province:	Oakville,
Postal Code:	L6L 6L7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Accounting

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: bailey.fleet@pecg.ca

Email 2: kalina.naydenova@pecg.ca

Email 3: sarah.sipak@pecg.ca

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accounting@pecg.ca

Email 2: sarah.sipak@pecg.ca

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. Add fees may apply to rush requests on weekends, statutory holidays and routine tests

Date and Time Required for all E&P TATs:

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	2200902 - Phase Two ESA	Major/Minor Code:	Routing Code:
PO / AFE:	2200902	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only): | **ALS Contact:** Andrew | **Sampler:** BF

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	OC Pesticides	Metals + Inorganics	PAHs	PHC/VOCs	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	23-3-2	24-07-23	12:00	Soil	5	X	X		X			
	23-6-2	↓	9:30		1			X				
	23-10-2		15:00		1			X				
	23-10-2D		15:00		1			X				
	23-7-1	25-07-23	12:00		1	X						
	23-7-2	↓	12:15		4		X		X			
	23-11-2		9:30		5	X	X		X			
	23-8-1	26-07-23	10:30		1	X						
	23-8-2	↓	10:40		4		X		X			
	23-8-2D		10:40		1		X					
	23-2-1		12:30		2	X		X				
	23-2-2	↓	13:00	↓	4		X		X			

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

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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

Compare to O. Reg. 153/04 Table 1 SCS

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			
6.8				4.9			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Bailey Fleet	Date: July 28/2023	Time: 14:37	Received by:	Date: 28-JUL-23	Time: 14:37	Received by: EC	Date: July 28/23	Time: 18:20

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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

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

VS-274 EC SOIL 730

SOIL 730 SS

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page 2 of 2

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Bailey Fleet
Phone:	905-708-7299
	Company address below will appear on the final report
Street:	1-871 Equestrian Court
City/Province:	Oakville, ON
Postal Code:	L6L 6L7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Accounting

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: bailey.fleet@pecg.ca
Email 2: kalina.naydenova@pecg.ca
Email 3: sarah.sipak@pecg.ca

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: accounting@pecg.ca
Email 2: sarah.sipak@pecg.ca

Turnaround Time (TAT) Requested

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

Date and Time Required for all E&P TATs:

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

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:
Job #: 2200902 - Phase Two ESA
PO / AFE: 2200902
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):

ALS Contact: Andrew Sampler: BF

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	PAHs	PHC/VOCs	Metals + Inorganics	OC Pesticides	Grain Size (Hydrometer Std)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	23-12-2	27-07-23	9:30	Soil	1	X							
	23-4-1		12:30		3		X						
	23-4-1D		12:30		3		X						
	23-4-2		12:40		2			X	X				
	23-4-2D		12:40		1				X				
	23-4-4		13:00		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)

Compare to O. Reg. 153/04 Table 1 SCS

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			
6-8				4.9			

SHIPMENT RELEASE (client use)

Released by: Bailey Fleet Date: July 28 2023 Time: 14:39

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: [signature] Date: 28-JUL-23 Time: 14:37

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: EC Date: July 28/23 Time: 18:20

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**.

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2328116**	Page	: 1 of 6
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 05-Sep-2023 10:10
PO	: 2200902	Date Analysis Commenced	: 07-Sep-2023
C-O-C number	: 20-950921	Issue Date	: 12-Sep-2023 10:04
Sampler	: SB		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario

No Breaches Found

General Comments

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

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

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

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

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

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

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

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

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-1-1	23-1-2	23-5-1	23-5-2	23-9-1	----	----
				Sampling date/time	01-Sep-2023 14:50	01-Sep-2023 14:50	01-Sep-2023 15:00	01-Sep-2023 15:00	01-Sep-2023 17:00	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	----	----
					WT2328116-001	WT2328116-002	WT2328116-003	WT2328116-004	WT2328116-005	--------	--------
Physical Tests											
Moisture	----	E144/WT			8.06	27.2	21.0	26.4	11.7	----	----
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Acenaphthylene	208-96-8	E641A/WT			----	<0.050	----	<0.050	----	----	----
Anthracene	120-12-7	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT			----	<0.050	----	<0.050	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT			----	<0.050	----	<0.050	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT			----	<0.050	----	<0.050	----	----	----
Chrysene	218-01-9	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT			----	<0.050	----	<0.050	----	----	----
Fluoranthene	206-44-0	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Fluorene	86-73-7	E641A/WT			----	<0.050	----	<0.050	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT			----	<0.030	----	<0.030	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT			----	<0.030	----	<0.030	----	----	----
Naphthalene	91-20-3	E641A/WT	mg/kg		----	<0.010	----	<0.010	----	----	----
Phenanthrene	85-01-8	E641A/WT			----	<0.050	----	<0.050	----	----	----
Pyrene	129-00-0	E641A/WT	mg/kg		----	<0.050	----	<0.050	----	----	----
Organochlorine Pesticides											
Aldrin	309-00-2	E660F-L/WT			<0.00021 DLM	----	<0.00025 DLM	----	<0.00022 DLM	----	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
Chlordane, total	57-74-9	E660F-L/WT			<0.00042	----	<0.00042	----	<0.00042	----	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
DDD, 2,4'-	53-19-0	E660F-L/WT			<0.00030	----	<0.00030	----	<0.00030	----	----

Analytical Results Evaluation

Matrix: **Soil**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-1-1	23-1-2	23-5-1	23-5-2	23-9-1	----	----
				Sampling date/time	01-Sep-2023 14:50	01-Sep-2023 14:50	01-Sep-2023 15:00	01-Sep-2023 15:00	01-Sep-2023 17:00	----	----
				Sub-Matrix	Soil	Soil	Soil	Soil	Soil	----	----
					WT2328116-001	WT2328116-002	WT2328116-003	WT2328116-004	WT2328116-005	--------	--------
Organochlorine Pesticides											
DDD, 4,4'-	72-54-8	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
DDD, total	----	E660F-L/WT			<0.00042	----	<0.00042	----	<0.00042	----	----
DDE, 2,4'-	3424-82-6	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
DDE, 4,4'-	72-55-9	E660F-L/WT			<0.00030	----	<0.00030	----	<0.00030	----	----
DDE, total	----	E660F-L/WT	mg/kg		<0.00042	----	<0.00042	----	<0.00042	----	----
DDT, 2,4'-	789-02-6	E660F-L/WT			<0.00030	----	<0.00030	----	<0.00030	----	----
DDT, 4,4'-	50-29-3	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
DDT, total	----	E660F-L/WT			<0.00042	----	<0.00042	----	<0.00042	----	----
Dieldrin	60-57-1	E660F-L/WT	mg/kg		<0.00021 DLM	----	<0.00025 DLM	----	<0.00022 DLM	----	----
Endosulfan, alpha-	959-98-8	E660F-L/WT			<0.00030	----	<0.00030	----	<0.00030	----	----
Endosulfan, beta-	33213-65-9	E660F-L/WT	mg/kg		<0.00030	----	<0.00030	----	<0.00030	----	----
Endosulfan, total	----	E660F-L/WT			<0.00042	----	<0.00042	----	<0.00042	----	----
Endrin	72-20-8	E660F-L/WT	mg/kg		<0.00050	----	<0.00050	----	<0.00050	----	----
Heptachlor	76-44-8	E660F-L/WT			<0.00021 DLM	----	<0.00025 DLM	----	<0.00022 DLM	----	----
Heptachlor epoxide	1024-57-3	E660F-L/WT	mg/kg		<0.00021 DLM	----	<0.00025 DLM	----	<0.00022 DLM	----	----
Hexachlorobenzene	118-74-1	E660F-L/WT			<0.00050	----	<0.00050	----	<0.00050	----	----
Hexachlorobutadiene	87-68-3	E660F-L/WT	mg/kg		<0.00050	----	<0.00050	----	<0.00050	----	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L/WT			<0.00021 DLM	----	<0.00025 DLM	----	<0.00022 DLM	----	----
Hexachloroethane	67-72-1	E660F-L/WT	mg/kg		<0.00050	----	<0.00050	----	<0.00050	----	----
Methoxychlor	72-43-5	E660F-L/WT			<0.00050	----	<0.00050	----	<0.00050	----	----
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F-L/WT	%		107	----	119	----	89.6	----	----
Tetrachloro-m-xylene	877-09-8	E660F-L/WT			98.8	----	92.9	----	87.6	----	----

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

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

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T1-All	ON153/04 T1-A	ON153/04 T1-RPIICC				
Physical Tests									
Moisture	----	%	--	--	<a--				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	83-32-9	mg/kg	--	0.05 mg/kg	0.072 mg/kg				
Acenaphthylene	208-96-8	mg/kg	--	0.093 mg/kg	0.093 mg/kg				
Anthracene	120-12-7	mg/kg	0.22 mg/kg	0.05 mg/kg	0.16 mg/kg				
Benz(a)anthracene	56-55-3	mg/kg	0.32 mg/kg	0.095 mg/kg	0.36 mg/kg				
Benzo(a)pyrene	50-32-8	mg/kg	0.37 mg/kg	0.05 mg/kg	0.3 mg/kg				
Benzo(b+j)fluoranthene	n/a	mg/kg	--	0.3 mg/kg	0.47 mg/kg				
Benzo(g,h,i)perylene	191-24-2	mg/kg	0.17 mg/kg	0.2 mg/kg	0.68 mg/kg				
Benzo(k)fluoranthene	207-08-9	mg/kg	0.24 mg/kg	0.05 mg/kg	0.48 mg/kg				
Chrysene	218-01-9	mg/kg	0.34 mg/kg	0.18 mg/kg	2.8 mg/kg				
Dibenz(a,h)anthracene	53-70-3	mg/kg	0.06 mg/kg	0.1 mg/kg	0.1 mg/kg				
Fluoranthene	206-44-0	mg/kg	0.75 mg/kg	0.24 mg/kg	0.56 mg/kg				
Fluorene	86-73-7	mg/kg	0.19 mg/kg	0.05 mg/kg	0.12 mg/kg				
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	0.2 mg/kg	0.11 mg/kg	0.23 mg/kg				
Methylnaphthalene, 1+2-	----	mg/kg	--	0.05 mg/kg	0.59 mg/kg				
Methylnaphthalene, 1-	90-12-0	mg/kg	--	0.05 mg/kg	0.59 mg/kg				
Methylnaphthalene, 2-	91-57-6	mg/kg	--	0.05 mg/kg	0.59 mg/kg				
Naphthalene	91-20-3	mg/kg	--	0.05 mg/kg	0.09 mg/kg				
Phenanthrene	85-01-8	mg/kg	0.56 mg/kg	0.19 mg/kg	0.69 mg/kg				
Pyrene	129-00-0	mg/kg	0.49 mg/kg	0.19 mg/kg	1 mg/kg				
Organochlorine Pesticides									
Aldrin	309-00-2	mg/kg	0.002 mg/kg	0.05 mg/kg	0.05 mg/kg				
Chlordane, cis- (alpha)	5103-71-9	mg/kg	--	--	<a--				
Chlordane, total	57-74-9	mg/kg	0.007 mg/kg	0.05 mg/kg	0.05 mg/kg				
Chlordane, trans- (gamma)	5103-74-2	mg/kg	--	--	<a--				
DDD, 2,4'-	53-19-0	mg/kg	0.008 mg/kg	--	<a--				
DDD, 4,4'-	72-54-8	mg/kg	0.008 mg/kg	--	<a--				
DDD, total	----	mg/kg	0.008 mg/kg	0.05 mg/kg	0.05 mg/kg				
DDE, 2,4'-	3424-82-6	mg/kg	0.005 mg/kg	--	<a--				
DDE, 4,4'-	72-55-9	mg/kg	0.005 mg/kg	--	<a--				
DDE, total	----	mg/kg	0.005 mg/kg	0.05 mg/kg	0.05 mg/kg				
DDT, 2,4'-	789-02-6	mg/kg	0.007 mg/kg	--	<a--				
DDT, 4,4'-	50-29-3	mg/kg	0.007 mg/kg	--	<a--				
DDT, total	----	mg/kg	0.007 mg/kg	0.078 mg/kg	1.4 mg/kg				
Dieldrin	60-57-1	mg/kg	0.002 mg/kg	0.05 mg/kg	0.05 mg/kg				
Endosulfan, alpha-	959-98-8	mg/kg	--	--	<a--				

Analyte	CAS Number	Unit	ON153/04 T1-All	ON153/04 T1-A	ON153/04 T1-RPIICC				
Organochlorine Pesticides - Continued									
Endosulfan, beta-	33213-65-9	mg/kg	--	--	<a--				
Endosulfan, total	----	mg/kg	--	0.04 mg/kg	0.04 mg/kg				
Endrin	72-20-8	mg/kg	0.003 mg/kg	0.04 mg/kg	0.04 mg/kg				
Heptachlor epoxide	1024-57-3	mg/kg	0.005 mg/kg	0.05 mg/kg	0.05 mg/kg				
Heptachlor	76-44-8	mg/kg	--	0.05 mg/kg	0.05 mg/kg				
Hexachlorobenzene	118-74-1	mg/kg	0.02 mg/kg	0.01 mg/kg	0.01 mg/kg				
Hexachlorobutadiene	87-68-3	mg/kg	--	0.01 mg/kg	0.01 mg/kg				
Hexachlorocyclohexane, gamma-	58-89-9	mg/kg	--	0.01 mg/kg	0.01 mg/kg				
Hexachloroethane	67-72-1	mg/kg	--	0.01 mg/kg	0.01 mg/kg				
Methoxychlor	72-43-5	mg/kg	--	0.05 mg/kg	0.05 mg/kg				
Decachlorobiphenyl	2051-24-3	%							
Tetrachloro-m-xylene	877-09-8	%							

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

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2328116**	Page	: 1 of 10
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 05-Sep-2023 10:10
PO	: 2200902	Date Analysis Commenced	: 07-Sep-2023
C-O-C number	: 20-950921	Issue Date	: 12-Sep-2023 10:04
Sampler	: SB		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, 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.

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

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

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

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

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

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

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

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

	Client sample ID	23-1-1							
	Sampling date/time	01-Sep-2023 14:50							
Analyte	*Method/Lab*	*LOR*	*Unit*	WT2328116-001	**ON153/04 T1-AII**	**ON153/04 T1-A**	**ON153/04 T1-RPIICC**	**--**	**--**	**--**
Physical Tests										
Moisture	E144/WT	0.25	%	8.06	--	--	--	--	--	--
Organochlorine Pesticides										
Aldrin	E660F-L/WT	0.00020	mg/kg	<0.00021 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, cis- (alpha)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Chlordane, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, trans- (gamma)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
DDD, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.008 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDE, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDT, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.078 mg/kg**	**1.4 mg/kg**	--	--	--
Dieldrin	E660F-L/WT	0.00020	mg/kg	<0.00021 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Endosulfan, alpha-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, beta-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, total	E660F-L/WT	0.00040	mg/kg	<0.00042	--	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Endrin	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.003 mg/kg**	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Heptachlor epoxide	E660F-L/WT	0.00020	mg/kg	<0.00021 DLM	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Heptachlor	E660F-L/WT	0.00020	mg/kg	<0.00021 DLM	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Hexachlorobenzene	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.02 mg/kg**	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorobutadiene	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorocyclohexane, gamma-	E660F-L/WT	0.00020	mg/kg	<0.00021 DLM	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachloroethane	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Methoxychlor	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Decachlorobiphenyl	E660F-L/WT	0.1	%	107	--	--	--	--	--	--
Tetrachloro-m-xylene	E660F-L/WT	0.1	%	98.8	--	--	--	--	--	--

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

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

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Analytical Results

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

Analyte	Method/Lab	LOR	Unit	Client sample ID: 23-1-2 Sampling date/time: 01-Sep-2023 14:50 WT2328116-002	ON153/04 T1-All	ON153/04 T1-A	ON153/04 T1-RPIICC	--	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	27.2	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	--	0.05 mg/kg	0.072 mg/kg	--	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	--	0.093 mg/kg	0.093 mg/kg	--	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	0.22 mg/kg	0.05 mg/kg	0.16 mg/kg	--	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	<0.050	0.32 mg/kg	0.095 mg/kg	0.36 mg/kg	--	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	<0.050	0.37 mg/kg	0.05 mg/kg	0.3 mg/kg	--	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	--	0.3 mg/kg	0.47 mg/kg	--	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	<0.050	0.17 mg/kg	0.2 mg/kg	0.68 mg/kg	--	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	0.24 mg/kg	0.05 mg/kg	0.48 mg/kg	--	--	--
Chrysene	E641A/WT	0.050	mg/kg	<0.050	0.34 mg/kg	0.18 mg/kg	2.8 mg/kg	--	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	0.06 mg/kg	0.1 mg/kg	0.1 mg/kg	--	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	<0.050	0.75 mg/kg	0.24 mg/kg	0.56 mg/kg	--	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	0.19 mg/kg	0.05 mg/kg	0.12 mg/kg	--	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	<0.050	0.2 mg/kg	0.11 mg/kg	0.23 mg/kg	--	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	--	0.05 mg/kg	0.09 mg/kg	--	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	<0.050	0.56 mg/kg	0.19 mg/kg	0.69 mg/kg	--	--	--
Pyrene	E641A/WT	0.050	mg/kg	<0.050	0.49 mg/kg	0.19 mg/kg	1 mg/kg	--	--	--

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

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

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Analytical Results

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

	Client sample ID	23-5-1								
	Sampling date/time	01-Sep-2023 15:00								
Analyte	*Method/Lab*	*LOR*	*Unit*	WT2328116-003	**ON153/04 T1-All**	**ON153/04 T1-A**	**ON153/04 T1-RPIICC**	**--**	**--**	**--**
Physical Tests										
Moisture	E144/WT	0.25	%	21.0	--	--	--	--	--	--
Organochlorine Pesticides										
Aldrin	E660F-L/WT	0.00020	mg/kg	<0.00025 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, cis- (alpha)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Chlordane, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, trans- (gamma)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
DDD, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.008 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDE, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDT, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.078 mg/kg**	**1.4 mg/kg**	--	--	--
Dieldrin	E660F-L/WT	0.00020	mg/kg	<0.00025 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Endosulfan, alpha-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, beta-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, total	E660F-L/WT	0.00040	mg/kg	<0.00042	--	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Endrin	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.003 mg/kg**	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Heptachlor epoxide	E660F-L/WT	0.00020	mg/kg	<0.00025 DLM	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Heptachlor	E660F-L/WT	0.00020	mg/kg	<0.00025 DLM	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Hexachlorobenzene	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.02 mg/kg**	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorobutadiene	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorocyclohexane, gamma-	E660F-L/WT	0.00020	mg/kg	<0.00025 DLM	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachloroethane	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Methoxychlor	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Decachlorobiphenyl	E660F-L/WT	0.1	%	119	--	--	--	--	--	--
Tetrachloro-m-xylene	E660F-L/WT	0.1	%	92.9	--	--	--	--	--	--

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

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

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Analytical Results

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

Analyte	Method/Lab	LOR	Unit	Client sample ID: 23-5-2 Sampling date/time: 01-Sep-2023 15:00 WT2328116-004	ON153/04 T1-All	ON153/04 T1-A	ON153/04 T1-RPIICC	--	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	26.4	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	--	0.05 mg/kg	0.072 mg/kg	--	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	--	0.093 mg/kg	0.093 mg/kg	--	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	0.22 mg/kg	0.05 mg/kg	0.16 mg/kg	--	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	<0.050	0.32 mg/kg	0.095 mg/kg	0.36 mg/kg	--	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	<0.050	0.37 mg/kg	0.05 mg/kg	0.3 mg/kg	--	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	--	0.3 mg/kg	0.47 mg/kg	--	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	<0.050	0.17 mg/kg	0.2 mg/kg	0.68 mg/kg	--	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	0.24 mg/kg	0.05 mg/kg	0.48 mg/kg	--	--	--
Chrysene	E641A/WT	0.050	mg/kg	<0.050	0.34 mg/kg	0.18 mg/kg	2.8 mg/kg	--	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	0.06 mg/kg	0.1 mg/kg	0.1 mg/kg	--	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	<0.050	0.75 mg/kg	0.24 mg/kg	0.56 mg/kg	--	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	0.19 mg/kg	0.05 mg/kg	0.12 mg/kg	--	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	<0.050	0.2 mg/kg	0.11 mg/kg	0.23 mg/kg	--	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	--	0.05 mg/kg	0.59 mg/kg	--	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	--	0.05 mg/kg	0.09 mg/kg	--	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	<0.050	0.56 mg/kg	0.19 mg/kg	0.69 mg/kg	--	--	--
Pyrene	E641A/WT	0.050	mg/kg	<0.050	0.49 mg/kg	0.19 mg/kg	1 mg/kg	--	--	--

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

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

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Analytical Results

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

Analyte	Method/Lab	LOR	Unit	Client sample ID: 23-9-1 Sampling date/time: 01-Sep-2023 17:00 WT2328116-005	ON153/04 T1-All	ON153/04 T1-A	ON153/04 T1-RPIICC	--	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	11.7	--	--	--	--	--	--
Organochlorine Pesticides										
Aldrin	E660F-L/WT	0.00020	mg/kg	<0.00022 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, cis- (alpha)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Chlordane, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Chlordane, trans- (gamma)	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
DDD, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.008 mg/kg**	--	--	--	--	--
DDD, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.008 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDE, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.005 mg/kg**	--	--	--	--	--
DDE, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
DDT, 2,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, 4,4'-	E660F-L/WT	0.00030	mg/kg	<0.00030	**0.007 mg/kg**	--	--	--	--	--
DDT, total	E660F-L/WT	0.00040	mg/kg	<0.00042	**0.007 mg/kg**	**0.078 mg/kg**	**1.4 mg/kg**	--	--	--
Dieldrin	E660F-L/WT	0.00020	mg/kg	<0.00022 DLM	**0.002 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Endosulfan, alpha-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, beta-	E660F-L/WT	0.00030	mg/kg	<0.00030	--	--	--	--	--	--
Endosulfan, total	E660F-L/WT	0.00040	mg/kg	<0.00042	--	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Endrin	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.003 mg/kg**	**0.04 mg/kg**	**0.04 mg/kg**	--	--	--
Heptachlor epoxide	E660F-L/WT	0.00020	mg/kg	<0.00022 DLM	**0.005 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Heptachlor	E660F-L/WT	0.00020	mg/kg	<0.00022 DLM	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Hexachlorobenzene	E660F-L/WT	0.00050	mg/kg	<0.00050	**0.02 mg/kg**	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorobutadiene	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachlorocyclohexane, gamma-	E660F-L/WT	0.00020	mg/kg	<0.00022 DLM	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Hexachloroethane	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.01 mg/kg**	**0.01 mg/kg**	--	--	--
Methoxychlor	E660F-L/WT	0.00050	mg/kg	<0.00050	--	**0.05 mg/kg**	**0.05 mg/kg**	--	--	--
Decachlorobiphenyl	E660F-L/WT	0.1	%	89.6	--	--	--	--	--	--
Tetrachloro-m-xylene	E660F-L/WT	0.1	%	87.6	--	--	--	--	--	--

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

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

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-A	153 T1-Soil-Agricultural or Other Property Use
T1-All	153 T1-Sediment-All Types of Property Uses
T1-RPIICC	153 T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2328116**	Page	: 1 of 6
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 05-Sep-2023 10:10
PO	: 2200902	Issue Date	: 12-Sep-2023 10:04
C-O-C number	: 20-950921		
Sampler	: SB		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
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

- 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
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-1-1	E660F-L	01-Sep-2023	11-Sep-2023	60 days	10 days	✓	11-Sep-2023	40 days	0 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-5-1	E660F-L	01-Sep-2023	11-Sep-2023	60 days	10 days	✓	11-Sep-2023	40 days	0 days	✓
Organochlorine Pesticides : OCPs by GC-MS-MS (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
23-9-1	E660F-L	01-Sep-2023	11-Sep-2023	60 days	10 days	✓	11-Sep-2023	40 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-1-1	E144	01-Sep-2023	----	----	----		07-Sep-2023	----	6 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-1-2	E144	01-Sep-2023	----	----	----		07-Sep-2023	----	6 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-5-1	E144	01-Sep-2023	----	----	----		07-Sep-2023	----	6 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-5-2	E144	01-Sep-2023	----	----	----		07-Sep-2023	----	6 days	

Matrix: **Soil/Solid**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
23-9-1	E144	01-Sep-2023	----	----	----		07-Sep-2023	----	6 days	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-1-2	E641A	01-Sep-2023	10-Sep-2023	60 days	9 days	✓	11-Sep-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
23-5-2	E641A	01-Sep-2023	10-Sep-2023	60 days	9 days	✓	11-Sep-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Soil/Solid**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Moisture Content by Gravimetry	E144	1123130	1	28	3.5	5.0	✗
OCPs by GC-MS-MS (Low Level)	E660F-L	1128361	0	7	0.0	5.0	✗
PAHs by Hex:Ace GC-MS	E641A	1124017	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Moisture Content by Gravimetry	E144	1123130	1	28	3.5	5.0	✗
OCPs by GC-MS-MS (Low Level)	E660F-L	1128361	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1124017	1	7	14.2	5.0	✓
Method Blanks (MB)							
Moisture Content by Gravimetry	E144	1123130	1	28	3.5	5.0	✗
OCPs by GC-MS-MS (Low Level)	E660F-L	1128361	1	7	14.2	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1124017	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
OCPs by GC-MS-MS (Low Level)	E660F-L	1128361	0	7	0.0	5.0	✗
PAHs by Hex:Ace GC-MS	E641A	1124017	1	7	14.2	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
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.
OCPs by GC-MS-MS (Low Level)	E660F-L ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	OCPs are analyzed by GC-MS-MS.

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.
Pesticides, PCB, PAH, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Soil/Solid	EPA 3570 (mod)	A homogenized subsample is extracted with organic solvents using a mechanical shaker.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2328116**	Page	: 1 of 8
Client	: Palmer Environmental Consulting Group Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 05-Sep-2023 10:10
PO	: 2200902	Date Analysis Commenced	: 07-Sep-2023
C-O-C number	: 20-950921	Issue Date	: 12-Sep-2023 10:04
Sampler	: SB ----		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
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*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Waterloo Organics, 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: 1123130)											
WT2328030-002	Anonymous	Moisture	----	E144	0.25	%	11.0	11.3	2.98%	20%	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1124017)											
WT2328176-001	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	0.291	0.288	1.04%	50%	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	0.276	0.272	1.16%	50%	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	0.418	0.422	0.968%	50%	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	0.706	0.681	3.53%	50%	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	1.15	1.14	1.26%	50%	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	0.593	0.577	2.66%	50%	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	0.417	0.406	2.52%	50%	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	0.593	0.593	0.00781%	50%	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	0.139	0.138	0.0009	Diff <2x LOR	J
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	0.603	0.587	2.64%	50%	----
		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	0.630	0.571	9.89%	50%	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	0.130	0.096	0.034	Diff <2x LOR	J
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	0.147	0.103	35.2%	50%	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	0.097	0.072	29.0%	50%	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	0.219	0.203	7.76%	50%	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	0.645	0.618	4.23%	50%	----

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: 1123130)						
Moisture	----	E144	0.25	%	<0.25	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1124017)						
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	----
Organochlorine Pesticides (QCLot: 1128361)						
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	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1128361) - continued						
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: 1123130)									
Moisture	----	E144	0.25	%	50 %	100.0	90.0	110	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1124017)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	89.5	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	89.2	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	90.7	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	93.4	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	89.1	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	93.2	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	97.6	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	92.3	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	97.2	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	92.0	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	91.5	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	91.2	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	92.7	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	83.4	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	93.2	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	86.3	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	91.0	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	90.5	60.0	130	----
Organochlorine Pesticides (QCLot: 1128361)									
Aldrin	309-00-2	E660F-L	0.0002	mg/kg	0.005 mg/kg	71.9	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	63.5	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F-L	0.0003	mg/kg	0.005 mg/kg	95.4	50.0	150	----
DDD, 2,4'-	53-19-0	E660F-L	0.0003	mg/kg	0.005 mg/kg	78.4	50.0	150	----
DDD, 4,4'-	72-54-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	83.0	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	85.4	50.0	150	----
DDE, 4,4'-	72-55-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	74.4	50.0	150	----
DDT, 2,4'-	789-02-6	E660F-L	0.0003	mg/kg	0.005 mg/kg	85.0	50.0	150	----
DDT, 4,4'-	50-29-3	E660F-L	0.0003	mg/kg	0.005 mg/kg	78.4	50.0	150	----
Dieldrin	60-57-1	E660F-L	0.0002	mg/kg	0.005 mg/kg	80.1	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: 1128361) - continued									
Endosulfan, alpha-	959-98-8	E660F-L	0.0003	mg/kg	0.005 mg/kg	66.5	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F-L	0.0003	mg/kg	0.005 mg/kg	77.6	50.0	150	----
Endrin	72-20-8	E660F-L	0.0005	mg/kg	0.005 mg/kg	85.9	50.0	150	----
Heptachlor	76-44-8	E660F-L	0.0002	mg/kg	0.005 mg/kg	81.8	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F-L	0.0002	mg/kg	0.005 mg/kg	82.3	50.0	150	----
Hexachlorobenzene	118-74-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	71.8	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F-L	0.0005	mg/kg	0.005 mg/kg	85.5	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F-L	0.0002	mg/kg	0.005 mg/kg	66.3	50.0	150	----
Hexachloroethane	67-72-1	E660F-L	0.0005	mg/kg	0.005 mg/kg	86.6	50.0	150	----
Methoxychlor	72-43-5	E660F-L	0.0005	mg/kg	0.005 mg/kg	108	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
Polycyclic Aromatic Hydrocarbons (QCLot: 1124017)										
WT2328176-001	Anonymous	Acenaphthene	83-32-9	E641A	0.400 mg/kg	0.5 mg/kg	96.9	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.453 mg/kg	0.5 mg/kg	110	50.0	140	----
		Anthracene	120-12-7	E641A	0.448 mg/kg	0.5 mg/kg	108	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.495 mg/kg	0.5 mg/kg	120	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Benzo(b+j)fluoranthene	n/a	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Benzo(g,h,i)perylene	191-24-2	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Benzo(k)fluoranthene	207-08-9	E641A	0.500 mg/kg	0.5 mg/kg	121	50.0	140	----
		Chrysene	218-01-9	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Dibenz(a,h)anthracene	53-70-3	E641A	0.388 mg/kg	0.5 mg/kg	93.8	50.0	140	----
		Fluoranthene	206-44-0	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Fluorene	86-73-7	E641A	0.407 mg/kg	0.5 mg/kg	98.5	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B
		Methylnaphthalene, 1-	90-12-0	E641A	0.393 mg/kg	0.5 mg/kg	95.1	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.443 mg/kg	0.5 mg/kg	107	50.0	140	----
		Naphthalene	91-20-3	E641A	0.432 mg/kg	0.5 mg/kg	104	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.502 mg/kg	0.5 mg/kg	122	50.0	140	----
		Pyrene	129-00-0	E641A	ND mg/kg	0.5 mg/kg	ND	50.0	140	MS-B

Qualifiers

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 950921

Canada Toll Free: 1 800 668 9878

Page 1 of 1

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Environmental Division Waterloo
Work Order Reference
WT2328116

Telephone : +1 519 886 6910

Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
mer Babiarz 647 882 7310	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: sylva.babiarz@pecg.ca Email 2: halina.naydenova@pecg.ca Email 3: sarah.vlantis@pecg.ca	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests. Date and Time Required for all E&P TATs: For all tests with rush TATs requested, please contact your AM to confirm availability.
y address below will appear on the final report 71 Equestrian Court Unit 1 Oakville ON		
Report To ☐ YES ☑ NO nvoice with Report ☑ YES ☐ NO Palmer accounting	Invoice Recipients Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: sarah.vlantis@pecg.ca Email 2: accounting@pecg.ca	
Project Information 02 902	Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:	
(ALS use only): WT2328116 cm	ALS Contact: Andrew Sampler: SB	

Analysis Requ

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

Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	OC Pesticides PAHs	SAMPLES ON HOLD	EXTENDED STORAGE RI	SUSPECTED HAZARD (SI
23-1-1	Sept 1	2:00 pm	Soil	1	✓			
23-1-2	↓	↓	↓	↓	✓			
23-5-1		3:00 pm			✓			
23-5-2		↓			✓			
23-9-1		5:00 pm			✓			

DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)	SAMPLE RECEIPT DETAILS (ALS use only)
Regulated DW System? NO sumption/ use? NO	Compare to O.Reg 153/04 Table 1 please also include bailey.fleet@pecg.ca	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: 6-1

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Date: Sept 1/23	Time:	Received by:	Date:	Time:	Received by:	Date: 09/05/23	Time: 10:10

R ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

f 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.

from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Palmer™

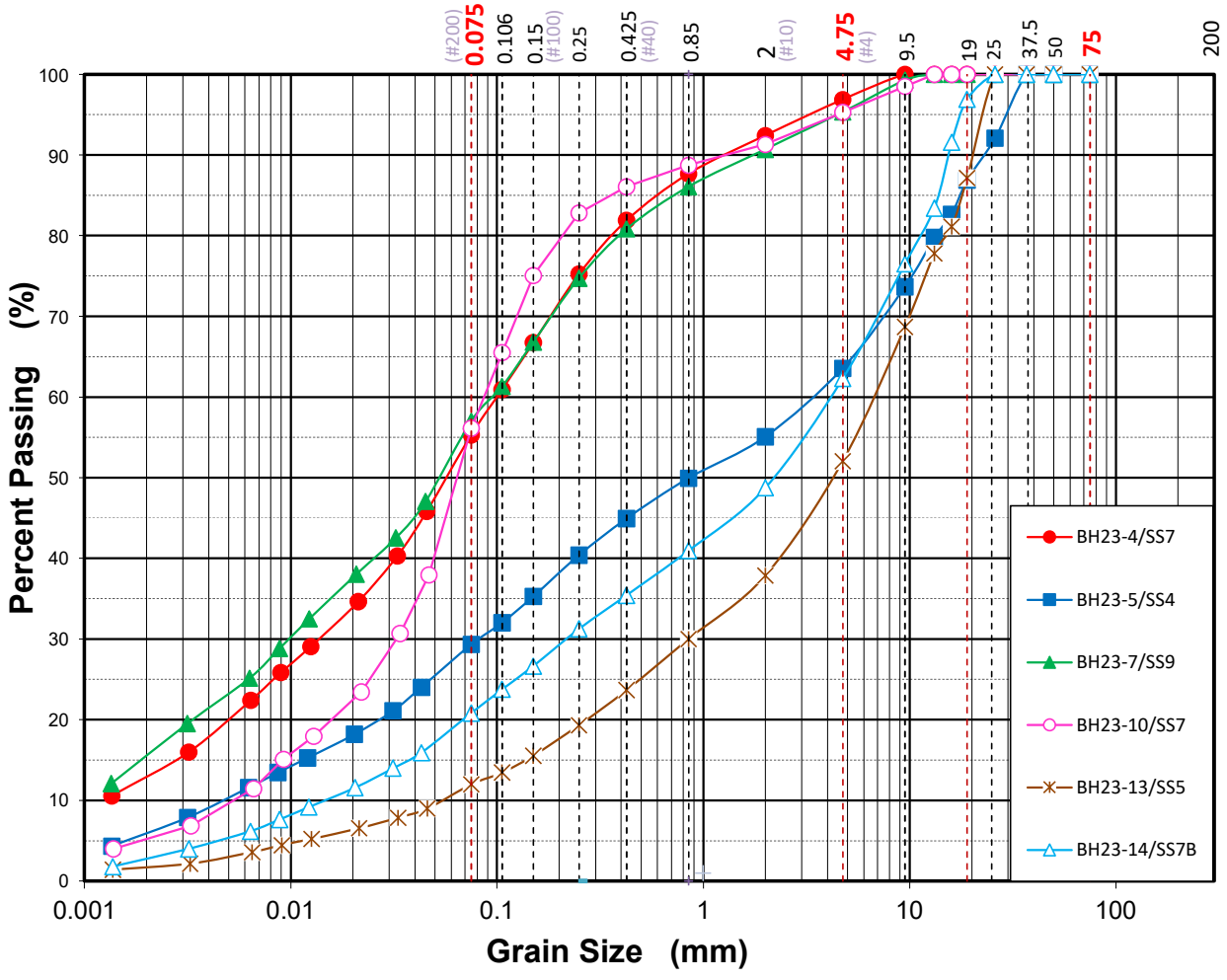
Palmer Environmental Consulting Group Inc.
871 Equestrain Ct, Unit 1
Oakville, ON L6L 6L7

Particle Size Distribution Report

Project No.:	2200902	Lab No.:	R23-003
Project Name:	Black Bear Ridge Geotechnical Investigation	Tested By:	BW
Client:	Black Bear Ridge GP Inc.	Checked By:	TO
Location:	Belleville, Ontario	Date:	10/19/2023

Test Results

Test No.	Sample No.	Clay	Silt	Sand			Gravel		Cobble+	Remarks
				Fine	Medium	Coarse	Fine	Coarse		
1	BH23-4/SS7	12	43	42			3			
2	BH23-5/SS4	6	23	35			36			
3	BH23-7/SS9	15	42	38			5			
4	BH23-10/SS7	5	51	39			5			
5	BH23-13/SS5	2	10	40			48			
6	BH23-14/SS7B	3	18	41			38			
7										
8										



ALS Canada Ltd.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2323385**	Page	: 1 of 8
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 17:54
PO	: 2200902	Date Analysis Commenced	: 31-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023 16:49
Sampler	: BF		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 11		
No. of samples analysed	: 11		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario

No Breaches Found

General Comments

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

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

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

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

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

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

Unit	*Description*
µg/L	micrograms per litre

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

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-6	23-6D	23-3	23-10	23-7	23-7D	23-11
				Sampling date/time	26-Jul-2023 09:30	26-Jul-2023 09:30	26-Jul-2023 10:00	26-Jul-2023 10:30	26-Jul-2023 11:30	26-Jul-2023 11:30	26-Jul-2023 12:00
				Sub-Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
					WT2323385-001	WT2323385-002	WT2323385-003	WT2323385-004	WT2323385-005	WT2323385-006	WT2323385-007
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Acenaphthylene	208-96-8	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Anthracene	120-12-7	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	µg/L		<0.0050	<0.0050	----	<0.0050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Chrysene	218-01-9	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	µg/L		<0.0050	<0.0050	----	<0.0050	----	----	----
Fluoranthene	206-44-0	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Fluorene	86-73-7	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	µg/L		<0.010	<0.010	----	<0.010	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	µg/L		0.034	0.030	----	0.013	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	µg/L		0.084	0.074	----	0.032	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	µg/L		0.050	0.044	----	0.019	----	----	----
Naphthalene	91-20-3	E641A/WT	µg/L		0.055	<0.050	----	<0.050	----	----	----
Phenanthrene	85-01-8	E641A/WT	µg/L		<0.020	<0.020	----	<0.020	----	----	----
Pyrene	129-00-0	E641A/WT	µg/L		0.024	0.022	----	<0.010	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Chrysene-d12	1719-03-5	E641A/WT	%		126	115	----	118	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	%		113	103	----	104	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT	%		119	107	----	111	----	----	----
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Chlordane, cis- (alpha)	5103-71-9	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Chlordane, total	57-74-9	E660F/WT	µg/L		----	----	<0.011	----	<0.011	<0.011	<0.011
Chlordane, trans- (gamma)	5103-74-2	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-6	23-6D	23-3	23-10	23-7	23-7D	23-11
				Sampling date/time	26-Jul-2023 09:30	26-Jul-2023 09:30	26-Jul-2023 10:00	26-Jul-2023 10:30	26-Jul-2023 11:30	26-Jul-2023 11:30	26-Jul-2023 12:00
				Sub-Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
					WT2323385-001	WT2323385-002	WT2323385-003	WT2323385-004	WT2323385-005	WT2323385-006	WT2323385-007
Organochlorine Pesticides											
DDD, 2,4'-	53-19-0	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDD, 4,4'-	72-54-8	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDD, total	----	E660F/WT	µg/L		----	----	<0.0060	----	<0.0060	<0.0060	<0.0060
DDE, 2,4'-	3424-82-6	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDE, 4,4'-	72-55-9	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDE, total	----	E660F/WT	µg/L		----	----	<0.0060	----	<0.0060	<0.0060	<0.0060
DDT, 2,4'-	789-02-6	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDT, 4,4'-	50-29-3	E660F/WT	µg/L		----	----	<0.0040	----	<0.0040	<0.0040	<0.0040
DDT, total	----	E660F/WT	µg/L		----	----	<0.0060	----	<0.0060	<0.0060	<0.0060
Dieldrin	60-57-1	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Endosulfan, alpha-	959-98-8	E660F/WT	µg/L		----	----	<0.0070	----	<0.0070	<0.0070	<0.0070
Endosulfan, beta-	33213-65-9	E660F/WT	µg/L		----	----	<0.0070	----	<0.0070	<0.0070	<0.0070
Endosulfan, total	----	E660F/WT	µg/L		----	----	<0.010	----	<0.010	<0.010	<0.010
Endrin	72-20-8	E660F/WT	µg/L		----	----	<0.010	----	<0.010	<0.010	<0.010
Heptachlor	76-44-8	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Heptachlor epoxide	1024-57-3	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Hexachlorobenzene	118-74-1	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Hexachlorobutadiene	87-68-3	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Hexachloroethane	67-72-1	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Methoxychlor	72-43-5	E660F/WT	µg/L		----	----	<0.0080	----	<0.0080	<0.0080	<0.0080
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT	%		----	----	99.4	----	94.8	98.8	95.1
Tetrachloro-m-xylene	877-09-8	E660F/WT	%		----	----	83.3	----	81.6	81.4	82.8

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 Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8	23-4	23-2	TRIP BLANK	----	----	----
				Sampling date/time	27-Jul-2023 08:30	28-Jul-2023 09:30	28-Jul-2023 10:30	28-Jul-2023 00:00	----	----	----
				Sub-Matrix	Groundwater	Groundwater	Groundwater	Groundwater	----	----	----
					WT2323385-008	WT2323385-009	WT2323385-010	WT2323385-011	--------	--------	--------
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Acenaphthylene	208-96-8	E641A/WT			----	----	<0.010	<0.010	----	----	----
Anthracene	120-12-7	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT			----	----	<0.010	<0.010	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	µg/L		----	----	<0.0050	<0.0050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT			----	----	<0.010	<0.010	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT			----	----	<0.010	<0.010	----	----	----
Chrysene	218-01-9	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT			----	----	<0.0050	<0.0050	----	----	----
Fluoranthene	206-44-0	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Fluorene	86-73-7	E641A/WT			----	----	<0.010	<0.010	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT			----	----	0.047	<0.010	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	µg/L		----	----	0.115	<0.015	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT			----	----	0.068	<0.010	----	----	----
Naphthalene	91-20-3	E641A/WT	µg/L		----	----	0.051	<0.050	----	----	----
Phenanthrene	85-01-8	E641A/WT			----	----	<0.020	<0.020	----	----	----
Pyrene	129-00-0	E641A/WT	µg/L		----	----	<0.010	<0.010	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Chrysene-d12	1719-03-5	E641A/WT			----	----	112	109	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	%		----	----	98.0	91.1	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT			----	----	103	103	----	----	----
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Chlordane, cis- (alpha)	5103-71-9	E660F/WT			<0.0080	<0.0080	<0.0080	----	----	----	----
Chlordane, total	57-74-9	E660F/WT	µg/L		<0.011	<0.011	<0.011	----	----	----	----
Chlordane, trans- (gamma)	5103-74-2	E660F/WT			<0.0080	<0.0080	<0.0080	----	----	----	----
DDD, 2,4'-	53-19-0	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-8	23-4	23-2	TRIP BLANK	----	----	----
				Sampling date/time	27-Jul-2023 08:30	28-Jul-2023 09:30	28-Jul-2023 10:30	28-Jul-2023 00:00	----	----	----
				Sub-Matrix	Groundwater	Groundwater	Groundwater	Groundwater	----	----	----
					WT2323385-008	WT2323385-009	WT2323385-010	WT2323385-011	--------	--------	--------
Organochlorine Pesticides											
DDD, 4,4'-	72-54-8	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----
DDD, total	----	E660F/WT	µg/L		<0.0060	<0.0060	<0.0060	----	----	----	----
DDE, 2,4'-	3424-82-6	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----
DDE, 4,4'-	72-55-9	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----
DDE, total	----	E660F/WT	µg/L		<0.0060	<0.0060	<0.0060	----	----	----	----
DDT, 2,4'-	789-02-6	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----
DDT, 4,4'-	50-29-3	E660F/WT	µg/L		<0.0040	<0.0040	<0.0040	----	----	----	----
DDT, total	----	E660F/WT	µg/L		<0.0060	<0.0060	<0.0060	----	----	----	----
Dieldrin	60-57-1	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Endosulfan, alpha-	959-98-8	E660F/WT	µg/L		<0.0070	<0.0070	<0.0070	----	----	----	----
Endosulfan, beta-	33213-65-9	E660F/WT	µg/L		<0.0070	<0.0070	<0.0070	----	----	----	----
Endosulfan, total	----	E660F/WT	µg/L		<0.010	<0.010	<0.010	----	----	----	----
Endrin	72-20-8	E660F/WT	µg/L		<0.010	<0.010	<0.010	----	----	----	----
Heptachlor	76-44-8	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Heptachlor epoxide	1024-57-3	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Hexachlorobenzene	118-74-1	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Hexachlorobutadiene	87-68-3	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Hexachloroethane	67-72-1	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Methoxychlor	72-43-5	E660F/WT	µg/L		<0.0080	<0.0080	<0.0080	----	----	----	----
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT	%		106	93.1	98.5	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E660F/WT	%		88.0	84.5	89.5	----	----	----	----

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

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

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T1-GW-All						
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	83-32-9	µg/L	**4.1 µg/L**						
Acenaphthylene	208-96-8	µg/L	**1 µg/L**						
Anthracene	120-12-7	µg/L	**0.1 µg/L**						
Benz(a)anthracene	56-55-3	µg/L	**0.2 µg/L**						
Benzo(a)pyrene	50-32-8	µg/L	**0.01 µg/L**						
Benzo(b+j)fluoranthene	n/a	µg/L	**0.1 µg/L**						
Benzo(g,h,i)perylene	191-24-2	µg/L	**0.2 µg/L**						
Benzo(k)fluoranthene	207-08-9	µg/L	**0.1 µg/L**						
Chrysene	218-01-9	µg/L	**0.1 µg/L**						
Dibenz(a,h)anthracene	53-70-3	µg/L	**0.2 µg/L**						
Fluoranthene	206-44-0	µg/L	**0.4 µg/L**						
Fluorene	86-73-7	µg/L	**120 µg/L**						
Indeno(1,2,3-c,d)pyrene	193-39-5	µg/L	**0.2 µg/L**						
Methylnaphthalene, 1+2-	----	µg/L	**2 µg/L**						
Methylnaphthalene, 1-	90-12-0	µg/L	**2 µg/L**						
Methylnaphthalene, 2-	91-57-6	µg/L	**2 µg/L**						
Naphthalene	91-20-3	µg/L	**7 µg/L**						
Phenanthrene	85-01-8	µg/L	**0.1 µg/L**						
Pyrene	129-00-0	µg/L	**0.2 µg/L**						
Chrysene-d12	1719-03-5	%							
Naphthalene-d8	1146-65-2	%							
Phenanthrene-d10	1517-22-2	%							
Organochlorine Pesticides									
Aldrin	309-00-2	µg/L	**0.01 µg/L**						
Chlordane, cis- (alpha)	5103-71-9	µg/L	**--**						
Chlordane, total	57-74-9	µg/L	**0.06 µg/L**						
Chlordane, trans- (gamma)	5103-74-2	µg/L	**--**						
DDD, 2,4'-	53-19-0	µg/L	**--**						
DDD, 4,4'-	72-54-8	µg/L	**--**						
DDD, total	----	µg/L	**1.8 µg/L**						
DDE, 2,4'-	3424-82-6	µg/L	**--**						
DDE, 4,4'-	72-55-9	µg/L	**--**						
DDE, total	----	µg/L	**10 µg/L**						
DDT, 2,4'-	789-02-6	µg/L	**--**						
DDT, 4,4'-	50-29-3	µg/L	**--**						
DDT, total	----	µg/L	**0.05 µg/L**						
Dieldrin	60-57-1	µg/L	**0.05 µg/L**						

Analyte	CAS Number	Unit	ON153/04 T1-GW-All						
Organochlorine Pesticides - Continued									
Endosulfan, alpha-	959-98-8	µg/L	--						
Endosulfan, beta-	33213-65-9	µg/L	--						
Endosulfan, total	----	µg/L	**0.05 µg/L**						
Endrin	72-20-8	µg/L	**0.05 µg/L**						
Heptachlor epoxide	1024-57-3	µg/L	**0.01 µg/L**						
Heptachlor	76-44-8	µg/L	**0.01 µg/L**						
Hexachlorobenzene	118-74-1	µg/L	**0.01 µg/L**						
Hexachlorobutadiene	87-68-3	µg/L	**0.01 µg/L**						
Hexachlorocyclohexane, gamma-	58-89-9	µg/L	**0.01 µg/L**						
Hexachloroethane	67-72-1	µg/L	**0.01 µg/L**						
Methoxychlor	72-43-5	µg/L	**0.05 µg/L**						
Decachlorobiphenyl	2051-24-3	%							
Tetrachloro-m-xylene	877-09-8	%							

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

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-GW-All	153 T1-Ground Water-All Types of Property Uses

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2323385**	Page	: 1 of 7
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 17:54
PO	: 2200902	Issue Date	: 04-Aug-2023 16:54
C-O-C number	: ----		
Sampler	: BF		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 11		
No. of samples analysed	: 11		

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.
- 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								
Organochlorine Pesticides	QC-MRG3-1064483 002	----	Chlordane, trans- (gamma)	5103-74-2	E660F	166 % LCS-H	50.0-150%	Recovery greater than upper control limit
Organochlorine Pesticides	QC-MRG3-1064483 002	----	DDD, 4,4'-	72-54-8	E660F	155 % LCS-H	50.0-150%	Recovery greater than upper control limit
Organochlorine Pesticides	QC-MRG3-1064483 002	----	Heptachlor epoxide	1024-57-3	E660F	155 % LCS-H	50.0-150%	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: **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
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-2	E660F	28-Jul-2023	31-Jul-2023	14 days	3 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-4	E660F	28-Jul-2023	31-Jul-2023	14 days	3 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-8	E660F	27-Jul-2023	31-Jul-2023	14 days	4 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-11	E660F	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-3	E660F	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-7	E660F	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-2023	40 days	1 days	✓
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap [ON MECP]										
23-7D	E660F	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	01-Aug-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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-2	E641A	28-Jul-2023	31-Jul-2023	14 days	3 days	✓	03-Aug-2023	40 days	3 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
TRIP BLANK	E641A	28-Jul-2023	31-Jul-2023	14 days	4 days	✓	03-Aug-2023	40 days	3 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-10	E641A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	03-Aug-2023	40 days	3 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-6	E641A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	03-Aug-2023	40 days	3 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-6D	E641A	26-Jul-2023	31-Jul-2023	14 days	5 days	✓	03-Aug-2023	40 days	3 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 Control Samples (LCS)							
OCP Analysis by GC-MS-MS or GC-MS	E660F	1064484	1	12	8.3	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1063374	1	8	12.5	5.0	✓
Method Blanks (MB)							
OCP Analysis by GC-MS-MS or GC-MS	E660F	1064484	1	12	8.3	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1063374	1	8	12.5	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2323385**	Page	: 1 of 6
Client	: Palmer Environmental Consulting Group Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Bailey Fleet	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 2200902- PHASE TWO ESA	Date Samples Received	: 28-Jul-2023 17:54
PO	: 2200902	Date Analysis Commenced	: 31-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023 16:47
Sampler	: BF ----		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
No. of samples received	: 11		
No. of samples analysed	: 11		

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:

- 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
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	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.

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
Polycyclic Aromatic Hydrocarbons (QCLot: 1063374)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Organochlorine Pesticides (QCLot: 1064484)						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	<0.0040	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	<0.0040	----
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	<0.0040	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	<0.0040	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	<0.0070	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	<0.0070	----
Endrin	72-20-8	E660F	0.01	µg/L	<0.010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1064484) - continued						
Heptachlor	76-44-8	E660F	0.008	µg/L	<0.0080	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	<0.0080	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	<0.0080	----

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
Polycyclic Aromatic Hydrocarbons (QCLot: 1063374)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5263 µg/L	104	50.0	140	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5263 µg/L	106	50.0	140	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5263 µg/L	108	50.0	140	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5263 µg/L	129	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5263 µg/L	119	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5263 µg/L	122	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5263 µg/L	110	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5263 µg/L	121	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5263 µg/L	118	50.0	140	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5263 µg/L	112	50.0	140	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5263 µg/L	107	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5263 µg/L	100	50.0	140	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5263 µg/L	95.1	50.0	140	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5263 µg/L	93.3	50.0	140	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5263 µg/L	97.0	50.0	140	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5263 µg/L	109	50.0	140	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5263 µg/L	114	50.0	140	----
Organochlorine Pesticides (QCLot: 1064484)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	116	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	128	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	# 166	50.0	150	LCS-H
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	0.2 µg/L	143	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	0.2 µg/L	# 155	50.0	150	LCS-H
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	0.2 µg/L	117	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	0.2 µg/L	116	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	106	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	67.9	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	129	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	0.2 µg/L	135	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	0.2 µg/L	132	50.0	150	----
Endrin	72-20-8	E660F	0.01	µg/L	0.2 µg/L	76.8	50.0	150	----

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
Organochlorine Pesticides (QCLot: 1064484) - continued									
Heptachlor	76-44-8	E660F	0.008	µg/L	0.2 µg/L	115	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	0.2 µg/L	# 155	50.0	150	LCS-H
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	95.9	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	0.2 µg/L	72.3	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	104	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	0.2 µg/L	67.2	50.0	150	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	0.2 µg/L	91.6	50.0	150	----

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.*

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

WT2323385

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Bailey Fleet
Phone:	905-708-7299
	Company address below will appear on the final report
Street:	1-871 Equestrian Court
City/Province:	Oakville, ON
Postal Code:	L6L 6L7

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: bailey.fleet@pecg.ca

Email 2: kalina.naydenova@pecg.ca

Email 3: sarah.sipak@pecg.ca

Turnaround Time (TAT) Requested

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

☐ 4 day [P4] If received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] If received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] If received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] If received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] If received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non routine tests

Date and Time Required for all E&P TATs:

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

Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Accounting

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: accounting@pecg.ca

Email 2: sarah.sipak@pecg.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	2200902 - Phase Two ESA	Major/Minor Code:	Routing Code:
PO / AFE:	2200902	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only): **ALS Contact:** Andrew **Sampler:** BF

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	PAHs	OC Pesticides	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	23-6	26-07-23	9:30	GW	2	X				
	23-6D		9:30		2	X				
	23-3		10:00		2		X			
	23-10		10:30		2	X				
	23-7		11:30		2		X			
	23-7D		11:30		2		X			
	23-11		12:00		2		X			
	23-8	27-07-23	8:30		2		X			
	23-4	28-07-23	9:30		2		X			
	23-2	↓	10:30	↓	4	X	X			
	TRIP BLANK				2	X				

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

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

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

Compare to O. Reg. 153/04 Table 1 SCS

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			
6.8				4.9			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: BF	Date: July 28/2023	Time: 14:3	Received by:	Date: 28-Jul-23	Time: 14:37	Received by: EC	Date: July 28/23	Time: 18:20

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**.

OR961 OR-962 EC

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2328854**	Page	: 1 of 6
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 11-Sep-2023 09:40
PO	: 2200902	Date Analysis Commenced	: 11-Sep-2023
C-O-C number	: ----	Issue Date	: 18-Sep-2023 10:18
Sampler	: SB		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
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
- Guideline Comparison

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario

No Breaches Found

General Comments

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

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

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

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

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

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

Unit	*Description*
µg/L	micrograms per litre

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

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-1	23-5	----	----	----	----	----
				Sampling date/time	07-Sep-2023 14:00	07-Sep-2023 15:00	----	----	----	----	----
				Sub-Matrix	Groundwater	Groundwater	----	----	----	----	----
					WT2328854-001	WT2328854-002	--------	--------	--------	--------	--------
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Acenaphthylene	208-96-8	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Anthracene	120-12-7	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	µg/L		<0.0050	<0.0050	----	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Chrysene	218-01-9	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	µg/L		<0.0050	<0.0050	----	----	----	----	----
Fluoranthene	206-44-0	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Fluorene	86-73-7	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	µg/L		<0.015	<0.015	----	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Naphthalene	91-20-3	E641A/WT	µg/L		<0.050	<0.050	----	----	----	----	----
Phenanthrene	85-01-8	E641A/WT	µg/L		<0.020	<0.020	----	----	----	----	----
Pyrene	129-00-0	E641A/WT	µg/L		<0.010	<0.010	----	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates											
Chrysene-d12	1719-03-5	E641A/WT	%		108	103	----	----	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	%		101	101	----	----	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT	%		117	116	----	----	----	----	----
Organochlorine Pesticides											
Aldrin	309-00-2	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Chlordane, cis- (alpha)	5103-71-9	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Chlordane, total	57-74-9	E660F/WT	µg/L		----	<0.011	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Groundwater**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	23-1	23-5	----	----	----	----	----
				Sampling date/time	07-Sep-2023 14:00	07-Sep-2023 15:00	----	----	----	----	----
				Sub-Matrix	Groundwater	Groundwater	----	----	----	----	----
					WT2328854-001	WT2328854-002	--------	--------	--------	--------	--------
Organochlorine Pesticides											
Chlordane, trans- (gamma)	5103-74-2	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
DDD, 2,4'-	53-19-0	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDD, 4,4'-	72-54-8	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDD, total	----	E660F/WT	µg/L		----	<0.0060	----	----	----	----	----
DDE, 2,4'-	3424-82-6	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDE, 4,4'-	72-55-9	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDE, total	----	E660F/WT	µg/L		----	<0.0060	----	----	----	----	----
DDT, 2,4'-	789-02-6	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDT, 4,4'-	50-29-3	E660F/WT	µg/L		----	<0.0040	----	----	----	----	----
DDT, total	----	E660F/WT	µg/L		----	<0.0060	----	----	----	----	----
Dieldrin	60-57-1	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Endosulfan, alpha-	959-98-8	E660F/WT	µg/L		----	<0.0070	----	----	----	----	----
Endosulfan, beta-	33213-65-9	E660F/WT	µg/L		----	<0.0070	----	----	----	----	----
Endosulfan, total	----	E660F/WT	µg/L		----	<0.010	----	----	----	----	----
Endrin	72-20-8	E660F/WT	µg/L		----	<0.010	----	----	----	----	----
Heptachlor	76-44-8	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Heptachlor epoxide	1024-57-3	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Hexachlorobenzene	118-74-1	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Hexachlorobutadiene	87-68-3	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Hexachloroethane	67-72-1	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Methoxychlor	72-43-5	E660F/WT	µg/L		----	<0.0080	----	----	----	----	----
Organochlorine Pesticides Surrogates											
Decachlorobiphenyl	2051-24-3	E660F/WT	%		----	125	----	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E660F/WT	%		----	105	----	----	----	----	----

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

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

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON153/04 T1-GW-All						
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	83-32-9	µg/L	**4.1 µg/L**						
Acenaphthylene	208-96-8	µg/L	**1 µg/L**						
Anthracene	120-12-7	µg/L	**0.1 µg/L**						
Benz(a)anthracene	56-55-3	µg/L	**0.2 µg/L**						
Benzo(a)pyrene	50-32-8	µg/L	**0.01 µg/L**						
Benzo(b+j)fluoranthene	n/a	µg/L	**0.1 µg/L**						
Benzo(g,h,i)perylene	191-24-2	µg/L	**0.2 µg/L**						
Benzo(k)fluoranthene	207-08-9	µg/L	**0.1 µg/L**						
Chrysene	218-01-9	µg/L	**0.1 µg/L**						
Dibenz(a,h)anthracene	53-70-3	µg/L	**0.2 µg/L**						
Fluoranthene	206-44-0	µg/L	**0.4 µg/L**						
Fluorene	86-73-7	µg/L	**120 µg/L**						
Indeno(1,2,3-c,d)pyrene	193-39-5	µg/L	**0.2 µg/L**						
Methylnaphthalene, 1+2-	----	µg/L	**2 µg/L**						
Methylnaphthalene, 1-	90-12-0	µg/L	**2 µg/L**						
Methylnaphthalene, 2-	91-57-6	µg/L	**2 µg/L**						
Naphthalene	91-20-3	µg/L	**7 µg/L**						
Phenanthrene	85-01-8	µg/L	**0.1 µg/L**						
Pyrene	129-00-0	µg/L	**0.2 µg/L**						
Chrysene-d12	1719-03-5	%							
Naphthalene-d8	1146-65-2	%							
Phenanthrene-d10	1517-22-2	%							
Organochlorine Pesticides									
Aldrin	309-00-2	µg/L	**0.01 µg/L**						
Chlordane, cis- (alpha)	5103-71-9	µg/L	**--**						
Chlordane, total	57-74-9	µg/L	**0.06 µg/L**						
Chlordane, trans- (gamma)	5103-74-2	µg/L	**--**						
DDD, 2,4'-	53-19-0	µg/L	**--**						
DDD, 4,4'-	72-54-8	µg/L	**--**						
DDD, total	----	µg/L	**1.8 µg/L**						
DDE, 2,4'-	3424-82-6	µg/L	**--**						
DDE, 4,4'-	72-55-9	µg/L	**--**						
DDE, total	----	µg/L	**10 µg/L**						
DDT, 2,4'-	789-02-6	µg/L	**--**						
DDT, 4,4'-	50-29-3	µg/L	**--**						
DDT, total	----	µg/L	**0.05 µg/L**						
Dieldrin	60-57-1	µg/L	**0.05 µg/L**						

Analyte	CAS Number	Unit	ON153/04 T1-GW-All						
Organochlorine Pesticides - Continued									
Endosulfan, alpha-	959-98-8	µg/L	--						
Endosulfan, beta-	33213-65-9	µg/L	--						
Endosulfan, total	----	µg/L	**0.05 µg/L**						
Endrin	72-20-8	µg/L	**0.05 µg/L**						
Heptachlor epoxide	1024-57-3	µg/L	**0.01 µg/L**						
Heptachlor	76-44-8	µg/L	**0.01 µg/L**						
Hexachlorobenzene	118-74-1	µg/L	**0.01 µg/L**						
Hexachlorobutadiene	87-68-3	µg/L	**0.01 µg/L**						
Hexachlorocyclohexane, gamma-	58-89-9	µg/L	**0.01 µg/L**						
Hexachloroethane	67-72-1	µg/L	**0.01 µg/L**						
Methoxychlor	72-43-5	µg/L	**0.05 µg/L**						
Decachlorobiphenyl	2051-24-3	%							
Tetrachloro-m-xylene	877-09-8	%							

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

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T1-GW-All	153 T1-Ground Water-All Types of Property Uses

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2328854**	Page	: 1 of 5
Client	: **Palmer Environmental Consulting Group Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 11-Sep-2023 09:40
PO	: 2200902	Issue Date	: 18-Sep-2023 10:18
C-O-C number	: ----		
Sampler	: SB		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
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 Laboratory Control Sample (LCS) 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
Organochlorine Pesticides : OCP Analysis by GC-MS-MS or GC-MS										
Amber glass/Teflon lined cap										
23-5	E660F	07-Sep-2023	11-Sep-2023	7 days	4 days	✓	11-Sep-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-1	E641A	07-Sep-2023	11-Sep-2023	14 days	4 days	✓	12-Sep-2023	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
23-5	E641A	07-Sep-2023	11-Sep-2023	14 days	4 days	✓	12-Sep-2023	40 days	1 days	✓

Legend & Qualifier Definitions

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

Quality Control Parameter Frequency Compliance

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

Matrix: **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 Control Samples (LCS)							
OCP Analysis by GC-MS-MS or GC-MS	E660F	1128240	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1128205	1	6	16.6	5.0	✓
Method Blanks (MB)							
OCP Analysis by GC-MS-MS or GC-MS	E660F	1128240	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1128205	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
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
OCP Analysis by GC-MS-MS or GC-MS	E660F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Pesticides are analyzed by GC-MS-MS or GC-MS

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2328854**	Page	: 1 of 6
Client	: Palmer Environmental Consulting Group Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Sylvia Babiarz	Account Manager	: Andrew Martin
Address	: 74 Berkeley Street Toronto ON Canada M5V 1E3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 2200902	Date Samples Received	: 11-Sep-2023 09:40
PO	: 2200902	Date Analysis Commenced	: 11-Sep-2023
C-O-C number	: ----	Issue Date	: 18-Sep-2023 10:18
Sampler	: SB ----		
Site	: ----		
Quote number	: (Q88296) PALMER 2023 STANDING OFFER		
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:

- 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
Jeremy Gingras	Team Leader - Semi-Volatile Instrumentation	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.

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
Polycyclic Aromatic Hydrocarbons (QCLot: 1128205)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Organochlorine Pesticides (QCLot: 1128240)						
Aldrin	309-00-2	E660F	0.008	µg/L	<0.0080	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	<0.0080	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	<0.0080	----
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	<0.0040	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	<0.0040	----
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	<0.0040	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	<0.0040	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	<0.0040	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	<0.0040	----
Dieldrin	60-57-1	E660F	0.008	µg/L	<0.0080	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	<0.0070	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	<0.0070	----
Endrin	72-20-8	E660F	0.01	µg/L	<0.010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organochlorine Pesticides (QCLot: 1128240) - continued						
Heptachlor	76-44-8	E660F	0.008	µg/L	<0.0080	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	<0.0080	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	<0.0080	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	<0.0080	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	<0.0080	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	<0.0080	----

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
Polycyclic Aromatic Hydrocarbons (QCLot: 1128205)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5263 µg/L	102	50.0	140	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5263 µg/L	101	50.0	140	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5263 µg/L	116	50.0	140	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5263 µg/L	110	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5263 µg/L	110	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5263 µg/L	95.4	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5263 µg/L	104	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5263 µg/L	100	50.0	140	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5263 µg/L	111	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5263 µg/L	109	50.0	140	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5263 µg/L	108	50.0	140	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5263 µg/L	108	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5263 µg/L	134	50.0	140	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5263 µg/L	92.9	50.0	140	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5263 µg/L	92.3	50.0	140	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5263 µg/L	98.6	50.0	140	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5263 µg/L	121	50.0	140	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5263 µg/L	112	50.0	140	----
Organochlorine Pesticides (QCLot: 1128240)									
Aldrin	309-00-2	E660F	0.008	µg/L	0.2 µg/L	74.9	50.0	150	----
Chlordane, cis- (alpha)	5103-71-9	E660F	0.008	µg/L	0.2 µg/L	90.3	50.0	150	----
Chlordane, trans- (gamma)	5103-74-2	E660F	0.008	µg/L	0.2 µg/L	104	50.0	150	----
DDD, 2,4'-	53-19-0	E660F	0.004	µg/L	0.2 µg/L	103	50.0	150	----
DDD, 4,4'-	72-54-8	E660F	0.004	µg/L	0.2 µg/L	110	50.0	150	----
DDE, 2,4'-	3424-82-6	E660F	0.004	µg/L	0.2 µg/L	94.9	50.0	150	----
DDE, 4,4'-	72-55-9	E660F	0.004	µg/L	0.2 µg/L	89.8	50.0	150	----
DDT, 2,4'-	789-02-6	E660F	0.004	µg/L	0.2 µg/L	108	50.0	150	----
DDT, 4,4'-	50-29-3	E660F	0.004	µg/L	0.2 µg/L	82.3	50.0	150	----
Dieldrin	60-57-1	E660F	0.008	µg/L	0.2 µg/L	95.2	50.0	150	----
Endosulfan, alpha-	959-98-8	E660F	0.007	µg/L	0.2 µg/L	82.2	50.0	150	----
Endosulfan, beta-	33213-65-9	E660F	0.007	µg/L	0.2 µg/L	87.8	50.0	150	----
Endrin	72-20-8	E660F	0.01	µg/L	0.2 µg/L	96.5	50.0	150	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Organochlorine Pesticides (QCLot: 1128240) - continued									
Heptachlor	76-44-8	E660F	0.008	µg/L	0.2 µg/L	85.2	50.0	150	----
Heptachlor epoxide	1024-57-3	E660F	0.008	µg/L	0.2 µg/L	106	50.0	150	----
Hexachlorobenzene	118-74-1	E660F	0.008	µg/L	0.2 µg/L	77.1	50.0	150	----
Hexachlorobutadiene	87-68-3	E660F	0.008	µg/L	0.2 µg/L	89.7	50.0	150	----
Hexachlorocyclohexane, gamma-	58-89-9	E660F	0.008	µg/L	0.2 µg/L	78.4	50.0	150	----
Hexachloroethane	67-72-1	E660F	0.008	µg/L	0.2 µg/L	82.9	50.0	150	----
Methoxychlor	72-43-5	E660F	0.008	µg/L	0.2 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

Pag

Environmental Division Waterloo

Work Order Reference WT2328854

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Sylvia Babiarz
Phone:	6478827310
	Company address below will appear on the final report
Street:	871 Equestrian Court Unit 1
City/Province:	Oakville, ON
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Accounting

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	sylvia.babiarz@pecg.ca
Email 2	halina.nawalerowa@pecg.ca
Email 3	sarah.sipak@pecg.ca / sarah.monisteri@pecg.ca

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accounting@pecg.ca
Email 2	sarah.sipak@pecg.ca

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 n
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge n
☐ Same day [E2] if received by 10am M-S - 200% rush surch
☐ fees may apply to rush requests on weekends, statutory holi
☐ routine tests
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, p

Project Information	
ALS Account # / Quote #:	
Job #:	2200902
PO / AFE:	2200902
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): WT2328854

ALS Contact: A. Martin | Sampler: SB

Analysis 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	DAT	8e Pesticides	SAMPLES ON HOLD	EXTENDED STORAGE REQUIR	SUSPECTED HAZARD (see notes
	23-1	Sept 7/23	2:00pm	GW	2	✓				
	23-5	↓	3:00 pm	↓	4	✓	✓			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	Compare to O Reg 153/04 Table 1
Are samples for human consumption/ use? ☐ YES ☑ NO	Please also include bailey.fleet@pecg.ca

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
	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
by: Sylvia Babiarz	Date: Sept 7/23	Time:	Received by:	Date:	Time:	Received by:	Date: 09/11/23	Time: 9:40

K PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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l 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.

are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

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