PATERSON GROUP

Phase II Environmental Site Assessment

1450, 1454, 1458, 1464 and 1468 Bankfield Road,
and 5479 and 5485 Elijah Court
Ottawa, Ontario

Prepared for Myers Automotive Group

Report: PE5397-2R
November 30, 2022

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EXECUTIVE SUMMARY

Assessment

A Phase II ESA was conducted for the property addressed 1450, 1454, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, in the Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The subsurface investigations were conducted in August 2021 and July 2022. The program consisted of nine (9) boreholes, five (5) of which were instrumented with groundwater monitoring wells. The general soil profile encountered during the field program consisted of a consisted of crushed stone, gravel and silty was encountered in all of the boreholes, except in boreholes BH2-22, BH3-22 and BH4-22. Traces of clay and asphalt, wood and/or glass were identified in BH4-21, BH5-21 and BH1-22, followed by a silty sand layer with traces of gravel in BH1-21, BH2-21, BH3-21, BH1-22, BH2-22, BH3-22 and BH4-22, overlying glacial till. All of the boreholes were terminated in this layer at depths ranging from 6.71 to 10.52mbgs. Bedrock was inferred, based on a dynamic cone penetration test (DCPT), where practical refusal was encountered at 24.8 m below the exiting grade.

Thirteen (13) soil samples, including duplicate samples, were submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHCs, Fractions F_1-F_4), polycyclic aromatic hydrocarbons (PAHs) and/or metals. All of the soil results complied with MECP Table 2 Commercial Standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21, BH1-22 and BH2-22 were collected on the August 24, 2021, and/or July 15, 2022, sampling events. No free product or petroleum hydrocarbon sheen was noted on the purge water during the groundwater sampling events.

Groundwater samples as well as duplicate samples were analyzed for volatile organic compounds (VOCs), which included the BTEX group, and PHCs (F1-F4). All of the groundwater results complied with the MECP Table 2 Standards.

Based on the findings of the Phase II ESA, no further environmental investigation is recommended at this time.

Recommendations

It is our understanding that the Phase II Property will be redeveloped with an automotive dealership with an asphaltic concrete paved area which will utilize at least half of the property.

Any excess soil requiring off-site disposal during construction must be managed in accordance with Ontario Regulation 406/19 – On-site and Excess Soil Management. The presence of the wood, brick and asphalt concrete may restrict the reuse of this material if off-site removal is required for construction purposes. Any soils deemed excess during the site development will require additional analytical testing to determine the appropriate method of disposal. It is recommended that the future redevelopment be designed to minimize the volume of excess soil that will be generated and require off-site disposal.

Monitoring Wells

If the monitoring wells installed on the Phase II Property are not going to be used in the future, or will be destroyed during site redevelopment, they should be abandoned according to Ontario Regulation 903. The wells will be registered with the MECP under this regulation. More information can be provided regarding the decommissioning of these wells.

1.0 INTRODUCTION

At the request of Myers Automotive Group (Myers), Paterson Group (Paterson) conducted a Phase II Environmental Site Assessment at the Phase II Property, addressed 1450, 1454, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, in the City of Ottawa, Ontario. The purpose of this Phase II ESA has been to address areas of potential environmental concern (APECs) identified on the Phase II Property, during the Phase I ESA conducted by Paterson in November of 2022.

1.1 Site Description

Address:	1450, 1454, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, Ottawa, Ontario.
Location:	The Phase II Property is located on the southeast corner of the Bankfield Road and Prince of Wales Drive intersection, in the City of Ottawa, Ontario. The Phase II Property is shown on Figure 1 - Key Plan following the body of this report.
Latitude and Longitude:	45° 13' 5.59" N, 75° 42’ 53.03" W

Site Description:

Configuration:	Irregular
Site Area:	19,200 m^2 or 1.92 hectares (approximate).
Zoning:	DR1 – Development Reserved Zone
Current Use:	The Phase II Property consists of residential properties at 1450, 1458 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, and commercial and residential uses (mixed-use) at 1454 and 1464 Bankfield Road: a small equipment rental and repair operation and an automotive service garage, respectively.

1.2 Property Ownership

Paterson was engaged to conduct this Phase II ESA by Mr. Geoff Publow of Myers Automotive Group.

The office of Myers Automotive Group is located at 1200 Baseline Road, Ottawa, Ontario. Mr. Publow can be reached by telephone at (613) 225-2277.

1.3 Current and Proposed Future Uses

The Phase II Property consists of six (6) parcels of land, addressed 1450, 1454, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, consisting of residential lands and two mixed-use properties.

The residential properties of the Phase II Property, specifically 1450, 1458 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court are occupied by the original 1950s to 1970s residential dwellings.

The mixed-used properties, 1454 and 1464 Bankfield Road operate as service garages for small non-road vehicles (i.e., backhoes) and automoblies, respectively.

It is our understanding that the proposed redevelopment of the Phase II Property will consist of an automotive dealership with associated vehicular parking and storage. A record of site condition (RSC) will not be required as per O.Reg 153/04.

1.4 Applicable Site Condition Standard

The site condition standards for the property were obtained from Table 2 of the document entitled “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, prepared by the Ontario Ministry of Environment, Conservation and Parks (MECP), April 2011.

The selected MECP Table 2 Standards are based on the following considerations:

- ❒ Coarse-grained soil conditions
- ❒ Full depth generic site conditions
- ❒ Potable groundwater conditions
- ❒ Commercial land use

Section 35 of O.Reg. 153/04 does not apply to the Phase II Property in that the property and surrounding lands rely upon potable groundwater.

Section 41 of O.Reg. 153/04 does not apply to the Phase II Property, as the property is not within 30m of an environmentally sensitive area.

Section 43.1 of O.Reg. 153/04 does not apply to the Phase II Property in that the property is not a Shallow Soil property.

The intended use of the Phase II Property is commercial; therefore, the Commercial/Industrial Standards have been selected for the purpose of this Phase II ESA.

Additionally, the soil test results have been compared to the MECP Table 1 Standards, which are considered to be indicative of typical Ontario background concentrations and are commonly used to assess whether soil is clean for off-site disposal purposes.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The Phase II Property is situated in a rural area, located on the southeast corner of Prince of Wales Drive and Bankfield Road, in the City of Ottawa, Ontario, and accessible from Bankfield Road and Elijah Court.

The Phase II Property is currently occupied by six (6) residential dwellings, two (2) of which operate as a small equipment rental and service garage and an automotive garage.

The majority of the subject land is landscaped, with asphaltic concrete paved or gravel covered driveways. Site drainage consists primarily of infiltration.

The site topography is above the grade of Prince of Wales Drive and generally slopes down in an easterly direction, while the southern portions of the properties at 1454, 1458, 1464 and 1468 Bankfield Road slope drastically down to the south. The regional topography slopes down in an easterly direction towards the Rideau River.

2.2 Past Investigations

Paterson completed a Phase I ESA in November of 2022, for the Phase II Property. Based on the findings of the Phase I ESA, four (4) potentially contaminating activities (PCAs) were considered to have resulted in areas of potential environmental concern (APECs) on the Phase I Property.

As per Table 2 of the O.Reg. 153/04, as amended, the following PCAs that generated APECs on the Phase I Property:

- ❒ PCA 28 – "Gasoline and Associated Products Storage in Fixed Tanks" associated with two (2) exterior waste oil totes at 1464 Bankfield Road (APEC 1).
- ❒ PCA 30 – "Importation of Fill Material of Unknown Quality," associated with importation of fill material on the southcentral portion of the site in 1990-1991 (APEC 2).
- ❒ PCA 52 – "Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems," associated with the presence of an automotive repair garage at 1464 Bankfield Road (APEC 3).
- ❒ PCA 52 – "Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems," associated with the presence of and small equipment rental and repair company on the southern (rear) end of 1454 Bankfield Road (APEC 4).

The rationale for identifying the above PCAs and APECs is based on the aerial photographs, site visits and personal interviews. A Phase II ESA was recommended to address the aforementioned APECs.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The subsurface investigations were conducted during the interim of August 13 to August 16, 2021, and on July 11, 2022. The field programs consisted of drilling nine (9) boreholes to address the APECs identified on the Phase II Property.

Five (5) of the nine (9) boreholes were completed with monitoring well installations. Boreholes were drilled to a maximum depth of 10.56 m below the ground surface (mbgs).

3.2 Media Investigated

During the subsurface investigation, soil samples and groundwater samples were obtained and submitted for laboratory analysis. The rationale for sampling and analyzing these media is based on the Contaminants of Potential Concern (CPCs) identified in the Phase I ESA.

The CPCs on the Phase II Property include benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs, F1-F4), polycyclic aromatic hydrocarbons (PAHs), Volatile Organic Compounds (VOCs) and metals.

These CPCs may be present in the soil and/or groundwater beneath the Phase II Property.

3.3 Phase I Conceptual Site Model

Geological and Hydrogeological Setting

Based on information from the Geological Survey of Canada mapping, drift thickness in the area of the Phase I Property is on the order of 15 to 25m across the site. The overburden consists of glaciofluvial deposits. Bedrock in the area consists of dolomite of the Oxford Formation.

Subsurface Services and Utilities

The Phase I Property is situated in an area where private services (potable water wells and septic systems) are relied upon. Other utilities and/or structures include electricity entering from Bankfield Road. There is no use of natural gas on the Phase I Property.

Fill Material

Based on the historical review, fill material of unknown quality was imported onto the southcentral portion of the Phase I Property in 1990-1991.

Existing Buildings and Structures

1450 Bankfield Road is occupied by a single-storey residential dwelling and private garage. The dwelling was constructed in the early 1970s with a concrete block foundation and is heated by a propane fired furnace. The exterior of the dwelling is finished in vinyl siding and a sloped shingle style roof, while the private shed is finished in vinyl siding and a shingle style roof. The private shed is used to store lawn care equipment and a hobby car.

1454 Bankfield Road is occupied by a single-storey residential dwelling with a private garage and shed. The dwelling was constructed in the early 1970s with a concrete block foundation and heated by a propane fired furnace. The exterior of the dwelling is finished in red brick with a sloped shingle style roof, while the private shed and garage are both finished in vinyl siding with shingle covered roofs. The garage is constructed with a slab-on-grade concrete floor, which has been used to store equipment and tools, while lawn maintenance equipment and tools were stored in the private wooden shed. The south end of the property is occupied by a temporary workspace/garage, which was built using sheet metal cover, supported by in-ground 4x4 pressure treated wood columns and an above ground hoist. No signs of staining or sources of contamination were noted in the area of the make-shift workspace/garage. However, based on the presence of

this make-shift garage, and given that small engine services have been conducted on-site, it represents an APEC.

1458 Bankfield Road is occupied by a single-storey residential dwelling and private garage. The dwelling was constructed in 1970 with a concrete block foundation and heated by a propane fired furnace. The exterior of the dwelling is finished in vinyl siding with a sloped shingle style roof. The private garage was constructed with a slab-on-grade foundation, while the building is finished in vinyl siding. The shed is currently used to store small recreational motor vehicles.

1464 Bankfield Road is occupied by a 2-storey residential dwelling, a shed, and a commercial automotive garage. The residential dwelling was constructed in 1964 with a concrete block foundation. The exterior is finished in red brick with a sloped shingle style roof. The commercial garage at 1464 Bankfield Road was constructed in 1997 with a slab-on-grade concrete foundation and concrete block walls with a flat style roof. The dwelling and garage are heated by electrical baseboard heaters and ceiling suspended (electric) furnace, respectively.

1468 Bankfield Road is occupied by a 2-storey residential dwelling and private garage. The dwelling was constructed in 1952 with a concrete block foundation, vinyl exterior and a sloped shingle style roof. The residence is heated by furnace oil.

The properties addressed 5479 and 5485 Elijah Court are occupied by single-storey residential dwellings with a single basement level, and private garages. The dwellings were constructed circa 1960 with concrete block foundations. The dwelling at 5479 Elijah Court is finished in an aggregate-mixed glass stucco and a sloped shingled style roof. The private garage was constructed with a slab-on-grade foundation and wooden structure with a shingled cover roof.

The residential dwelling at 5485 Elijah Court is constructed with a concrete block foundation, finished in vinyl siding exterior and a sloped shingled style roof.

The private garage is a slab-on-grade structure, also finished in vinyl siding with a sloped shingled roof.

Drinking Water Wells

The Phase I Property is situated in an area where potable water wells are relied upon. Each parcel/property is equipped with a private drinking well. Based on the well records, the wells were drilled between 1952 to 1962 to depths ranging from 18 to 38 m below the existing ground surface.

Areas of Natural Significance and Water Bodies

No areas of natural significance or natural water bodies were identified in the Phase I Study Area.

Neighbouring Land Use

Neighbouring land use in the Phase I study area consists primarily of residential. Land use is shown on Drawing PE5397-2R – Surrounding Land Use Plan.

Potentially Contaminating Activities and Areas of Potential Environmental Concern

As per Section 7.1 of the Phase I ESA report, four (4) PCAs and the resultant APECs are summarized in Table 1, along with their respective locations and contaminants of potential concern (CPCs).

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

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC 1: Resulting from the presence of two (2) exterior waste oil totes associated the service garage at 1464 Bankfield Road	Central north portion of the Phase I Property	PCA – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX PHCs (F_1-F_4)	Soil and groundwater
APEC 2: Resulting from fill material of unknown quality	Southcentral portion of the Phase I Property	PCA 30 – Importation of Fill Material of Unknown Quality	On-site	Metals PAHs	Soil
APEC 3: Resulting from the presence of a service garage at 1464 Bankfield Road	Northeastern portion of the Phase I Property	PCA 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-site	BTEX PHCs (F_1-F_4)	Soil and Groundwater

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

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil, and/or Sediment)
APEC 4: Resulting from the presence of a service small service garage Bankfield Road	Eastern portion of the Phase I Property	PCA 52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-site	BTEX PHCs (F_1-F_4)	Soil and Groundwater

Contaminants of Potential Concern

As per Section 7.1 of the Phase I ESA report, the contaminants of potential concern (CPCs) in soil and/or groundwater include benzene, toluene, ethylbenzene, and xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4), polycyclic aromatic hydrocarbons (PAHs) and metals.

Assessment of Uncertainty and/or Absence of Information

The information available for review as part of the preparation of the Phase I-ESA is considered to be sufficient to conclude that there are PCAs that have resulted in APECs on the Phase I Property. A variety of independent sources were consulted as part of this assessment, and as such, the conclusions of this report are not affected by uncertainty which may be present with respect to the individual sources.

3.4 Deviations from Sampling and Analysis Plan

There were no deviations from the Sampling and Analysis Plan which is included in Appendix 1 of this report.

3.5 Impediments

Private septic systems and potable water wells near the residential dwellings constrained the placement of some of the boreholes during the Phase II ESA field program.

4.0 INVESTIGATION METHOD

4.1 Subsurface Investigation

The subsurface investigation conducted for this Phase II ESA consisted of drilling nine (9) boreholes across the Phase II Property to address the APECs identified in the Phase I ESA and in conjunction with a geotechnical investigation in August 2021 and July 2022. The boreholes were drilled to a maximum depth of 10.52 m below ground surface (mbgs) to intercept groundwater.

The boreholes were drilled using a low clearance track mounted drill rig operated by George Downing Estate Drilling of Hawkesbury, Ontario, under full-time supervision of Paterson personnel. The borehole locations are indicated on the attached Drawing PE5397-3R - Test Hole Location Plan.

4.2 Soil Sampling

A total of 90 soil samples were obtained from the boreholes by means of grab sampling from auger flights/auger samples and split spoon sampling. Split spoon samples were taken at approximate 0.76 m intervals.

The depths at which auger samples and split spoon samples were obtained from the boreholes are shown as "**AU**" and "**SS**", respectively on the Soil Profile and Test Data Sheets.

The borehole profiles generally consist of fill material comprised of crushed stone, gravel and silty sand, followed by silty sand, overlying glacial till consisting of silty sand, gravel, cobbles and boulders.

The fill material encountered in the southeastern portion of the site was considered an APEC on the Phase I Property.

4.3 Field Screening Measurements

Soil samples recovered at the time of sampling were placed immediately into airtight plastic bags with nominal headspace.

All lumps of soil inside the bags were broken by hand, and the soil was allowed to come to room temperature prior to conducting the vapour survey. Allowing the samples to stabilize to room temperature ensures consistency of readings between samples.

To measure the soil vapours, the analyser probe is inserted into the nominal headspace above the soil sample. A photo ionization detector (PID) was used to measure the volatile organic vapour concentrations.

The sample is agitated/manipulated gently as the measurement is taken. The peak reading registered within the first 15 seconds is recorded as the vapour measurement.

The PID readings were found to range from 0 to 199 ppm in the soil samples obtained. These results are not necessarily indicative of contamination from volatile contaminants. Vapour readings are noted on the Soil Profile and Test Data Sheets in Appendix 1. The results of the vapour survey are presented on the Soil Profile and Test Data sheets.

4.4 Groundwater Monitoring Well Installation

Five (5) groundwater monitoring wells were installed on the Phase II Property as part of the subsurface investigation.

The monitoring wells consisted of 50 mm diameter, Schedule 40 threaded PVC risers and screens. Monitoring well construction details are listed below in Table 2 and are also presented on the Soil Profile and Test Data Sheets provided in Appendix 1.

Borehole locations and elevations were surveyed geodetically by Paterson personnel.

TABLE 2. Monitoring Well Construction Details

Well ID	Ground Surface Elevation	Total Depth (m BGS)	Screened Interval (m BGS)	Sand Pack (m BGS)	Bentonite Seal (m BGS)	Casing Type
BH1-21	101.11	10.52	6.91-9.91	6.55-9.91	0.18-6.55	Flushmount
BH2-21	99.36	9.14	5.53-8.53	5.26-8.53	0.18-5.26	Flushmount
BH3-21	99.19	9.14	5.59-8.59	5.33-8.69	0.18-5.69	Flushmount
BH1-22	96.89	8.99	5.99-8.99	5.60-8.99	0.18-5.60	Stick-up
BH2-22	95.76	6.68	3.86-6.86	2.42-6.86	0.18-2.42	Stick-up

4.5 Groundwater Sampling

Groundwater sampling protocols were followed using the MECP document entitled “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario”, dated May 1996. Groundwater samples were obtained from each monitoring well, using dedicated sampling equipment. Standing water was purged from each well prior to sampling. Samples were stored in coolers to reduce analyte volatilization during transportation. Details of our standard

operating procedure for groundwater sampling are provided in the Sampling and Analysis Plan in Appendix 1.

4.6 Analytical Testing

Based on the guidelines outlined in the Sampling and Analysis Plan appended to this report, the following soil and groundwater samples, as well as analyzed parameters, are presented in Tables 3 and 4.

TABLE 3: Soil Samples Submitted and Analyzed Parameters

Sample ID	Sample Depth / Stratigraphic Unit	Parameters Analyzed				Rationale
		BTEX	PHCs (F1-F4)	PAHs	Metals	
August 13, 2021						
BH1-21-SS3	1.52-2.13m Native	X	X			Assess the potential impact in soil due to the current use of the site.
BH2-21-SS2	0.76-1.37m Native	X	X			Assess the potential impact in soil due to the waste oil drums on-site.
BH3-21-SS5	2.29-2.89m Native	X	X			Assess the potential impact in soil due to the current use of the site as a garage.
DUP	0.76-1.37m Native	X	X			Duplicate soil sample (BH2-21-SS2) for QA/QC purposes.
August 16, 2021						
BH4-21-SS2	0.76-1.37m Fill			X	X	Assess the fill material of unknown quality.
BH4-21-SS4	2.52-2.89m Fill			X	X	
BH4-21-SS5	3.29-3.67m Fill			X	X	
BH5-21-SS2	0.76-1.37m Fill			X	X	
BH5-21-SS6	4.57-5.18m Fill			X	X	
July 11, 2022						
BH1-22-SS2	0.76-1.37m Fill			X	X	Assess the fill material of unknown quality.
BH1-22-SS6	3.81-4.42m Native	X	X			Assess the potential impact in soil due to the current use of temporary work area performing minor service repairs on off-road equipment.
BH2-22-SS5	3.05-3.66m Native	X	X			
DUP	3.81-4.42m Native	X	X			Duplicate soil sample (BH1-22-SS6) for QA/QC purposes.

TABLE 4: Groundwater Samples Submitted and Analyzed Parameters

Sample ID	Screened Interval	Parameters Analyzed		Rationale
		VOCs	PHCs (F1-F4)	
August 24, 2021				
BH1-21-GW1	6.91-9.61m	X	X	Assess potential groundwater impacts due to the current use as a garage.
BH2-21-GW1	5.53-8.53m	X	X	Assess potential groundwater impacts due to the presence of waste oil drums.
BH3-21-GW1	5.69-8.69m	X	X	Assess potential groundwater impacts due to the current use as a garage.
DUP	5.53-8.53m	X	X	Duplicate groundwater sample (BH3-GW1) for QA/QC purposes.
July 15, 2022				
BH1-22-GW1	5.99-8.99m	X	X	Assess potential groundwater impacts due to the current use of temporary work area performing minor service repairs on off-road equipment.
BH2-22-GW1	3.86-6.86m	X	X	
DUP1-22-GW1	5.99-8.99m	X	X	Duplicate groundwater sample (BH1-22-GW1) for QA/QC purposes.

Note:
VOC group of parameters includes BTEX

Paracel Laboratories (Paracel), of Ottawa, Ontario, performed the laboratory analysis on the samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Laboratory Accreditation (SCC/CALA). Paracel is accredited and certified by SCC/CALA for specific tests registered with the association.

4.7 Residue Management

All soil cuttings, purge water and fluids from equipment cleaning were retained on-site.

4.8 Elevation Surveying

Boreholes were surveyed at geodetic elevations by Paterson personnel.

4.9 Quality Assurance and Quality Control Measures

A summary of quality assurance and quality control (QA/QC) measures, including sampling containers, preservation, labelling, handling, and custody, equipment cleaning procedures, and field quality control measurements is provided in the Sampling and Analysis Plan in Appendix 1.

5.0 REVIEW AND EVALUATION

5.1 Geology

Site soils consist of topsoil or fill material consisting of crushed stone, gravel and silty sand, followed by silty sand, overlying glacial till consisting of silty sand, gravel, cobbles and boulders. The fill in BH1-21 to BH3-21 was limited to sand and gravel for use as access ways, while significant fill was identified in BH4-21, BH5-21 and BH1-22, with some fragments of brick, asphaltic concrete and/or wood.

Bedrock was not encountered during the field program, but rather inferred based on a dynamic cone penetration test (DCPT), where practical refusal was encountered at 24.8 m below the exiting grade.

Groundwater was encountered within the overburden at depths ranging from approximately 7.03 to 8.95 mbgs in August of 2021 and 3.76 to 6.45 m in July of 2022.

Site geology details are provided in the Soil Profile and Test Data Sheets provided in Appendix 1.

5.2 Groundwater Elevations, Flow Direction, and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling events on August 24, 2021, and July 15, 2022, using an electronic water level meter. Groundwater levels are summarized below in Table 5.

TABLE 5: Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
BH1-21	101.11	8.95	92.16	August 24, 2021
BH2-21	99.36	7.23	92.33	August 24, 2021
BH3-21	99.19	7.03	92.16	August 24, 2021
BH1-22	96.89	4.23	92.66	July 15, 2022
BH2-22	95.76	3.01	92.75	July 15, 2022
BH2-21	99.36	6.21	93.15	July 15, 2022
BH3-21	99.19	6.45	92.71	July 15, 2022

Based on the groundwater elevations measured during the sampling event, groundwater contour mapping was completed. Groundwater contours are shown on Drawing PE5397-3R.

Based on the contour mapping, groundwater flow at the subject site is in a northerly direction. A horizontal hydraulic gradient of approximately 0.02m/m was calculated.

5.3 Fine-Coarse Soil Texture

Grain-size analysis was not completed for the Phase II Property. As such, the more stringent, coarse-grained soil standards were used.

5.4 Soil: Field Screening

Field screening of the soil samples collected during drilling resulted in vapour readings ranging from 0 to 199 ppm. The field screening results of each individual soil sample are provided on the Soil Profile and Test Data Sheets appended to this report.

5.5 Soil Quality

Eight (8) soil samples plus a duplicate sample were submitted for BTEX, PHCs (F1-F4), PAHs and/or metals analysis. The results of the analytical testing are presented below in Tables 6, 7 and 8. The laboratory certificates of analysis are provided in Appendix 1.

TABLE 6: Analytical Test Results – Soil
BTEX and PHCs F_1-F_4

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 2 Commercial Standards (µg/g)
		August 13, 2021			August 16, 2021	
		BH1-21-SS3	BH2-21-SS2	DUP	BH3-21-SS5	
Benzene	0.02	nd	nd	nd	nd	0.32
Toluene	0.05	nd	nd	nd	nd	6.4
Ethylbenzene	0.05	nd	nd	nd	nd	1.1
Xylenes	0.05	nd	nd	nd	nd	26
PHC F_1	7	nd	nd	nd	nd	55
PHC F_2	4	nd	nd	nd	nd	230
PHC F_3	8	nd	nd	nd	nd	1700
PHC F_4	6	nd	nd	nd	nd	3300

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- DUP (BH2-21-SS2)

TABLE 6 Continued: Analytical Test Results – Soil
BTEX and PHCs F_1-F_4

Parameter	MDL (µg/g)	Soil Samples (µg/g) July 11, 2022			MECP Table 2 Commercial Standards (µg/g)
		BH1-22-SS6	BH2-22-SS5	DUP	
Benzene	0.02	nd	nd	nd	0.32
Toluene	0.05	nd	nd	nd	6.4
Ethylbenzene	0.05	nd	nd	nd	1.1
Xylenes	0.05	nd	nd	nd	26
PHC F_1	7	nd	nd	nd	55
PHC F_2	4	nd	9	nd	230
PHC F_3	8	nd	36	nd	1700
PHC F_4	6	nd	nd	nd	3300

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- DUP (BH1-22-SS6)

No detectable BTEX or PHC parameters were identified in any of the soil samples analyzed, with the exception of PHCs, fractions F2 and F3 concentrations in Sample BH2-22-SS5; however, all of the test results comply with the selected MECP Table 2 Commercial Standards. The soil results also comply with the MECP Table 1 Standards.

TABLE 7: Analytical Test Results – Soil
Metals

Parameter	MDL (µg/g)	Soil Samples (µg/g) August 16, 2021			MECP Table 2 Commercial Standards (µg/g)
		BH4-21-SS2	BH4-21-SS4	BH4-21-SS5	
Antimony	1.0	nd	nd	nd	40
Arsenic	1.0	2.7	2.7	3.2	18
Barium	1.0	100	159	163	670
Beryllium	0.5	nd	0.6	0.6	8
Boron	5.0	nd	nd	5.5	120
Cadmium	0.5	nd	nd	nd	1.9
Chromium	5.0	19.9	59.8	47.3	160
Cobalt	1.0	6.0	12.4	11.0	80
Copper	5.0	14.9	27.4	29.1	230
Lead	1.0	27.0	8.8	21.2	120
Molybdenum	1.0	nd	nd	nd	40
Nickel	5.0	13.9	33.3	27.9	270
Selenium	1.0	nd	nd	nd	5.5
Silver	0.3	nd	nd	nd	40
Thallium	1.0	nd	nd	nd	3.3
Uranium	1.0	nd	nd	nd	33
Vanadium	10.0	28.3	57.4	52.3	86
Zinc	20.0	55.5	67.2	73.1	340

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

TABLE 7 Continued: Analytical Test Results – Soil
Metals

Parameter	MDL (µg/g)	Soil Samples (µg/g)			MECP Table 2 Commercial Standards (µg/g)
		August 16, 2021		July 11, 2022	
		BH5-21-SS2	BH5-21-SS6	BH1-22-SS2	
Antimony	1.0	nd	nd	nd	40
Arsenic	1.0	3.2	2.2	2.8	18
Barium	1.0	110	69.8	110	670
Beryllium	0.5	nd	nd	nd	8
Boron	5.0	nd	6.6	nd	120
Cadmium	0.5	nd	nd	nd	1.9
Chromium	5.0	29.9	16.2	30.2	160
Cobalt	1.0	7.8	6.5	7.8	80
Copper	5.0	24.5	13.6	17.7	230
Lead	1.0	62.0	11.7	27.5	120
Molybdenum	1.0	nd	nd	nd	40
Nickel	5.0	18.4	11.8	17.7	270
Selenium	1.0	nd	nd	nd	5.5
Silver	0.3	nd	nd	nd	40
Thallium	1.0	nd	nd	nd	3.3
Uranium	1.0	nd	nd	nd	33
Vanadium	10.0	35.5	26.1	35.7	86
Zinc	20.0	73.5	29.0	61.4	340

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

Metal parameters were detected in all of the soil samples analyzed. All of these concentrations comply with the selected MECP Table 2 Commercial Standards. The results also comply with the MECP Table 1 Standards.

TABLE 8: Analytical Test Results – Soil
PAHs

Parameter	MDL (µg/g)	Soil Samples (µg/g)			MECP Table 2 Commercial Standards (µg/g)
		August 16, 2021			
		BH4-21-SS2	BH4-21-SS4	BH4-21-SS5	
Acenaphthene	0.02	nd	nd	0.05	21
Acenaphthylene	0.02	0.09	nd	nd	0.15
Anthracene	0.02	0.09	nd	0.02	0.67
Benzo[a]anthracene	0.02	0.16	nd	0.03	0.96
Benzo[a]pyrene	0.02	0.19	0.02	0.03	0.3
Benzo[b]fluoranthene	0.02	0.21	nd	0.04	0.96
Benzo[g,h,i]perylene	0.02	0.18	0.03	0.02	9.6
Benzo[k]fluoranthene	0.02	0.10	nd	nd	0.96
Chrysene	0.02	0.15	0.02	0.03	9.6
Dibenzo[a,h]anthracene	0.02	0.04	nd	nd	0.1
Fluoranthene	0.02	0.26	0.03	0.06	9.6
Fluorene	0.02	nd	nd	0.05	62
Indeno [1,2,3-cd] pyrene	0.02	0.10	nd	nd	0.76
1-Methylnaphthalene	0.02	nd	nd	nd	30
2-Methylnaphthalene	0.02	0.02	nd	nd	30
Methylnaphthalene (1&2)	0.04	0.04	nd	nd	30
Naphthalene	0.01	0.02	nd	0.01	9.6
Phenanthrene	0.02	0.13	nd	0.08	12
Pyrene	0.02	0.25	0.03	0.05	96

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

TABLE 8 Continued: Analytical Test Results – Soil
PAHs

Parameter	MDL (µg/g)	Soil Samples (µg/g)			MECP Table 2 Commercial Standards (µg/g)
		August 16, 2021		July 15, 2022	
		BH5-21-SS2	BH5-21-SS6	BH1-22-SS2	
Acenaphthene	0.02	0.02	nd	nd	21
Acenaphthylene	0.02	0.02	nd	0.04	0.15
Anthracene	0.02	0.06	nd	0.06	0.67
Benzo[a]anthracene	0.02	0.18	0.07	0.15	0.96
Benzo[a]pyrene	0.02	0.17	0.07	0.17	0.3
Benzo[b]fluoranthene	0.02	0.20	0.08	0.26	0.96
Benzo[g,h,i]perylene	0.02	0.14	0.05	0.15	9.6
Benzo[k]fluoranthene	0.02	0.11	0.03	0.11	0.96
Chrysene	0.02	0.21	0.09	0.19	9.6
Dibenzo[a,h]anthracene	0.02	0.03	nd	0.04	0.1
Fluoranthene	0.02	0.37	0.16	0.22	9.6
Fluorene	0.02	nd	nd	nd	62
Indeno [1,2,3-cd] pyrene	0.02	0.12	0.04	0.13	0.76
1-Methylnaphthalene	0.02	nd	nd	nd	30
2-Methylnaphthalene	0.02	0.02	nd	nd	30
Methylnaphthalene (1&2)	0.04	0.04	nd	nd	30
Naphthalene	0.01	0.02	0.01	0.01	9.6
Phenanthrene	0.02	0.25	0.15	0.08	12
Pyrene	0.02	0.30	0.13	0.21	96

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

PAH parameters were detected in all of the soil samples analyzed. All of these concentrations comply with the selected MECP Table 2 Commercial Standards. The results also comply with the MECP Table 1 Standards.

The analytical results for BTEX, PHCs, PAHs and Metals tested in soil are shown on Drawing PE5397-4R– Analytical Testing Plan – Soil.

The maximum concentrations of analyzed parameters in the soil at the site are summarized below in Table 9.

TABLE 9: Maximum Concentrations – Soil

Parameter	Maximum Concentration (µg/g)	Borehole	Depth Interval (m BGS)
PHC-F2	9	BH2-22-SS5	3.05-3.66m; Native
PHC-F3	36	BH2-22-SS5	3.05-3.66m; Native
Arsenic	3.2	BH4-21-SS4	1.52-2.13m; Fill
Barium	163	BH4-21-SS5	2.29-2.89m; Fill
Beryllium	0.6		
Boron	6.6	BH5-21-SS6	4.57-5.18m; Fill
Chromium	59.8	BH4-21-SS4	1.52-2.13m; Fill
Cobalt	12.4		
Copper	27.4		
Lead	62.0	BH5-21-SS2	0.76-1.37m; Fill
Nickel	33.3	BH4-21-SS4	
Vanadium	57.4		
Zinc	73.5	BH5-21-SS2	0.76-1.37m; Fill
Acenaphthylene	0.09	BH4-21-SS2	0.76-1.37m; Fill
Anthracene	0.09		
Benzo[a]anthracene	0.18	BH5-21-SS2	0.76-1.37m; Fill
Benzo[a]pyrene	0.19	BH4-21-SS2	0.76-1.37m; Fill
Benzo[b]fluoranthene	0.21		
Benzo[g,h,i]perylene	0.18		
Benzo[k]fluoranthene	0.11	BH5-21-SS2	0.76-1.37m; Fill
Chrysene	0.21		
Dibenzo[a,h]anthracene	0.04	BH4-21-SS2	0.76-1.37m; Fill
Fluoranthene	0.37	BH5-21-SS2	0.76-1.37m; Fill
Fluorene	0.05	BH4-21-SS4	
Indeno [1,2,3-cd] pyrene	0.13	BH1-22-SS2	0.76-1.37m; Fill
2-Methylnaphthalene	0.02	BH4-21-SS2; BH5-21-SS2	0.76-1.37m; Fill
Methylnaphthalene (1&2)	0.04		
Naphthalene	0.02		
Phenanthrene	0.25	BH5-21-SS2	0.76-1.37m; Fill
Pyrene	0.30		

No other parameters were identified above the laboratory method detection limits.

5.6 Groundwater Quality

Groundwater samples from monitoring wells installed in BH1-21, BH2-21, BH3-21, BH1-22 and BH2-22 and duplicate groundwater samples were submitted for laboratory analysis of VOCs, which includes BTEX and PHC (fractions F1-F4) analyses. The groundwater samples were obtained from the screened intervals noted in Table 2. The results of the analytical testing are presented in Tables 10 and 11. The laboratory certificates of analysis are provided in Appendix 1.

TABLE 10: Analytical Test Results – Groundwater
BTEX and PHCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 2 Standards (µg/L)
		August 24, 2021				
		BH1-21-GW	BH2-21-GW	BH3-21-GW	DUP	
Benzene	0.5	nd	nd	nd	nd	0.5
Toluene	0.5	nd	nd	nd	nd	24
Ethylbenzene	0.5	nd	nd	nd	nd	2.4
Xylenes	0.5	nd	nd	nd	nd	72
PHC F_1	25	nd	nd	nd	NA	450
PHC F_2	100	nd	nd	nd	NA	150
PHC F_3	100	nd	nd	nd	NA	500
PHC F_4	100	nd	nd	nd	NA	500

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- NA – Parameter not analyzed
- DUP (BH3-21-GW)

TABLE 10 Continued: Analytical Test Results – Groundwater
BTEX and PHCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)			MECP Table 2 Standards (µg/L)
		July 15, 2022			
		BH1-22-GW1	BH2-22-GW1	DUP1-22-GW1	
Benzene	0.5	nd	nd	nd	0.5
Toluene	0.5	nd	nd	nd	24
Ethylbenzene	0.5	nd	nd	nd	2.4
Xylenes	0.5	nd	nd	nd	72
PHC F_1	25	nd	nd	nd	450
PHC F_2	100	nd	nd	nd	150
PHC F_3	100	nd	nd	nd	500
PHC F_4	100	nd	nd	nd	500

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

No detectable BTEX or PHC concentrations were identified in the groundwater samples analyzed. The groundwater results comply with the MECP Table 2 Standards.

TABLE 11: Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)		MECP Table 2 Standards (µg/L)
		August 24, 2021		
		BH1-21-GW	BH2-21-GW	
Acetone	5.0	nd	nd	2700
Benzene	0.5	nd	nd	0.5
Bromodichloromethane	0.5	nd	nd	16
Bromoform	0.5	nd	nd	5
Bromomethane	0.5	nd	nd	0.89
Carbon Tetrachloride	0.2	nd	nd	0.2
Chlorobenzene	0.5	nd	nd	30
Chloroform	0.5	nd	nd	2
Dibromochloromethane	0.5	nd	nd	25
Dichlorodifluoromethane	1.0	nd	nd	590
1,2-Dichlorobenzene	0.5	nd	nd	3
1,3-Dichlorobenzene	0.5	nd	nd	59
1,4-Dichlorobenzene	0.5	nd	nd	0.5
1,1-Dichloroethane	0.5	nd	nd	5
1,2-Dichloroethane	0.5	nd	nd	0.5
1,1-Dichloroethylene	0.5	nd	nd	0.5
cis-1,2-Dichloroethylene	0.5	nd	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	nd	1.6
1,2-Dichloropropane	0.5	nd	nd	0.58
1,3-Dichloropropene, total	0.5	nd	nd	0.5
Ethylbenzene	0.5	nd	nd	2.4
Ethylene dibromide (dibromoethane, 1,2-)	0.2	nd	nd	0.2
Hexane	1.0	nd	nd	5
Methyl Ethyl Ketone (2-Butanone)	5.0	nd	nd	1800
Methyl Isobutyl Ketone	5.0	nd	nd	640
Methyl tert-butyl ether	2.0	nd	nd	15
Methylene Chloride	5.0	nd	nd	26
Styrene	0.5	nd	nd	5.4
1,1,1,2-Tetrachloroethane	0.5	nd	nd	1.1
1,1,2,2-Tetrachloroethane	0.5	nd	nd	0.5
Tetrachloroethylene	0.5	nd	nd	0.5
Toluene	0.5	nd	nd	24
1,1,1-Trichloroethane	0.5	nd	nd	23
1,1,2-Trichloroethane	0.5	nd	nd	0.5
Trichloroethylene	0.5	nd	nd	0.5
Trichlorofluoromethane	1.0	nd	nd	150
Vinyl Chloride	0.5	nd	nd	0.5
Xylenes, total	0.5	nd	nd	72

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

TABLE 11 Continued: Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L) July 15, 2022			MECP Table 2 Standards (µg/L)
		BH1-22-GW1	BH1-22-GW1	DUP1-22-GW1	
Acetone	5.0	nd	nd	nd	2700
Benzene	0.5	nd	nd	nd	0.5
Bromodichloromethane	0.5	nd	nd	nd	16
Bromoform	0.5	nd	nd	nd	5
Bromomethane	0.5	nd	nd	nd	0.89
Carbon Tetrachloride	0.2	nd	nd	nd	0.2
Chlorobenzene	0.5	nd	nd	nd	30
Chloroform	0.5	nd	nd	nd	2
Dibromochloromethane	0.5	nd	nd	nd	25
Dichlorodifluoromethane	1.0	nd	nd	nd	590
1,2-Dichlorobenzene	0.5	nd	nd	nd	3
1,3-Dichlorobenzene	0.5	nd	nd	nd	59
1,4-Dichlorobenzene	0.5	nd	nd	nd	0.5
1,1-Dichloroethane	0.5	nd	nd	nd	5
1,2-Dichloroethane	0.5	nd	nd	nd	0.5
1,1-Dichloroethylene	0.5	nd	nd	nd	0.5
cis-1,2-Dichloroethylene	0.5	nd	nd	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	nd	nd	1.6
1,2-Dichloropropane	0.5	nd	nd	nd	0.58
1,3-Dichloropropene, total	0.5	nd	nd	nd	0.5
Ethylbenzene	0.5	nd	nd	nd	2.4
Ethylene dibromide (dibromoethane, 1,2-)	0.2	nd	nd	nd	0.2
Hexane	1.0	nd	nd	nd	5
Methyl Ethyl Ketone (2-Butanone)	5.0	nd	nd	nd	1800
Methyl Isobutyl Ketone	5.0	nd	nd	nd	640
Methyl tert-butyl ether	2.0	nd	nd	nd	15
Methylene Chloride	5.0	nd	nd	nd	26
Styrene	0.5	nd	nd	nd	5.4
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	1.1
1,1,2,2-Tetrachloroethane	0.5	nd	nd	nd	0.5
Tetrachloroethylene	0.5	nd	nd	nd	0.5
Toluene	0.5	nd	nd	nd	24
1,1,1-Trichloroethane	0.5	nd	nd	nd	23
1,1,2-Trichloroethane	0.5	nd	nd	nd	0.5
Trichloroethylene	0.5	nd	nd	nd	0.5
Trichlorofluoromethane	1.0	nd	nd	nd	150
Vinyl Chloride	0.5	nd	nd	nd	0.5
Xylenes, total	0.5	nd	nd	nd	72

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL

The analytical results for VOCs and PHCs tested in groundwater are shown on Drawing PE5397-5R–Analytical Testing Plan – Groundwater.

All of the parameters analyzed were below the laboratory method detection limits.

5.7 Quality Assurance and Quality Control Results

All samples submitted as part of the August 2021 and July 2022 sampling events were handled in accordance with the Analytical Protocol with respect to preservation method, storage requirement, and container type.

As per Subsection 47(3) of O.Reg. 153/04, as amended, under the Environmental Protection Act, a Certificate of Analysis has been received for each sample submitted for analysis and all Certificates of Analysis are appended to this report.

Two (2) duplicate soil samples were obtained from BH2-21-SS2 and BH1-22-SS6 and analyzed for BTEX and PHCs (F1-F4), while two (2) groundwater samples from BH2-21-GW and BH1-22-GW1 were analyzed for PHCs (F1-F4) and VOCs. None of the analyzed parameter concentrations were detected above the laboratory limits.

Based on the analytical results, it is our opinion that the overall quality of the field data collected during this Phase II-ESA is considered to be sufficient to meet the overall objectives of this assessment.

5.8 Phase II Conceptual Site Model

The following section has been prepared in accordance with the requirements of O.Reg. 153/04, as amended by the Environmental Protection Act. Conclusions and recommendations are discussed in a subsequent section.

Site Description

Potentially Contaminating Activity and Areas of Potential Environmental Concern

As per Section 3.3, four (4) on-site PCAs resulted in APECs, which have been summarized in Table 1, along with their respective locations and contaminants of potential concern (CPCs).

Contaminants of Potential Concern

As per Section 3.3, the contaminants of potential concern (CPCs) in soil and/or groundwater include benzene, toluene, ethylbenzene, and xylenes (BTEX), petroleum hydrocarbons (PHCs, F1-F4), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and metals.

Subsurface Structures and Utilities

The Phase II Property is situated in an area where private services (potable water wells and septic systems) are relied upon. Other utilities and/or structures include electricity entering from Bankfield Road.

Physical Setting

Site Stratigraphy

The site stratigraphy, from ground surface to the deepest aquifer or aquitard investigated, is illustrated on Drawings PE5397-4A and 5A. The stratigraphy consists of:

- Topsoil was encountered in boreholes BH1-22 through BH4-22, extending to depths ranging from 0.15 to 0.30 mbgs.
- A fill layer consisting of crushed stone, gravel and silty was encountered in all of the boreholes, except in boreholes BH2-22, BH3-22 and BH4-22. Traces of clay and asphalt, wood and/or glass were identified in BH4-21, BH5-21 and BH1-22. This fill layer extended to depths of approximately 0.31 to 6.25 mbgs. Groundwater was encountered in this layer.
- Silty sand was encountered in BH1-21, BH2-21, BH3-21, BH2-22, BH3-22 and BH4-22, extending to depths of approximately 2.13 to 3.96 mbgs. Groundwater was not encountered in this layer.
- Glacial till consisting of silty sand, gravel, cobles and boulders was encountered in all of the boreholes, which were terminated in this layer at depths ranging from 5.18 to 10.52 mbgs. Groundwater was encountered in this layer in BH1-21, BH2-21, BH3-21, BH1-22 and BH2-22.

Hydrogeological Characteristics

Groundwater at the Phase II Property was encountered within the glacial till during the groundwater sampling events in August 2021 and July 2022. This unit is interpreted to function as the shallow aquifer on the Phase II Property.

Water levels were measured at the Phase II Property on August 24, 2021 and July 15, 2022. Groundwater levels in August 2021, ranged in depths from approximately 7.03 to 8.95m below grade. Groundwater levels in July 2022, ranged in depths from approximately 3.01 to 6.45m below grade. Groundwater levels are expected to fluctuate throughout the year.

Groundwater contour mapping was conducted for groundwater elevations identified during the July 2022 sampling event. Groundwater flow at the Phase II Property was in a northerly direction, with an average hydraulic gradient of approximately 0.02 m/m. Groundwater contours are shown on Drawing PE5397-3R – Test Hole Location Plan.

Approximate Depth to Bedrock

Bedrock was not encountered during the field program, but rather inferred based on a dynamic cone penetration test (DCPT), where practical refusal was encountered at 24.8 m below the exiting grade.

Approximate Depth to Water Table

The depth to the water table at the subject site varies between approximately 3.01 to 8.95m below existing grade.

Sections 35, 41 and 43.1 of the Regulation

Section 35 of O.Reg. 153/04 does not apply to the Phase II Property in that the property and properties within the study area rely upon potable groundwater.

Section 41 of O.Reg. 153/04 does not apply to the Phase II Property, as the property is not within 30m of an environmentally sensitive area.

Section 43.1 of O.Reg. 153/04 does not apply to the Phase II Property in that the property is not a Shallow Soil property.

Fill Placement

The fill material consisted of crushed stone, gravel and silty sand and was identified in all of the boreholes, except boreholes BH2-22, BH3-22 and BH4-22. Traces of clay, asphalt, wood and/or glass were identified in BH4-21, BH5-21 and BH1-22. The fill material extended to depths of approximately 0.31 to 6.25 mbgs.

Existing Buildings and Structures

1450 Bankfield Road is occupied by a single-storey residential dwelling and private garage. The dwelling was constructed in the early 1970s with a concrete block foundation and is heated by a propane fired furnace. The exterior of the dwelling is finished in vinyl siding and a sloped shingle style roof, while the private shed is finished in vinyl siding and a shingle style roof. The private shed is used to store lawn care equipment and a hobby car.

1454 Bankfield Road is occupied by a single-storey residential dwelling with a private garage and shed. The dwelling was constructed in the early 1970s with a concrete block foundation and heated by a propane fired furnace. The exterior of the dwelling is finished in red brick with a sloped shingle style roof, while the private shed and garage are both finished in vinyl siding with shingle covered roofs. The garage is constructed with a slab-on-grade concrete floor, which has been used to store equipment and tools, while lawn maintenance equipment and tools were stored in the private wooden shed. The south end of the property is occupied by a temporary workspace/garage, which was built using sheet metal cover, supported by in-ground 4x4 pressure treated wood columns and an above ground hoist. No signs of staining or sources of contamination were noted in the area of the make-shift workspace/garage. However, based on the presence of this make-shift garage, and given that small engine services have been conducted on-site, it represents an APEC.

1458 Bankfield Road is occupied by a single-storey residential dwelling and private garage. The dwelling was constructed in 1970 with a concrete block foundation and heated by a propane fired furnace. The exterior of the dwelling is finished in vinyl siding with a sloped shingle style roof. The private garage was constructed with a slab-on-grade foundation, while the building is finished in vinyl siding. The shed is currently used to store small recreational motor vehicles.

1464 Bankfield Road is occupied by a 2-storey residential dwelling, a shed, and a commercial automotive garage. The residential dwelling was constructed in 1964 with a concrete block foundation. The exterior is finished in red brick with a sloped shingle style roof. The commercial garage at 1464 Bankfield Road was constructed in 1997 with a slab-on-grade concrete foundation and concrete block walls with a flat style roof. The dwelling and garage are heated by electrical baseboard heaters and ceiling suspended (electric) furnace, respectively.

1468 Bankfield Road is occupied by a 2-storey residential dwelling and private garage. The dwelling was constructed in 1952 with a concrete block foundation, vinyl exterior and a sloped shingle style roof. The residence is heated by furnace oil.

The properties addressed 5479 and 5485 Elijah Court are occupied by single-storey residential dwellings with a single basement level, and private garages. The dwellings were constructed circa 1960 with concrete block foundations. The dwelling at 5479 Elijah Court is finished in an aggregate-mixed glass stucco and a sloped shingled style roof. The private garage was constructed with a slab-on-grade foundation and wooden structure with a shingled cover roof.

The residential dwelling at 5485 Elijah Court is constructed with a concrete block foundation, finished in vinyl siding exterior and a sloped shingled style roof. The private garage is a slab-on-grade structure, also finished in vinyl siding with a sloped shingled roof.

Proposed Buildings and Other Structures

The proposed development for the Phase II Property will include a commercial automotive dealership with associated parking and vehicular storage.

Areas of Natural Significance and Natural Water Bodies

There are no areas of natural significance or natural water bodies in the Phase I Study Area.

Environmental Condition

Areas Where Contaminants are Present

Based on the analytical results for soil and groundwater, there are no contaminants present on or beneath the Phase II Property.

Types of Contaminants

Based on the analytical results for soil and groundwater, there are no contaminants on or beneath the Phase II Property.

Contaminated Media

Based on the analytical results for soil and groundwater, there are no contaminated media on the Phase II Property.

What Is Known About Areas Where Contaminants Are Present

Based on the findings of the Phase II ESA, soil and groundwater beneath the Phase II Property comply with the MECP Table 2 Standards.

Distribution and Migration of Contaminants

Based on the findings of the Phase II ESA, distribution and migration of contaminants is not considered to have occurred on the Phase II Property.

Discharge of Contaminants

Based on the findings of the Phase II ESA, soil and groundwater concentrations comply with the selected MECP Table 2 Standards. Discharge of contaminants is not considered to have occurred on the Phase II Property.

Climatic and Meteorological Conditions

In general, climatic and meteorological conditions have the potential to affect contaminant distribution. Two (2) ways by which climatic and meteorological conditions may affect contaminant distribution include the downward leaching of contaminants by means of the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally.

Based on the analytical results, contaminant distribution is not considered to have occurred on the Phase II Property.

Potential for Vapour Intrusion

Based on the findings of the Phase II ESA, there is no potential for vapour intrusion on the Phase II Property.

6.0 CONCLUSIONS

6.1 Assessment

A Phase II ESA was conducted for the property addressed 1450, 1454, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court, in the Ottawa, Ontario. The purpose of the Phase II ESA was to address potentially contaminating activities (PCAs) that were identified during the Phase I ESA and considered to result in areas of potential environmental concern (APECs) on the Phase II Property.

The subsurface investigations were conducted in August 2021 and July 2022. The program consisted of nine (9) boreholes, five (5) of which were instrumented with groundwater monitoring wells. The general soil profile encountered during the field program consisted of crushed stone, gravel and silty sand was encountered in all of the boreholes, except in boreholes BH2-22, BH3-22 and BH4-22. Traces of clay and asphalt, wood and/or glass were identified in BH4-21, BH5-21 and BH1-22, followed by a silty sand layer with traces of gravel in BH1-21, BH2-21, BH3-21, BH1-22, BH2-22, BH3-22 and BH4-22, overlying glacial till. All of the boreholes were terminated in this layer at depths ranging from 6.71 to 10.52mbgs. Bedrock was inferred, based on a dynamic cone penetration test (DCPT), where practical refusal was encountered at 24.8 m below the exiting grade in BH5-21.

Thirteen (13) soil samples, including duplicate samples, were submitted for laboratory analyses of benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHCs, Fractions F_1-F_4), polycyclic aromatic hydrocarbons (PAHs) and/or metals. All of the soil results complied with MECP Table 2 Commercial Standards.

Groundwater samples from monitoring wells BH1-21, BH2-21, BH3-21, BH1-22 and BH2-22 were collected on the August 24, 2021, and July 15, 2022, sampling events. No free product or petroleum hydrocarbon sheen was noted on the purge water during the groundwater sampling events.

Groundwater samples as well as duplicate samples were analyzed for volatile organic compounds (VOCs), which included the BTEX group, and PHCs (F1-F4). All of the groundwater results complied with the MECP Table 2 Standards.

Based on the findings of the Phase II ESA, no further environmental investigation is recommended at this time.

6.2 Recommendations

It is our understanding that the Phase II Property will be redeveloped with an automotive dealership with an asphaltic concrete paved area which will utilize at least half of the property.

Any excess soil requiring off-site disposal during construction must be managed in accordance with Ontario Regulation 406/19 – On-site and Excess Soil Management. The presence of the wood, brick and asphaltic concrete may restrict the reuse of this material if off-site removal is required for construction purposes. Any soils deemed excess during the site development will require additional analytical testing to determine the appropriate method of disposal. It is recommended that the future redevelopment be designed to minimize the volume of excess soil that will be generated and require off-site disposal.

Monitoring Wells

If the monitoring wells installed on the Phase II Property are not going to be used in the future, or will be destroyed during site redevelopment, they should be abandoned according to Ontario Regulation 903. The wells will be registered with the MECP under this regulation. More information can be provided regarding the decommissioning of these wells.

7.0 STATEMENT OF LIMITATIONS

This Phase II - Environmental Site Assessment report has been prepared by a Qualified Person (QP), in general accordance with O.Reg. 153/04, as amended, and CSA Z769-00. The conclusions presented herein are based on information gathered from a limited sampling and testing program. The test results represent conditions at specific test locations at the time of the field program.

The client should be aware that any information pertaining to soils and all test hole logs are furnished as a matter of general information only and test hole descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those of the test holes themselves.

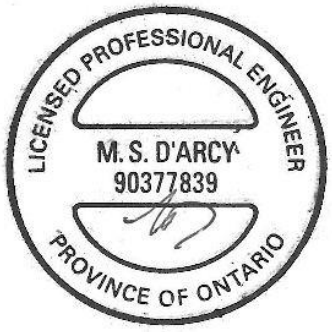
Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Myers Automotive Group. Notification from Myers Automotive Group and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Mandy Witteman, B.Eng., M.A.Sc., P.Eng.

Mark S. D'Arcy, P.Eng., QP_{ESA}



Report Distribution:

- ❒ Myers Automotive Group
- ❒ Paterson Group Inc.

FIGURES

Figure 1 - Key Plan

Drawing PE5397-1R– Site Plan

Drawing PE5397-2R– Surrounding Land Use Plan

Drawing PE5397-3R – Test Hole Location Plan & Groundwater Contour Plan

Drawing PE5397-4R – Analytical Testing Plan – Soil

Drawing PE5397-4AR – Cross-section A – A' – Soil

Drawing PE5397-5R – Analytical Testing Plan – Groundwater

Drawing PE5397-5AR – Cross-section A – A' – Groundwater

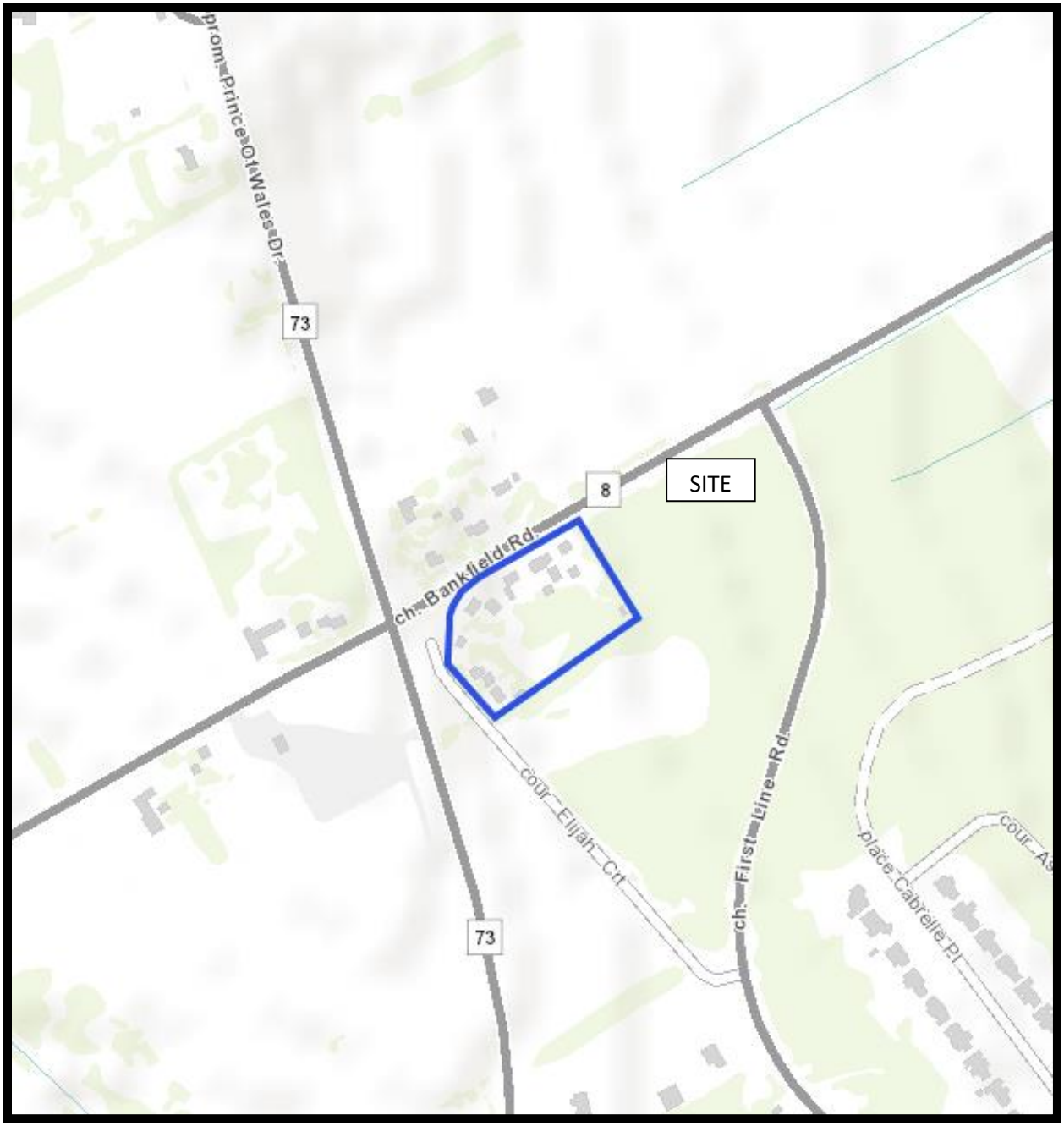
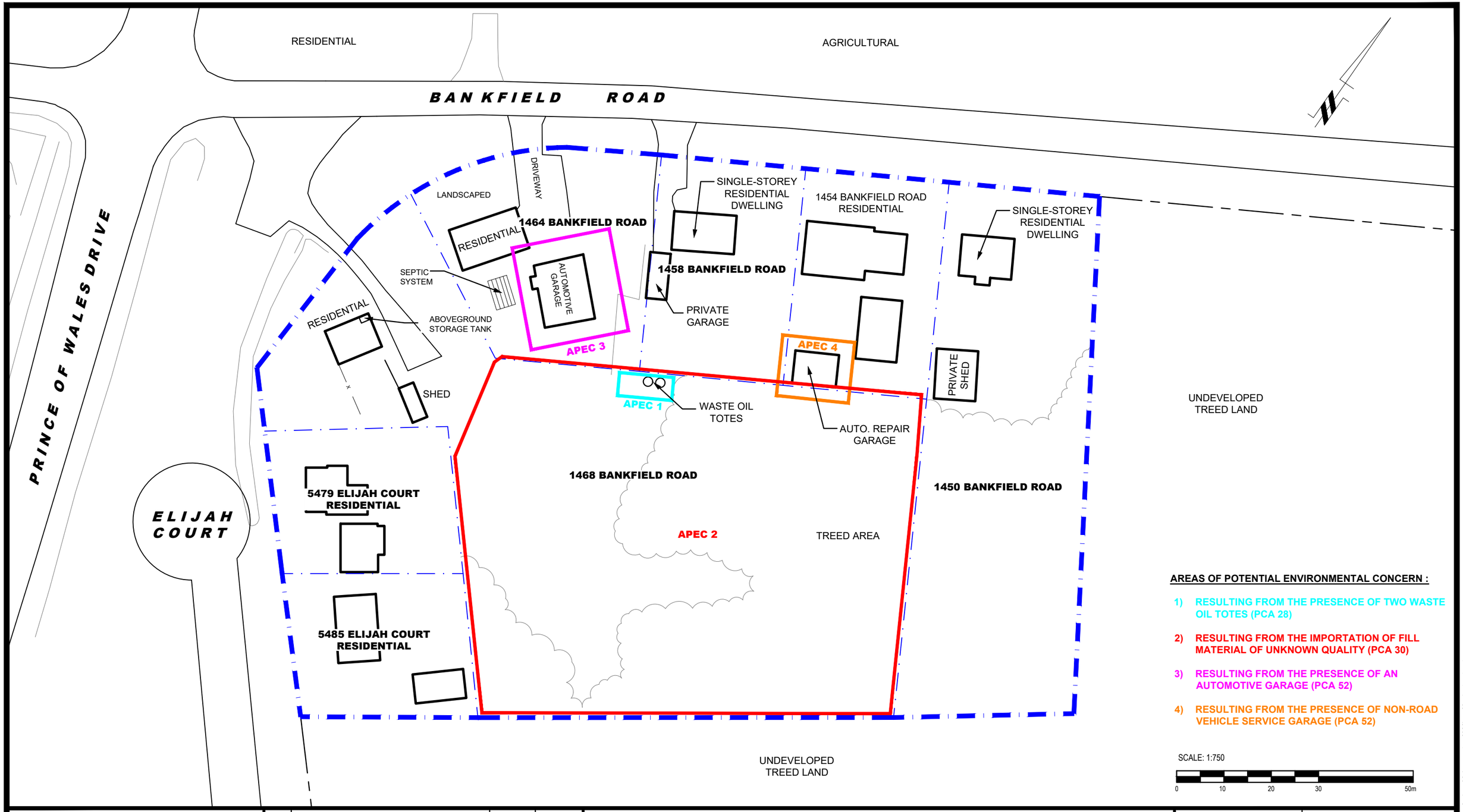


FIGURE 1

KEY PLAN

PATERSON GROUP



AREAS OF POTENTIAL ENVIRONMENTAL CONCERN :

1) RESULTING FROM THE PRESENCE OF TWO WASTE OIL TOTES (PCA 28)
2) RESULTING FROM THE IMPORTATION OF FILL MATERIAL OF UNKNOWN QUALITY (PCA 30)
3) RESULTING FROM THE PRESENCE OF AN AUTOMOTIVE GARAGE (PCA 52)
4) RESULTING FROM THE PRESENCE OF NON-ROAD VEHICLE SERVICE GARAGE (PCA 52)

SCALE: 1:750

0 10 20 30 50m

PATERSON GROUP
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TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

MYERS AUTOMOTIVE GROUP

PHASE I - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD, & 5479 & 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-1R2
Checked by: MW	Dwg. No.: PE5397-1R
Approved by: MSD	Revision No.:

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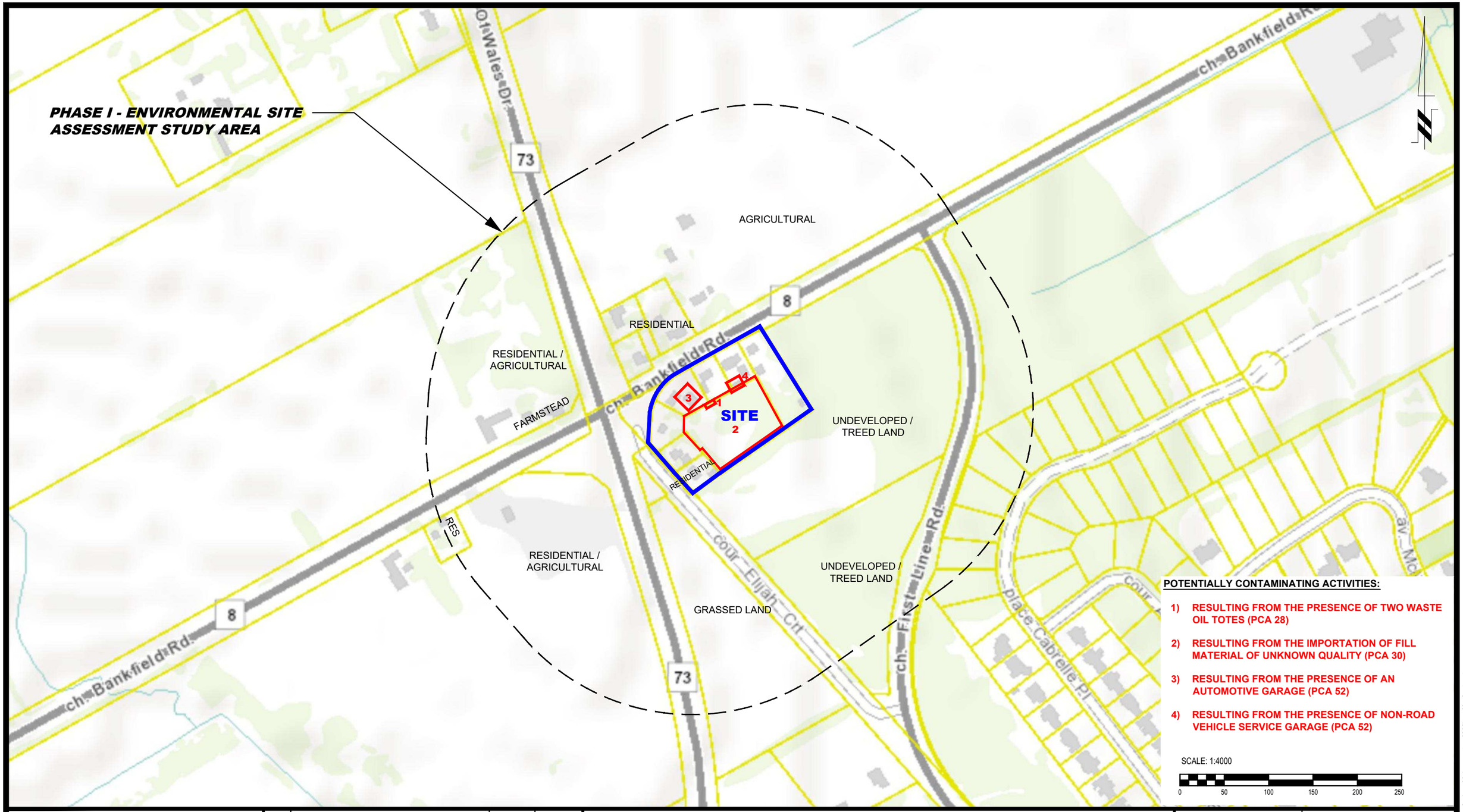

POTENTIALLY CONTAMINATING ACTIVITIES:

1) RESULTING FROM THE PRESENCE OF TWO WASTE OIL TOTES (PCA 28)
2) RESULTING FROM THE IMPORTATION OF FILL MATERIAL OF UNKNOWN QUALITY (PCA 30)
3) RESULTING FROM THE PRESENCE OF AN AUTOMOTIVE GARAGE (PCA 52)
4) RESULTING FROM THE PRESENCE OF NON-ROAD VEHICLE SERVICE GARAGE (PCA 52)

SCALE: 1:4000

0 50 100 150 200 250

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PHASE I - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD, & 5479 & 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:4000	Date: 10/2022
Drawn by: YA	Report No.: PE5397-1R2
Checked by: MW	Dwg. No.: PE5397-2R
Approved by: MSD	Revision No.:

11x17

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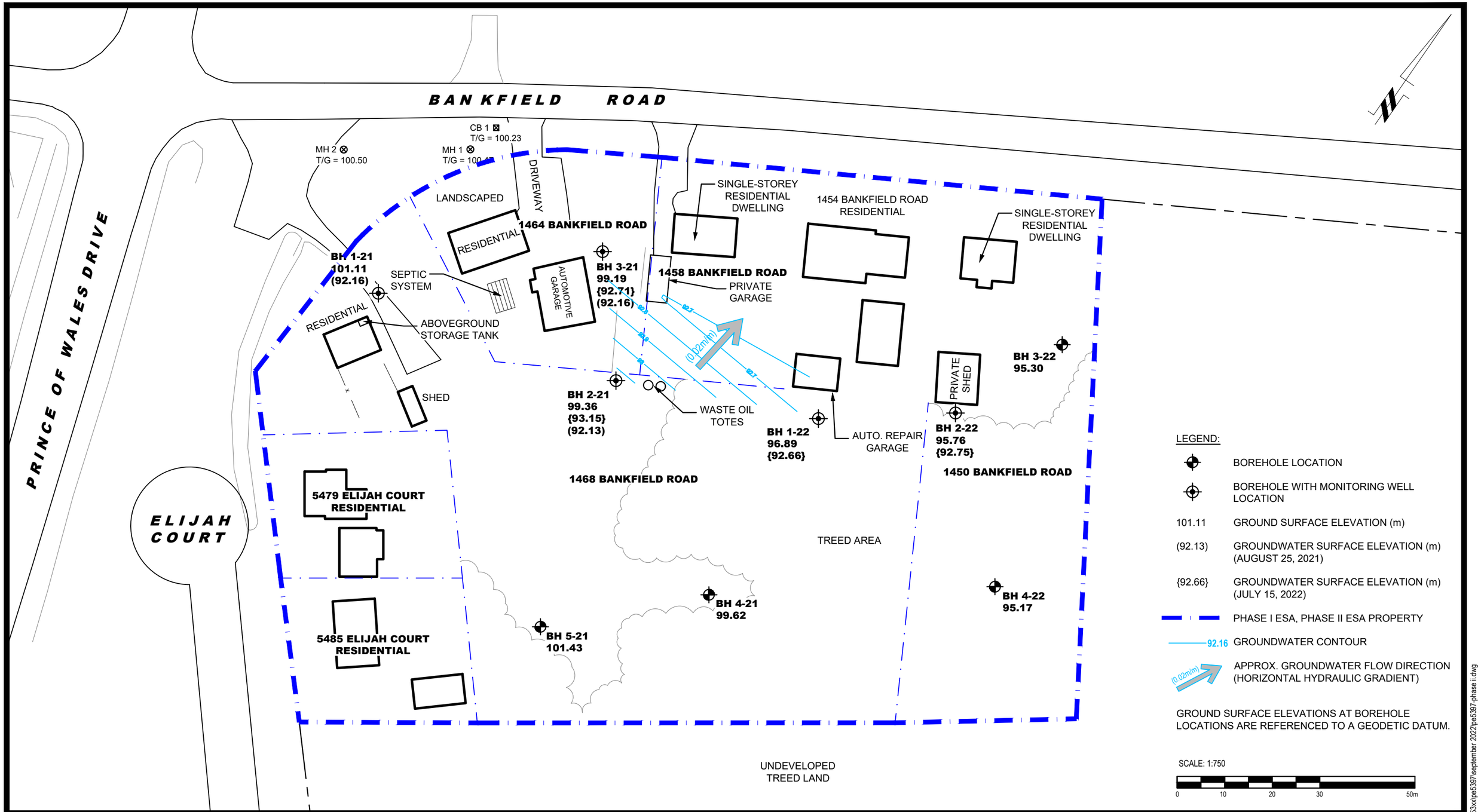

LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- 101.11 GROUND SURFACE ELEVATION (m)
- (92.13) GROUNDWATER SURFACE ELEVATION (m) (AUGUST 25, 2021)
- {92.66} GROUNDWATER SURFACE ELEVATION (m) (JULY 15, 2022)
- PHASE I ESA, PHASE II ESA PROPERTY
- 92.16 GROUNDWATER CONTOUR
- (0.02m/m) APPROX. GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:750

0 10 20 30 50m

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD & 5479, 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-2R
Checked by: MW	Dwg. No.: PE5397-3R
Approved by: MSD	Revision No.:

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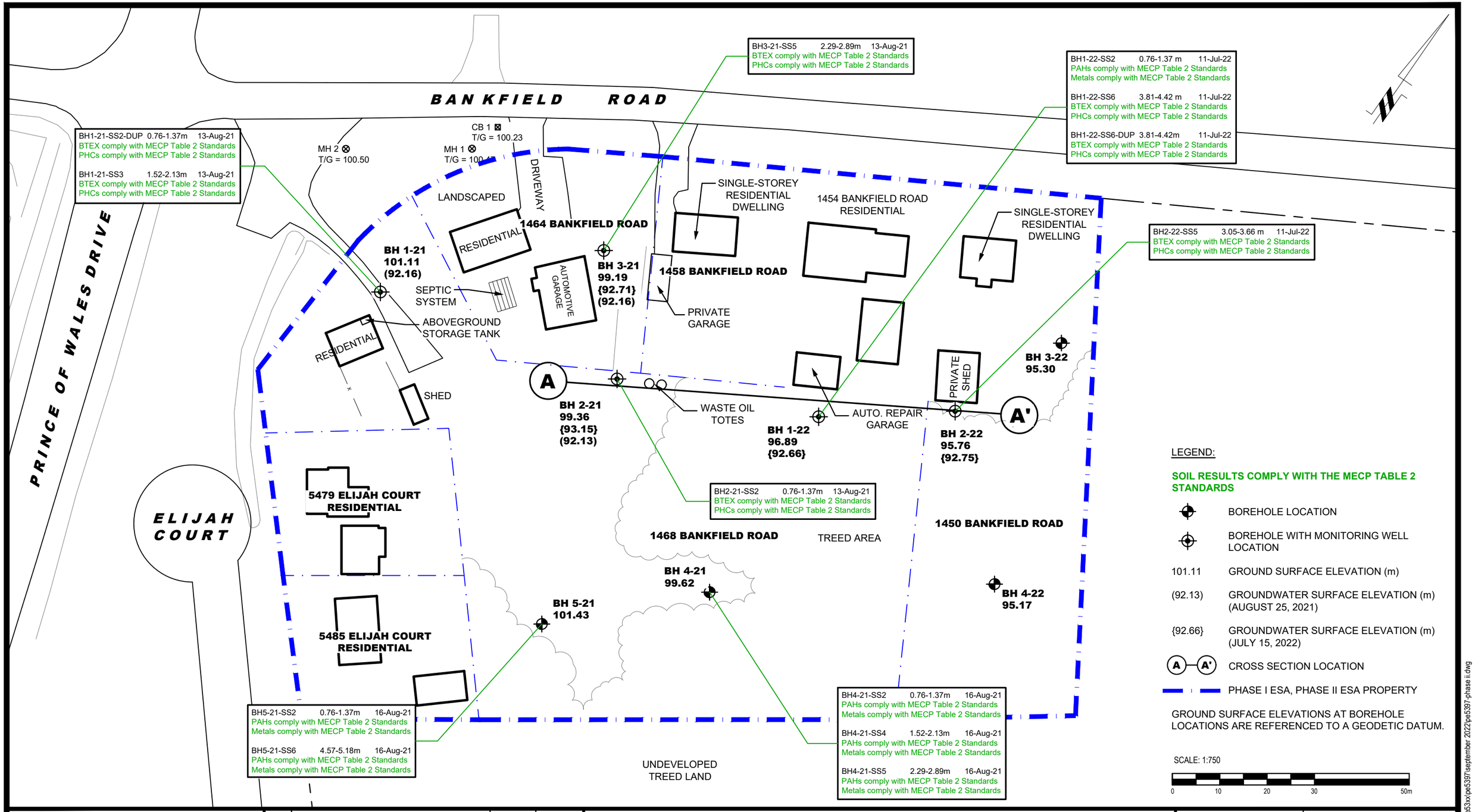

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD & 5479, 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - SOIL

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-2R
Checked by: MW	Dwg. No.: PE5397-4R
Approved by: MSD	Revision No.:

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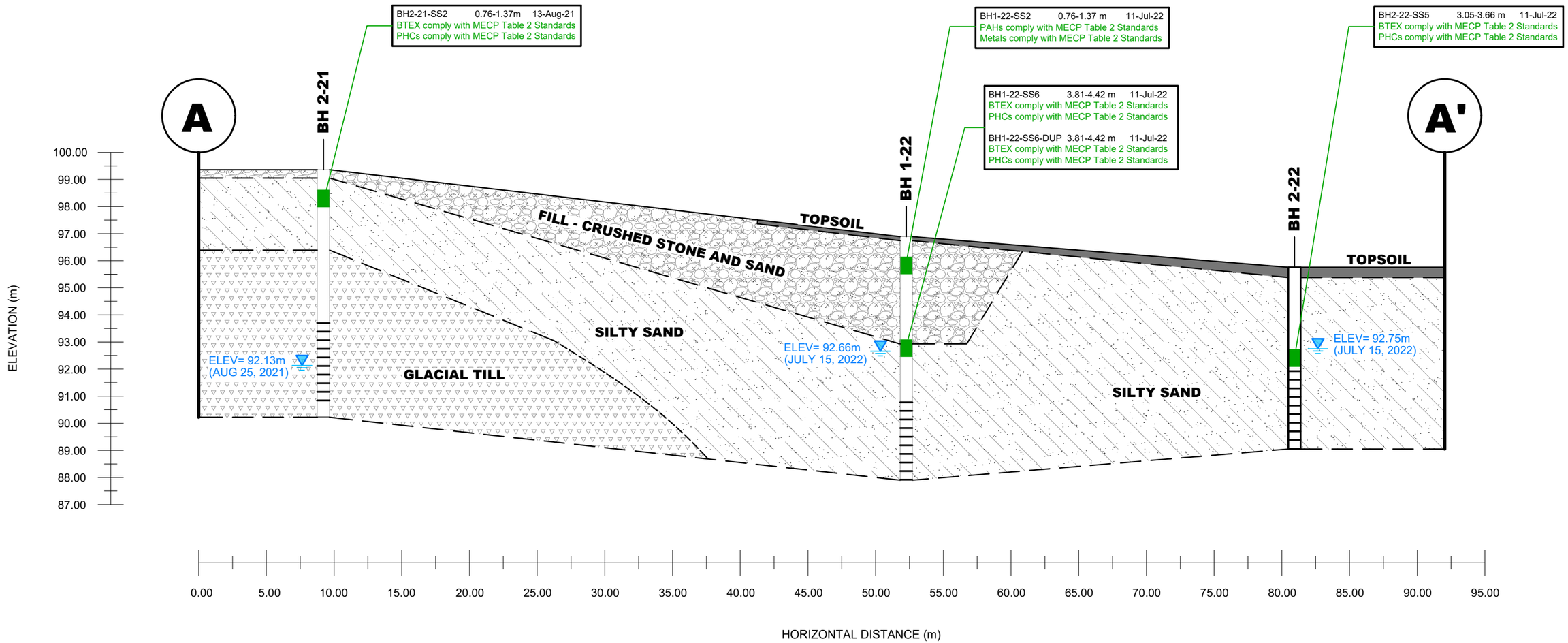

SOIL RESULTS COMPLY WITH THE MECP TABLE 2 STANDARDS

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD & 5479, 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-2R
Checked by: MW	Dwg. No.: PE5397-4AR
Approved by: MSD	Revision No.:

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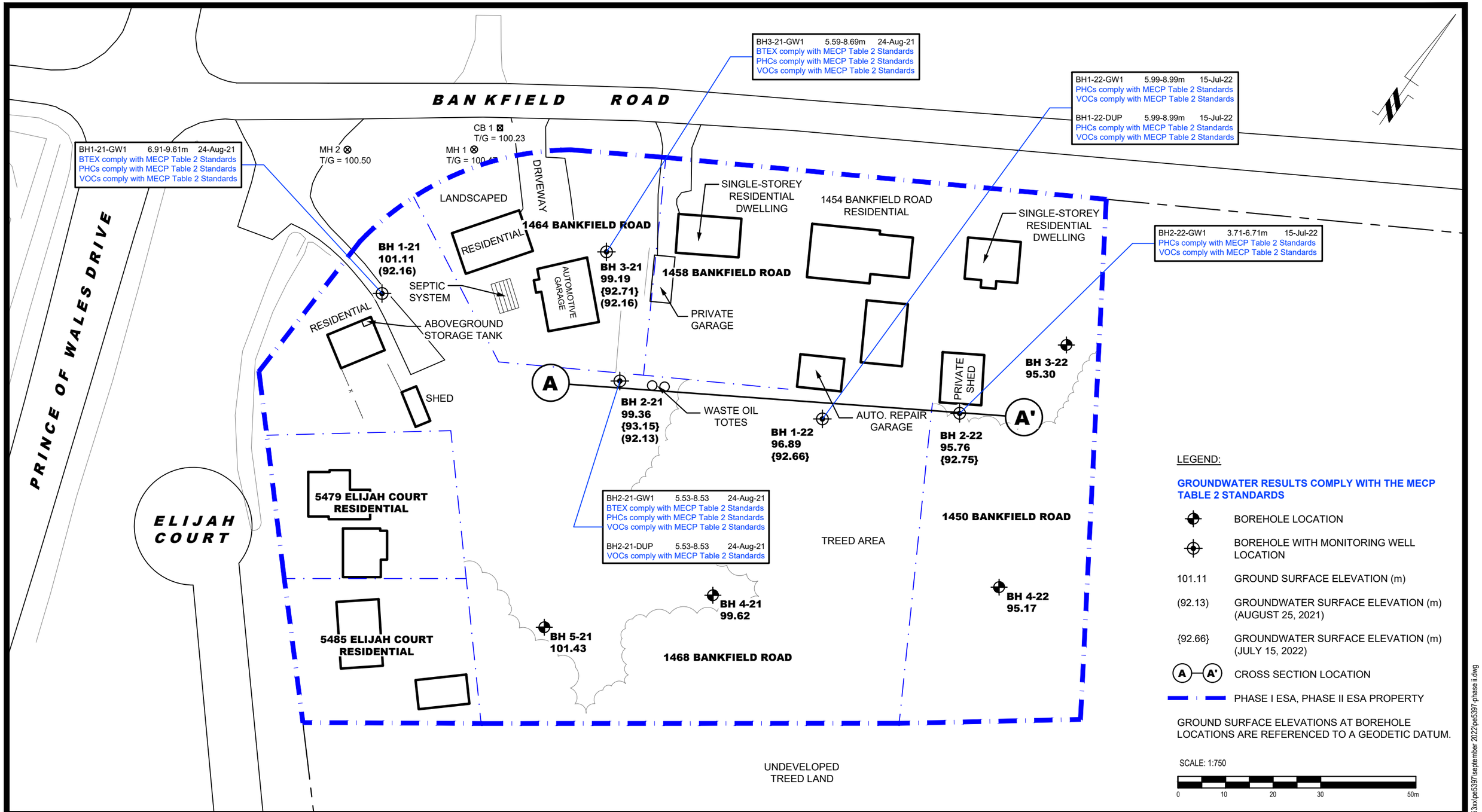

LEGEND:

GROUNDWATER RESULTS COMPLY WITH THE MECP TABLE 2 STANDARDS

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- 101.11 GROUND SURFACE ELEVATION (m)
- (92.13) GROUNDWATER SURFACE ELEVATION (m) (AUGUST 25, 2021)
- {92.66} GROUNDWATER SURFACE ELEVATION (m) (JULY 15, 2022)
- A—A' CROSS SECTION LOCATION
- PHASE I ESA, PHASE II ESA PROPERTY

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:750

0 10 20 30 50m

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD & 5479, 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - GROUNDWATER

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-2R
Checked by: MW	Dwg. No.: PE5397-5R
Approved by: MSD	Revision No.:

11x17

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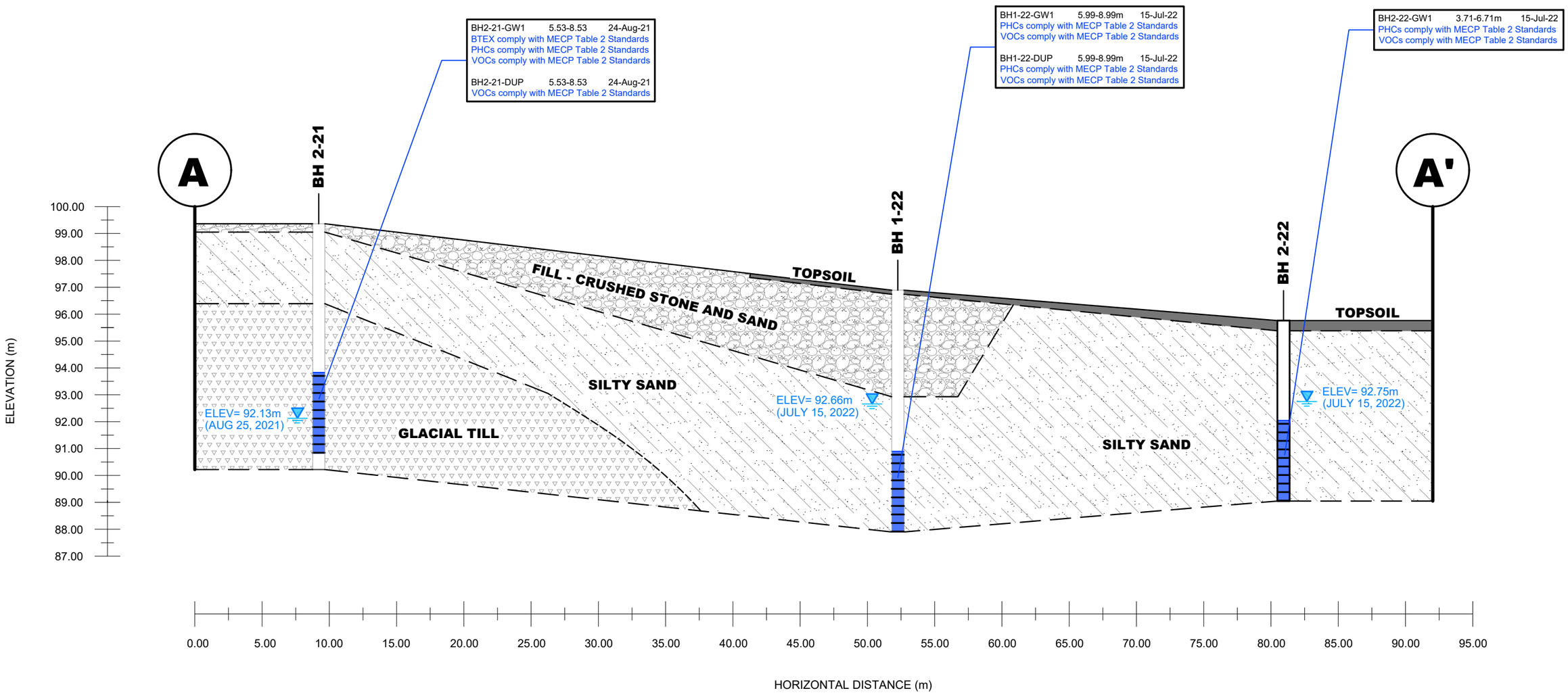

GROUNDWATER RESULTS COMPLY WITH THE MECP TABLE 2 STANDARDS

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PHASE II - ENVIRONMENTAL SITE ASSESSMENT

1450, 1454, 1458, 1464, 1468 BANKFIELD ROAD & 5479, 5485 ELIJAH COURT

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - GROUNDWATER

Scale: 1:750	Date: 10/2022
Drawn by: YA	Report No.: PE5397-2r
Checked by: MW	Dwg. No.: PE5397-5AR
Approved by: MSD	Revision No.:

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APPENDIX 1

SAMPLING AND ANALYSIS PLAN

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

LABORATORY CERTIFICATES OF ANALYSIS

PATERSON GROUP

Sampling and Analysis Plan

Phase II-Environmental Site Assessment
1450, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Elijah Court
Ottawa, Ontario

Prepared for Myers Automotive Group

Report: PE5397-SAP
August 2021

TABLE OF CONTENTS

1.0 SAMPLING PROGRAM

Paterson Group Inc. (Paterson) was commissioned by Mr. Geoff Publow of Myers Automotive Group to conduct a Phase II Environmental Site Assessment (ESA) for the Phase II ESA Property addressed 1450, 1458, 1464 and 1468 Bankfield Road, and 5479 and 5485 Ottawa, Ontario.

The Phase II ESA was carried out to address the APECs identified in the Paterson Phase I ESA that was initially completed in August of 2021 and revised in July of 2022, to include additional properties. The following subsurface investigation programs were developed to identify and delineate potential environmental concerns that were identified in August 2021 and July 2022.

Borehole	Location & Rationale	Proposed Depth & Rationale
BH1-21	Assess soil and groundwater conditions on the Phase I Property due to current use of the subject site.	Boreholes to be advanced to approximately 10.50 to intercept the groundwater table.
BH2-21	Assess soil and groundwater conditions on the Phase I Property due to current use of the subject site.	Boreholes to be advanced to approximately 9.0m to intercept the groundwater table.
BH3-21	Assess soil and groundwater conditions on the Phase I Property due to current use of the subject site.	Boreholes to be advanced to approximately 9.0m to intercept the groundwater table.
BH4-21	Assess soil conditions on the Phase I Property due to the importation of fill material.	Boreholes to be advanced to approximately 6.70m.
BH5-21	Assess soil conditions on the Phase I Property due to the importation of fill material.	Boreholes to be advanced to approximately 7.40m.
BH1-22	Assess site conditions on the Phase I Property due to the importation of fill material and the use of the neighbouring property as a garage	Boreholes to be advanced to approximately 9.0m to intercept the groundwater table.
BH2-22	Assess site conditions on the Phase I Property due to use of the neighbouring property as a garage	Boreholes to be advanced to approximately 6.7m to intercept the groundwater table.
BH3-22	Assess soil conditions on the Phase I Property.	Boreholes to be advanced to approximately 5.0m.
BH4-22	Assess soil conditions on the Phase I Property.	Boreholes to be advanced to approximately 5.0m.

At each borehole, split-spoon samples of overburden soils will be obtained at 0.76 m (2'6") intervals until groundwater was intercepted. All soil samples will be retained, and samples will be selected for submission following a preliminary screening analysis.

Following borehole drilling, monitoring wells will be installed in selected boreholes (as above) for the measurement of water levels and the collection of groundwater samples. Borehole locations are shown on the Test Hole Location Plan appended to the main report.

2.0 ANALYTICAL TESTING PROGRAM

The analytical testing program for soil at the subject site is based on the following general considerations:

- ❒ At least one sample from each borehole should be submitted, in order to delineate the horizontal extent of contamination across the site.
- ❒ At least one sample from each stratigraphic unit should be submitted, in order to delineate the vertical extent of contamination at the site.
- ❒ In boreholes where there is visual or olfactory evidence of contamination, or where organic vapour meter or photoionization detector readings indicate the presence of contamination, the 'worst-case' sample from each borehole should be submitted for comparison with MECP's site condition standards.
- ❒ In boreholes with evidence of contamination as described above, a sample should be submitted from the stratigraphic unit below the 'worst-case' sample to determine whether the contaminant(s) have migrated downward.
- ❒ Parameters analyzed should be consistent with the Contaminants of Potential Concern identified in the Phase I ESA.

The analytical testing program for groundwater at the subject site is based on the following general considerations:

- ❒ Groundwater monitoring wells should be installed in all boreholes with visual or olfactory evidence of soil contamination, in stratigraphic units where soil contamination was encountered, where those stratigraphic units are at or below the water table (i.e. a water sample can be obtained).
- ❒ Groundwater monitoring well screens should straddle the water table at sites where the contaminants of concern are suspected to be LNAPLs.
- ❒ At least one groundwater monitoring well should be installed in a stratigraphic unit below the suspected contamination, where said stratigraphic unit is water-bearing.
- ❒ Parameters analyzed should be consistent with the Contaminants of Concern identified in the Phase I ESA and with the contaminants identified in the soil samples.

3.0 STANDARD OPERATING PROCEDURES

3.1 Environmental Drilling Procedure

Purpose

The purpose of environmental boreholes is to identify and/or delineate contamination within the soil and/or to install groundwater monitoring wells in order to identify contamination within the groundwater.

Equipment

The following is a list of equipment that is in addition to regular drilling equipment stated in the geotechnical drilling SOP:

- ❒ glass soil sample jars
- ❒ two buckets
- ❒ cleaning brush (toilet brush works well)
- ❒ dish detergent
- ❒ methyl hydrate
- ❒ water (if not available on site - water jugs available in trailer)
- ❒ latex or nitrile gloves (depending on suspected contaminant)
- ❒ RKI Eagle organic vapour meter or MiniRae photoionization detector (depending on contamination suspected)

Determining Borehole Locations

If conditions on site are not as suspected, and planned borehole locations cannot be drilled, **call the office to discuss**. Alternative borehole locations will be determined in conversation with the field technician and supervising engineer.

After drilling is completed a plan with the borehole locations must be provided. Distances should be measured using a measuring tape or wheel rather than paced off. Elevations were surveyed at geodetic elevations by Paterson personnel.

Drilling Procedure

The actual drilling procedure for environmental boreholes is the same as geotechnical boreholes (see SOP for drilling and sampling) with a few exceptions as follows:

- ❒ Continuous split spoon samples (every 0.6 m or 2') or semi-continuous (every 0.76 m or 2'6") are required.
- ❒ Make sure samples are well sealed in plastic bags with no holes prior to screening and are kept cool but unfrozen.

- ❒ If sampling for VOCs, BTEX, or PHCs F1, a soil core from each soil sample which may be analyzed must be taken and placed in the laboratory-provided methanol vial.
- ❒ Note all and any odours or discolouration of samples.
- ❒ Split spoon samplers must be washed between samples.
- ❒ If obvious contamination is encountered, continue sampling until vertical extent of contamination is delineated.
- ❒ As a general rule, environmental boreholes should be deep enough to intercept the groundwater table (unless this is impossible/impractical - call project manager to discuss).
- ❒ If at all possible, soil samples should be submitted to a preliminary screening procedure on site, either using a RKI Eagle, PID, etc. depending on type of suspected contamination.

Spoon Washing Procedure

All sampling equipment (spilt spoons, etc.) must be washed between samples in order to prevent cross contamination of soil samples.

- ❒ Obtain two buckets of water (preferably hot if available)
- ❒ Add a small amount of dish soap to one bucket
- ❒ Scrub spoons with brush in soapy water, inside and out, including tip
- ❒ Rinse in clean water
- ❒ Apply a small amount of methyl hydrate to the inside of the spoon. (A spray bottle or water bottle with a small hole in the cap works well)
- ❒ Allow to dry (takes seconds)
- ❒ Rinse with distilled water, a spray bottle works well.

The methyl hydrate eliminates any soap residue that may be on the spoon, and is especially important when dealing with suspected VOCs.

Screening Procedure

The RKI Eagle is used to screen most soil samples, particularly where petroleum hydrocarbon contamination is suspected. The MiniRae is used when VOCs are suspected, however it also can be useful for detecting petroleum. These tools are for screening purposes only and cannot be used in place of laboratory testing. Vapour results obtained from the RKI Eagle and the PID are relative and must be interpreted.

Screening equipment should be calibrated on an approximately monthly basis, more frequently if heavily used.

- ❒ Samples should be brought to room temperature; this is specifically important in colder weather. Soil must not be frozen.
- ❒ Turn instrument on and allow to come to zero - calibrate if necessary
- ❒ If using RKI Eagle, ensure instrument is in methane elimination mode unless otherwise directed.
- ❒ Ensure measurement units are ppm (parts per million) initially. RKI Eagle will automatically switch to %LEL (lower explosive limit) if higher concentrations are encountered.
- ❒ Break up large lumps of soil in the sample bag, taking care not to puncture bag.
- ❒ Insert probe into soil bag, creating a seal with your hand around the opening.
- ❒ Gently manipulate soil in bag while observing instrument readings.
- ❒ Record the highest value obtained in the first 15 to 25 seconds
- ❒ Make sure to indicate scale (ppm or LEL); also note which instrument was used (RKI Eagle 1 or 2, or MiniRae).
- ❒ Jar samples and refrigerate as per Sampling and Analysis Plan.

3.2 Monitoring Well Installation Procedure

Equipment

- ❒ 5' x 2" [1.52 m x 50 mm] threaded sections of Schedule 40 PVC slotted well screen (5' x 1 ¼" [1.52 m x 32 mm] if installing in cored hole in bedrock)
- ❒ 5' x 2" [1.52 m x 50 mm] threaded sections of Schedule 40 PVC riser pipe (5' x 1 ¼" [1.52 m x 32 mm] if installing in cored hole in bedrock)
- ❒ Threaded end-cap
- ❒ Slip-cap or J-plug
- ❒ Asphalt cold patch or concrete
- ❒ Silica Sand
- ❒ Bentonite chips (Holeplug)
- ❒ Steel flushmount casing

Procedure

- ❒ Drill borehole to required depth, using drilling and sampling procedures described above.
- ❒ If borehole is deeper than required monitoring well, backfill with bentonite chips to required depth. This should only be done on wells where contamination is not suspected, in order to prevent downward migration of contamination.
- ❒ Only one monitoring well should be installed per borehole.
- ❒ Monitoring wells should not be screened across more than one stratigraphic unit to prevent potential migration of contaminants between units.
- ❒ Where LNAPLs are the suspected contaminants of concern, monitoring wells should be screened straddling the water table in order to capture any free product floating on top of the water table.
- ❒ Thread the end cap onto a section of screen. Thread second section of screen if required. Thread risers onto screen. Lower into borehole to required depth. Ensure slip-cap or J-plug is inserted to prevent backfill materials entering well.
- ❒ As drillers remove augers, backfill borehole annulus with silica sand until the level of sand is approximately 0.3 m above the top of the screen.
- ❒ Backfill with holeplug until at least 0.3 m of holeplug is present above the top of the silica sand.
- ❒ Backfill remainder of borehole with holeplug or with auger cuttings (if contamination is not suspected).
- ❒ Install flushmount casing. Seal space between flushmount and borehole annulus with concrete, cold patch, or holeplug to match surrounding ground surface.

3.3 Monitoring Well Sampling Procedure

Equipment

- ❒ Water level metre or interface probe on hydrocarbon/LNAPL sites
- ❒ Spray bottles containing water and methanol to clean water level tape or interface probe
- ❒ Peristaltic pump
- ❒ Polyethylene tubing for peristaltic pump
- ❒ Flexible tubing for peristaltic pump
- ❒ Latex or nitrile gloves (depending on suspected contaminant)
- ❒ Allen keys and/or 9/16" socket wrench to remove well caps
- ❒ Graduated bucket with volume measurements
- ❒ pH/Temperature/Conductivity combo pen
- ❒ Laboratory-supplied sample bottles

Sampling Procedure

- ❒ Locate well and use socket wrench or Allan key to open metal flush mount protector cap. Remove plastic well cap.
- ❒ Measure water level, with respect to existing ground surface, using water level meter or interface probe. If using interface probe on suspected NAPL site, measure the thickness of free product.
- ❒ Measure total depth of well.
- ❒ Clean water level tape or interface probe using methanol and water. Change gloves between wells.
- ❒ Calculate volume of standing water within well and record.
- ❒ Insert polyethylene tubing into well and attach to peristaltic pump. Turn on peristaltic pump and purge into graduated bucket. Purge at least three well volumes of water from the well. Measure and record field chemistry. Continue to purge, measuring field chemistry after every well volume purged, until appearance or field chemistry stabilizes.
- ❒ Note appearance of purge water, including colour, opacity (clear, cloudy, silty), sheen, presence of LNAPL, and odour. Note any other unusual features (particulate matter, effervescence (bubbling) of dissolved gas, etc.).
- ❒ Fill required sample bottles. If sampling for metals, attach 75-micron filter to discharge tube and filter metals sample. If sampling for VOCs, use low flow rate to ensure continuous stream of non-turbulent flow into sample bottles. Ensure no headspace is present in VOC vials.
- ❒ Replace well cap and flushmount casing cap.

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The QA/QC program for this Phase II ESA is as follows:

- ❒ All non-dedicated sampling equipment (split spoons) will be decontaminated according to the SOPs listed above.
- ❒ All groundwater sampling equipment is dedicated (polyethylene and flexible peristaltic tubing is replaced for each well).
- ❒ Where groundwater samples are to be analyzed for VOCs, one laboratory-provided trip blank will be submitted for analysis with every laboratory submission.
- ❒ Approximately one (1) field duplicate will be submitted for every ten (10) samples submitted for laboratory analysis. A minimum of one (1) field duplicate per project will be submitted. Field duplicates will be submitted for soil and groundwater samples
- ❒ Where combo pens are used to measure field chemistry, they will be calibrated on an approximately monthly basis, according to frequency of use.

5.0 DATA QUALITY OBJECTIVES

The purpose of setting data quality objectives (DQOs) is to ensure that the level of uncertainty in data collected during the Phase II ESA is low enough that decision-making is not affected, and that the overall objectives of the investigation are met.

The quality of data is assessed by comparing field duplicates with original samples. If the relative percent difference (RPD) between the duplicate and the sample is within 20%, the data are considered to be of sufficient quality so as not to affect decision-making. The RPD is calculated as follows:

$$RPD = \left| \frac{x_1 - x_2}{(x_1 + x_2)/2} \right| \times 100\%$$

Where x_1 is the concentration of a given parameter in an original sample and x_2 is the concentration of that same parameter in the field duplicate sample.

For the purpose of calculating the RPD, it is desirable to select field duplicates from samples for which parameters are present in concentrations above laboratory detection limits, i.e. samples which are expected to be contaminated. If parameters are below laboratory detection limits for selected samples or duplicates, the RPD may be calculated using a concentration equal to one half (0.5 x) the laboratory detection limit.

It is also important to consider data quality in the overall context of the project. For example, if the DQOs are not met for a given sample, yet the concentrations of contaminants in both the sample and the duplicate exceed the MOE site remediation standards by a large margin, the decision-making usefulness of the sample may not be considered to be impaired. The proximity of other samples which meet the DQOs must also be considered in developing the Phase II Conceptual Site Model; often there are enough data available to produce a reliable Phase II Conceptual Site Model even if DQOs are not met for certain individual samples.

These considerations are discussed in the body of the report.

6.0 PHYSICAL IMPEDIMENTS TO SAMPLING & ANALYSIS PLAN

Physical impediments to the Sampling and Analysis plan may include:

- The location of underground utilities
- Poor recovery of split-spoon soil samples
- Insufficient groundwater volume for groundwater samples
- Breakage of sampling containers following sampling or while in transit to the laboratory
- Elevated detection limits due to matrix interference (generally related to soil colour or presence of organic material)
- Elevated detection limits due to high concentrations of certain parameters, necessitating dilution of samples in laboratory
- Drill rig breakdowns
- Winter conditions
- Other site-specific impediments

Site-specific impediments to the Sampling and Analysis plan are discussed in the body of the Phase II ESA report.

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1450, 1454, 1458, 1464 & 1468 Bankfield Road, and
5479 and 5485 Elijah Court. Ottawa, Ontario

DATUM Elevations are referenced to a geodetic datum.

FILE NO. PE5397

REMARKS

HOLE NO. BH 1-21

BORINGS BY CME-55 Low Clearance Drill **DATE** August 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
FILL: Crushed stone with gravel and brown silty sand. 0.46		AU	1			0	101.11
		SS	2				
		SS	2	25	18	1	100.11
		SS	3	58	22	2	99.11
Compact, brown **SILTY SAND,** trace gravel.		SS	4	58	29		
		SS	5	50	29	3	98.11
3.96		SS	6	58	47	4	97.11
		SS	7	58	31	5	96.11
		SS	8	58	26		
		SS	9	55	50+	6	95.11
GLACIAL TILL: Compact to dense, brown silty sand with gravel, cobbles and boulders		SS	10	42	50	7	94.11
		SS	11	50	20	8	93.11
		SS	12	67	28		
- running sand encountered at 9.8m depth		SS	13	75	19	9	92.11
		SS	14	75	15	10	91.11
10.52							
End of Borehole							
(GWL @ 8.95m - August 25, 2021)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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FILE NO. PE5397

REMARKS

HOLE NO. BH 2-21

BORINGS BY CME-55 Low Clearance Drill **DATE** August 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
FILL: Crushed stone with gravel and brown silty sand. 0.31		AU	1				
		AU	2				
		SS	2		6	1	98.36
Loose to compact, brown **SILTY SAND**		SS	3		15	2	97.36
- very dense, with gravel by 2.3m depth		SS	4	67	50+		
2.97						3	96.36
		SS	5	86	50+		
		SS	6	75	19	4	95.36
		SS	7	100	50+	5	94.36
GLACIAL TILL: Dense, brown silty sand with gravel, cobbles and boulders		SS	8	80	50+		
		SS	9	0	50+	6	93.36
		SS	10	75	50+	7	92.36
- running sand encountered at 7.6m depth		SS	11	67		8	91.36
		SS	12	64	50+		
9.14						9	90.36
End of Borehole							
(GWL @ 7.23m - August 25, 2021)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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FILE NO. PE5397

REMARKS

HOLE NO. BH 3-21

BORINGS BY CME-55 Low Clearance Drill **DATE** August 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	99.19
FILL: Brown silty sand with crushed stone, trace gravel.		AU	1				
		AU	2				
0.76							
		SS	3	83	10	1	98.19
Compact to very dense, brown **SILTY SAND**.		SS	4	13	50+	2	97.19
2.13							
		SS	5	75	40		
		SS	6	27	50+	3	96.19
		SS	7	33	44	4	95.19
		SS	8	67	21	5	94.19
GLACIAL TILL: Compact to dense, brown silty sand with gravel cobbles and boulders		SS	9	67	18		
		SS	10	75	19	6	93.19
		SS	11	83	8	7	92.19
- running sand encountered from 7.5 to 9.1m depth		SS	12	83	36	8	91.19
		SS	13		41		
9.14						9	90.19
End of Borehole							
(GWL @ 7.03m - August 25, 2021)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**
20 40 60 80

Monitoring Well Construction

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

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SOIL PROFILE AND TEST DATA

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FILE NO. PE5397

REMARKS

HOLE NO. BH 4-21

BORINGS BY CME-55 Low Clearance Drill **DATE** August 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	99.62
FILL: Brown silty sand trace clay, gravel and asphaltic concrete. 0.31		AU	1				
		SS	2	50	14	1	98.62
		SS	3	42	8	2	97.62
FILL: Brown to grey silty clay with sand, trace gravel, cobbles, boulders, asphaltic concrete		SS	4	42	6		
- trace wood and brick by 3.0m depth		SS	5	33	5	3	96.62
						4	95.62
5.18		SS	6	25	50+	5	94.62
FILL: Brown silty sand, trace clay, gravel and organics		SS	7	50	13		
6.10						6	93.62
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders 6.71		SS	8	83	50+		
End of Borehole							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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FILE NO. PE5397

REMARKS

HOLE NO. BH 5-21

BORINGS BY CME-55 Low Clearance Drill **DATE** August 13, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	101.43
FILL: Brown silty sand, with crushed stone and gravel.		AU	1				
0.61							
FILL: Brown silty clay with silty sand, trace gravel and cobbles		SS	2	50	9	1	100.43
		SS	3	50	5	2	99.43
2.13							
		SS	4	8	7		
		SS	5	21	4	3	98.43
FILL: Brown silty sand with clay, trace gravel, wood and asphaltic concrete						4	97.43
		SS	6	75	10	5	96.43
6.25						6	95.43
GLACIAL TILL: Loose, brown silty sand with gravel, cobbles and boulders		SS	7	0	9		
		SS	8	42	8	7	94.43
7.47							
Dynamic cone penetration test commenced at 7.47m depth. DCPT refusal at 24.79m depth. Borehole terminated.							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

1450, 1454, 1458, 1464 & 1468 Bankfield Road, and 5479 and 5485 Elijah Court. Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5397

REMARKS

HOLE NO. BH 1-22

BORINGS BY CME-55 Low Clearance Drill **DATE** July 11, 2022

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
TOPSOIL 0.15		AU	1			0	96.89
		SS	2	75	22	1	95.89
FILL: Brown silty sand, some clay, gravel, occasional cobbles, trace asphalt, glass and crushed stone		SS	3	67	16	2	94.89
		SS	4	58	12		
		SS	5	568	28	3	93.89
3.96		SS	6	75	19	4	92.89
GLACIAL TILL: Compact to very dense, brown silty sand to sand with gravel, occasional cobbles		SS	7	83	13	5	91.89
		SS	8	75	44		
- some running sand by 5.8m depth		SS	9	75	32	6	90.89
		SS	10	83	34	7	89.89
		SS	11	92	65	8	88.89
8.30							
Loose, grey **SILTY SAND**		SS	12	58	6		
8.99							
End of Borehole							
(GWL @ 4.23m - July 15, 2022)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

199

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

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DATUM Geodetic

FILE NO. PE5397

REMARKS

HOLE NO. BH 2-22

BORINGS BY CME-55 Low Clearance Drill **DATE** July 11, 2022

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	95.76
TOPSOIL 0.38		AU	1				
		SS	2	75	13	1	94.76
Compact to dense, brown **SILTY SAND,** some gravel		SS	3	83	34	2	93.76
		SS	4	67	29		
2.97						3	92.76
		SS	5	75	27		
GLACIAL TILL: Compact, brown silty sand to sand, some gravel, occasional cobbles		SS	6	75	15	4	91.76
- some running sand by 4.3m depth		SS	7	83	19	5	90.76
		SS	8	92	28		
		SS	9	100	18	6	89.76
6.71							
End of Borehole							
(GWL @ 3.01m - July 15, 2022)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

1450, 1454, 1458, 1464 & 1468 Bankfield Road, and 5479 and 5485 Elijah Court. Ottawa, Ontario

DATUM Geodetic

FILE NO. PE5397

REMARKS

HOLE NO. BH 3-22

BORINGS BY CME-55 Low Clearance Drill **DATE** July 11, 2022

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							
TOPSOIL 0.30		AU	1			0	95.30
Compact, brown **SILTY SAND,** some gravel, occasional cobbles		SS	2	50	17	1	94.30
		SS	3	75	19	2	93.30
2.21		SS	4	83	54		
GLACIAL TILL: Very dense to compact, brown silty sand to sand, some gravel, occasional cobbles		SS	5	100	31	3	92.30
- some running sand by 4.1m depth		SS	6	92	21	4	91.30
5.18		SS	7	100	25	5	90.30
End of Borehole							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment

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DATUM Geodetic

FILE NO. PE5397

REMARKS

HOLE NO. BH 4-22

BORINGS BY CME-55 Low Clearance Drill **DATE** July 11, 2022

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	95.17
TOPSOIL 0.30		AU	1				
Compact to dense, brown **SILTY SAND,** some gravel		SS	2	75	18	1	94.17
		SS	3	67	46	2	93.17
GLACIAL TILL: Compact, brown silty sand to sand with gravel, occasional cobbles		SS	4	75	23	3	92.17
		SS	5	58	16		
- some running sand by 4.0m depth.		SS	6	67	22	4	91.17
		SS	7	67		5	90.17
5.18 End of Borehole							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the relative strength of cohesionless soils is the compactness condition, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm. An SPT N value of "P" denotes that the split-spoon sampler was pushed 300 mm into the soil without the use of a falling hammer.

Compactness Condition	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory shear vane tests, unconfined compression tests, or occasionally by the Standard Penetration Test (SPT). Note that the typical correlations of undrained shear strength to SPT N value (tabulated below) tend to underestimate the consistency for sensitive silty clays, so Paterson reviews the applicable split spoon samples in the laboratory to provide a more representative consistency value based on tactile examination.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity, S_t, is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil. The classes of sensitivity may be defined as follows:

Low Sensitivity:	$S_t < 2$
Medium Sensitivity:	$2 < S_t < 4$
Sensitive:	$4 < S_t < 8$
Extra Sensitive:	$8 < S_t < 16$
Quick Clay:	$S_t > 16$

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NQ or larger size core. However, it can be used on smaller core sizes, such as BQ, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD %	**ROCK QUALITY**
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube, generally recovered using a piston sampler
G	-	"Grab" sample from test pit or surface materials
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size BQ, NQ, HQ, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

WC%	-	Natural water content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic Limit, % (water content above which soil behaves plastically)
PI	-	Plasticity Index, % (difference between LL and PL)
Dxx	-	Grain size at which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2 / (D10 \times D60)$
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.
Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

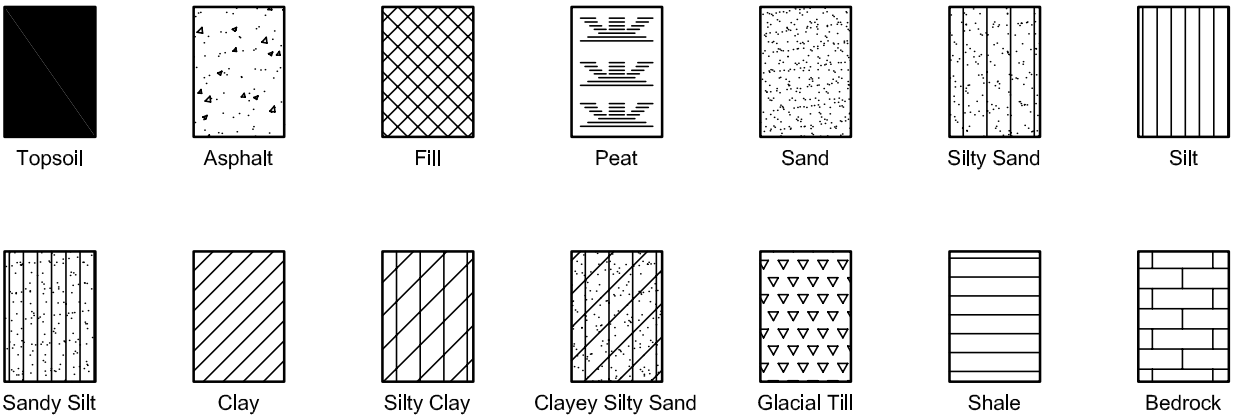
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

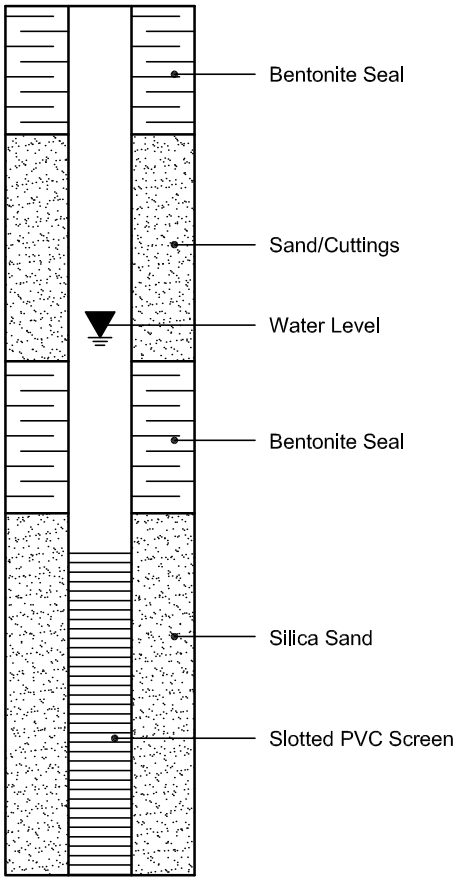
SYMBOLS AND TERMS (continued)

STRATA PLOT

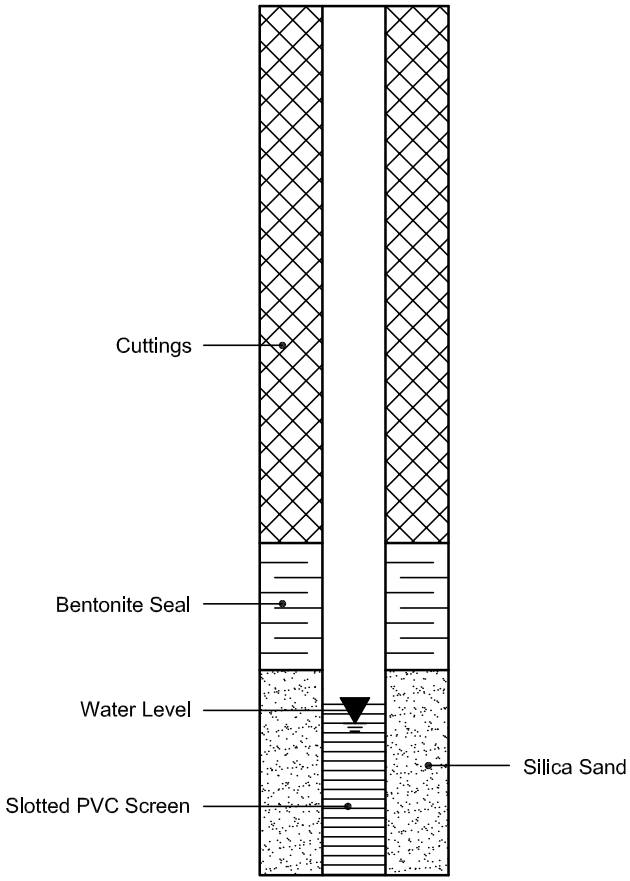


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Mandy Witteman

Client PO: 32699
Project: PE5397
Custody: 133075

Report Date: 19-Aug-2021
Order Date: 16-Aug-2021

Order #: 2134108

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2134108-01	BH1-21-SS3
2134108-02	BH2-21-SS2
2134108-03	DUP

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32699

Report Date: 19-Aug-2021

Order Date: 16-Aug-2021

Project Description: PE5397

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	17-Aug-21	18-Aug-21
PHC F1	CWS Tier 1 - P&T GC-FID	17-Aug-21	18-Aug-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	17-Aug-21	19-Aug-21
Solids, %	Gravimetric, calculation	17-Aug-21	17-Aug-21

Certificate of Analysis

Report Date: 19-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Aug-2021

Client PO: 32699

Project Description: PE5397

	Client ID:	BH1-21-SS3	BH2-21-SS2	DUP	-
	Sample Date:	13-Aug-21 09:00	13-Aug-21 09:00	13-Aug-21 09:00	-
	Sample ID:	2134108-01	2134108-02	2134108-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	96.7	97.1	97.6	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	96.8%	97.0%	90.0%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Certificate of Analysis

Report Date: 19-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Aug-2021

Client PO: 32699

Project Description: PE5397

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.56*		*ug/g*		*107*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Physical Characteristics									
% Solids	96.8	0.1	% by Wt.	96.7			0.1	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: Toluene-d8	*8.96*		*ug/g dry*		*107*	*50-140*			

Certificate of Analysis

Report Date: 19-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 16-Aug-2021

Client PO: 32699

Project Description: PE5397

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	185	7	ug/g	ND	92.7	80-120			
F2 PHCs (C10-C16)	85	4	ug/g	ND	106	80-120			
F3 PHCs (C16-C34)	224	8	ug/g	ND	114	80-120			
F4 PHCs (C34-C50)	144	6	ug/g	ND	116	80-120			
Volatiles									
Benzene	4.15	0.02	ug/g	ND	104	60-130			
Ethylbenzene	4.49	0.05	ug/g	ND	112	60-130			
Toluene	4.59	0.05	ug/g	ND	115	60-130			
m,p-Xylenes	9.49	0.05	ug/g	ND	119	60-130			
o-Xylene	4.42	0.05	ug/g	ND	110	60-130			
Surrogate: Toluene-d8	*9.77*		*ug/g*		*122*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

PARACE LABORATORIES LTD

Paracel ID: 2134108

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2134108	Nº 133075

Client Name: PATERSON GROUP	Project Ref: PE5397	Page __ of __
Contact Name: MANDY WITTEMAN	Quote #:	Turnaround Time: ☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Address: 154 COLONNADE RD	PO #: 32699	
Telephone:	E-mail: MWITTEMAN@PATERSONGROUP.CA	Date Required:

Regulation: ☒ REG 153/04 ☐ REG 406/19

Table: ☐ Table 1 ☐ Res/Park ☐ Med/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☒ Table 7

For RSC: ☐ Yes ☐ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm ☐ Mun: ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)					
1	BH1-21 - SS3	S		2	Aug 13/2021		X											
2	BH2-21-SS2	S		2	↓		X											
3	DUP	S		2	↓		X											
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): KAT LINSCOTT	Date/Time: 16/08/21 3:16	Date/Time: Aug 16, 2021 03:55	Date/Time: AUG 16, 2021 16:46
Date/Time: AUGUST 16/2021	Temperature: °C	Temperature: 16.7 °C	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Mandy Witteman

Client PO: 32704
Project: PE5397
Custody: 133080

Report Date: 23-Aug-2021
Order Date: 17-Aug-2021

Order #: 2134259

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2134259-01	BH3-21-SS5
2134259-02	BH4-21-SS2
2134259-03	BH4-21-SS4
2134259-04	BH4-21-SS5
2134259-05	BH5-21-SS2
2134259-06	BH5-21-SS6

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 23-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-Aug-2021

Client PO: 32704

Project Description: PE5397

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Aug-21	18-Aug-21
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-21	18-Aug-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	18-Aug-21	18-Aug-21
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	19-Aug-21	19-Aug-21
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	18-Aug-21	23-Aug-21
Solids, %	Gravimetric, calculation	18-Aug-21	18-Aug-21

Certificate of Analysis

Report Date: 23-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-Aug-2021

Client PO: 32704

Project Description: PE5397

	Client ID:	BH3-21-SS5	BH4-21-SS2	BH4-21-SS4	BH4-21-SS5
	Sample Date:	13-Aug-21 12:00	16-Aug-21 12:00	16-Aug-21 12:00	16-Aug-21 12:00
	Sample ID:	2134259-01	2134259-02	2134259-03	2134259-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.1	87.7	72.6	73.5
Metals					
Antimony	1.0 ug/g dry	-	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	-	2.7	2.7	3.2
Barium	1.0 ug/g dry	-	100	159	163
Beryllium	0.5 ug/g dry	-	<0.5	0.6	0.6
Boron	5.0 ug/g dry	-	<5.0	<5.0	5.5
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	-	19.9	59.8	47.3
Cobalt	1.0 ug/g dry	-	6.0	12.4	11.0
Copper	5.0 ug/g dry	-	14.9	27.4	29.1
Lead	1.0 ug/g dry	-	27.0	8.8	21.2
Molybdenum	1.0 ug/g dry	-	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	-	13.9	33.3	27.9
Selenium	1.0 ug/g dry	-	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	-	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	-	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	-	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	-	28.3	57.4	52.3
Zinc	20.0 ug/g dry	-	55.5	67.2	73.1
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	109%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	<0.02	0.05

Certificate of Analysis

Report Date: 23-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-Aug-2021

Client PO: 32704

Project Description: PE5397

	Client ID:	BH3-21-SS5	BH4-21-SS2	BH4-21-SS4	BH4-21-SS5
	Sample Date:	13-Aug-21 12:00	16-Aug-21 12:00	16-Aug-21 12:00	16-Aug-21 12:00
	Sample ID:	2134259-01	2134259-02	2134259-03	2134259-04
	MDL/Units	Soil	Soil	Soil	Soil
Acenaphthylene	0.02 ug/g dry	-	0.09	<0.02	<0.02
Anthracene	0.02 ug/g dry	-	0.09	<0.02	0.02
Benzo [a] anthracene	0.02 ug/g dry	-	0.16	<0.02	0.03
Benzo [a] pyrene	0.02 ug/g dry	-	0.19	0.02	0.03
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.21	<0.02	0.04
Benzo [g,h,i] perylene	0.02 ug/g dry	-	0.18	0.03	0.02
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.10	<0.02	<0.02
Chrysene	0.02 ug/g dry	-	0.15	0.02	0.03
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.04	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	-	0.26	0.03	0.06
Fluorene	0.02 ug/g dry	-	<0.02	<0.02	0.05
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.10	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	-	0.02	<0.01	0.01
Phenanthrene	0.02 ug/g dry	-	0.13	<0.02	0.08
Pyrene	0.02 ug/g dry	-	0.25	0.03	0.05
2-Fluorobiphenyl	Surrogate	-	107%	90.6%	97.2%
Terphenyl-d14	Surrogate	-	116%	101%	102%

Certificate of Analysis

Report Date: 23-Aug-2021

Client: **Paterson Group Consulting Engineers**

Order Date: 17-Aug-2021

Client PO: **32704**

Project Description: PE5397

	Client ID:	BH5-21-SS2	BH5-21-SS6	-	-
	Sample Date:	16-Aug-21 12:00	16-Aug-21 12:00	-	-
	Sample ID:	2134259-05	2134259-06	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	84.4	87.9	-	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	3.2	2.2	-	-
Barium	1.0 ug/g dry	110	69.8	-	-
Beryllium	0.5 ug/g dry	<0.5	<0.5	-	-
Boron	5.0 ug/g dry	<5.0	6.6	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	5.0 ug/g dry	29.9	16.2	-	-
Cobalt	1.0 ug/g dry	7.8	6.5	-	-
Copper	5.0 ug/g dry	24.5	13.6	-	-
Lead	1.0 ug/g dry	62.0	11.7	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	5.0 ug/g dry	18.4	11.8	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.3 ug/g dry	<0.3	<0.3	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	10.0 ug/g dry	35.5	26.1	-	-
Zinc	20.0 ug/g dry	73.5	29.0	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.02	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	0.02	<0.02	-	-
Anthracene	0.02 ug/g dry	0.06	<0.02	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.18	0.07	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.17	0.07	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.20	0.08	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.14	0.05	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.11	0.03	-	-
Chrysene	0.02 ug/g dry	0.21	0.09	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.03	<0.02	-	-
Fluoranthene	0.02 ug/g dry	0.37	0.16	-	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.12	0.04	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	-

Certificate of Analysis

Report Date: 23-Aug-2021

Client: **Paterson Group Consulting Engineers**

Order Date: 17-Aug-2021

Client PO: **32704**

Project Description: PE5397

	Client ID:	BH5-21-SS2	BH5-21-SS6	-	-
	Sample Date:	16-Aug-21 12:00	16-Aug-21 12:00	-	-
	Sample ID:	2134259-05	2134259-06	-	-
	MDL/Units	Soil	Soil	-	-
2-Methylnaphthalene	0.02 ug/g dry	0.02	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.04	<0.04	-	-
Naphthalene	0.01 ug/g dry	0.02	0.01	-	-
Phenanthrene	0.02 ug/g dry	0.25	0.15	-	-
Pyrene	0.02 ug/g dry	0.30	0.13	-	-
2-Fluorobiphenyl	Surrogate	86.8%	86.3%	-	-
Terphenyl-d14	Surrogate	105%	113%	-	-

Certificate of Analysis

Report Date: 23-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-Aug-2021

Client PO: 32704

Project Description: PE5397

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.38*		*ug/g*		*103*	*50-140*			
Surrogate: Terphenyl-d14	*1.64*		*ug/g*		*123*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.45*		*ug/g*		*106*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			NC	30	
Arsenic	1.5	1.0	ug/g dry	1.5			0.2	30	
Barium	91.2	1.0	ug/g dry	89.7			1.6	30	
Beryllium	ND	0.5	ug/g dry	ND			NC	30	
Boron	ND	5.0	ug/g dry	ND			NC	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	8.9	5.0	ug/g dry	9.1			1.8	30	
Cobalt	3.8	1.0	ug/g dry	3.9			0.7	30	
Copper	6.4	5.0	ug/g dry	7.2			12.2	30	
Lead	5.1	1.0	ug/g dry	4.9			5.2	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	7.5	5.0	ug/g dry	7.8			4.4	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	3.1	1.0	ug/g dry	ND			NC	30	
Vanadium	19.2	10.0	ug/g dry	19.8			2.9	30	
Zinc	28.7	20.0	ug/g dry	ND			NC	30	
Physical Characteristics									
% Solids	92.2	0.1	% by Wt.	92.0			0.2	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: Toluene-d8	*13.9*		*ug/g dry*		*121*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	200	7	ug/g	ND	100	80-120			
F2 PHCs (C10-C16)	105	4	ug/g	ND	121	60-140			
F3 PHCs (C16-C34)	292	8	ug/g	ND	137	60-140			
F4 PHCs (C34-C50)	166	6	ug/g	ND	123	60-140			
Metals									
Antimony	52.5	1.0	ug/g	ND	105	70-130			
Arsenic	56.7	1.0	ug/g	ND	112	70-130			
Barium	87.2	1.0	ug/g	35.9	103	70-130			
Beryllium	53.3	0.5	ug/g	ND	107	70-130			
Boron	49.2	5.0	ug/g	ND	96.2	70-130			
Cadmium	51.4	0.5	ug/g	ND	103	70-130			
Chromium	59.3	5.0	ug/g	ND	111	70-130			
Cobalt	56.5	1.0	ug/g	1.5	110	70-130			
Copper	56.1	5.0	ug/g	ND	106	70-130			
Lead	51.0	1.0	ug/g	1.9	98.2	70-130			
Molybdenum	55.9	1.0	ug/g	ND	111	70-130			
Nickel	56.9	5.0	ug/g	ND	108	70-130			
Selenium	51.8	1.0	ug/g	ND	103	70-130			
Silver	51.0	0.3	ug/g	ND	102	70-130			
Thallium	50.5	1.0	ug/g	ND	101	70-130			
Uranium	53.0	1.0	ug/g	ND	105	70-130			
Vanadium	64.8	10.0	ug/g	ND	114	70-130			
Zinc	58.6	20.0	ug/g	ND	102	70-130			
Semi-Volatiles									
Acenaphthene	0.167	0.02	ug/g	ND	100	50-140			
Acenaphthylene	0.134	0.02	ug/g	ND	80.4	50-140			
Anthracene	0.180	0.02	ug/g	ND	108	50-140			
Benzo [a] anthracene	0.182	0.02	ug/g	ND	109	50-140			
Benzo [b] fluoranthene	0.204	0.02	ug/g	ND	123	50-140			
Benzo [g,h,i] perylene	0.206	0.02	ug/g	ND	124	50-140			
Benzo [k] fluoranthene	0.178	0.02	ug/g	ND	107	50-140			
Chrysene	0.184	0.02	ug/g	ND	111	50-140			
Dibenzo [a,h] anthracene	0.201	0.02	ug/g	ND	121	50-140			
Fluoranthene	0.185	0.02	ug/g	ND	111	50-140			
Fluorene	0.182	0.02	ug/g	ND	109	50-140			
Indeno [1,2,3-cd] pyrene	0.164	0.02	ug/g	ND	98.7	50-140			
1-Methylnaphthalene	0.162	0.02	ug/g	ND	97.4	50-140			
2-Methylnaphthalene	0.177	0.02	ug/g	ND	106	50-140			
Naphthalene	0.160	0.01	ug/g	ND	95.9	50-140			
Phenanthrene	0.182	0.02	ug/g	ND	109	50-140			
Pyrene	0.188	0.02	ug/g	ND	113	50-140			
Surrogate: 2-Fluorobiphenyl	*1.32*		*ug/g*		*99.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.83*		*ug/g*		*137*	*50-140*			
Volatiles									
Benzene	3.87	0.02	ug/g	ND	96.7	60-130			
Ethylbenzene	3.74	0.05	ug/g	ND	93.6	60-130			
Toluene	4.17	0.05	ug/g	ND	104	60-130			
m,p-Xylenes	7.57	0.05	ug/g	ND	94.7	60-130			

Certificate of Analysis

Report Date: 23-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-Aug-2021

Client PO: 32704

Project Description: PE5397

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	3.99	0.05	ug/g	ND	99.7	60-130			
Surrogate: Toluene-d8	*8.27*		*ug/g*		*103*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

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Page 1 of 1

Client Name: Paterson Group	Project Ref: PE5397
Contact Name: Mandy Witteman / Mark D'Arcy	Quote #:
Address: 154 Colonnade Rd S	PO #: 32704
Telephone: 613/226-7381	E-mail: mwitteman@patersongroup.ca

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☐ REG 153/04 ☐ REG 406/19

Other Regulation
☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☒ Ind/Comm ☒ Coarse
☒ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)					
1	BH3-21-SS5	S		2	Aug 13/21	12pm	X											
2	BH4-21-SS2 (HOLD)	S		1	Aug 16/21				X	X								
3	BH4-21-SS4 (HOLD)	↓		↓	↓				X	X								
4	BH4-21-SS5 (HOLD)								↓	↓								
5	BH5-21-SS2 (HOLD)																	
6	BH5-21-SS6 (HOLD)																	
7																		
8																		
9																		
10																		

Comments:

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Relinquished By (Print): Mandy Witteman	Date/Time: 17/08/21 2:36	Date/Time: Aug 17, 2021 04:50	Date/Time: Aug 17 2021 5:51
Date/Time: Aug 17/21 - 13:00	Temperature: °C	Temperature: 9.6 °C	pH Verified: ☒ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mandy Witteman

Client PO: 55265
Project: PE5397
Custody:

Report Date: 19-Jul-2022
Order Date: 12-Jul-2022

Order #: 2229286

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2229286-01	BH1-22-SS2
2229286-02	BH1-22-SS6
2229286-04	BH2-22-SS5
2229286-05	DUP

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 55265

Report Date: 19-Jul-2022

Order Date: 12-Jul-2022

Project Description: PE5397

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	14-Jul-22	14-Jul-22
PHC F1	CWS Tier 1 - P&T GC-FID	14-Jul-22	14-Jul-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	14-Jul-22	16-Jul-22
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	18-Jul-22	18-Jul-22
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	14-Jul-22	16-Jul-22
Solids, %	Gravimetric, calculation	18-Jul-22	18-Jul-22

Certificate of Analysis

Report Date: 19-Jul-2022

Client: Paterson Group Consulting Engineers

Order Date: 12-Jul-2022

Client PO: 55265

Project Description: PE5397

	Client ID:	BH1-22-SS2	BH1-22-SS6	BH2-22-SS5	DUP
	Sample Date:	11-Jul-22 09:00	11-Jul-22 09:00	11-Jul-22 09:00	11-Jul-22 09:00
	Sample ID:	2229286-01	2229286-02	2229286-04	2229286-05
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	86.8	87.1	88.7	86.4
Metals					
Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.8	-	-	-
Barium	1.0 ug/g dry	110	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron	5.0 ug/g dry	<5.0	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	30.2	-	-	-
Cobalt	1.0 ug/g dry	7.8	-	-	-
Copper	5.0 ug/g dry	17.7	-	-	-
Lead	1.0 ug/g dry	27.5	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	17.7	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	35.7	-	-	-
Zinc	20.0 ug/g dry	61.4	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	-	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	-	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	-	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	-	105%	105%	103%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	9	<4
F3 PHCs (C16-C34)	8 ug/g dry	-	<8	36	<8
F4 PHCs (C34-C50)	6 ug/g dry	-	<6	<6	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	-	-

Certificate of Analysis

Report Date: 19-Jul-2022

Client: Paterson Group Consulting Engineers

Order Date: 12-Jul-2022

Client PO: 55265

Project Description: PE5397

	Client ID:	BH1-22-SS2	BH1-22-SS6	BH2-22-SS5	DUP
	Sample Date:	11-Jul-22 09:00	11-Jul-22 09:00	11-Jul-22 09:00	11-Jul-22 09:00
	Sample ID:	2229286-01	2229286-02	2229286-04	2229286-05
	MDL/Units	Soil	Soil	Soil	Soil
Acenaphthylene	0.02 ug/g dry	0.04	-	-	-
Anthracene	0.02 ug/g dry	0.06	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.15	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.17	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.26	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.15	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.11	-	-	-
Chrysene	0.02 ug/g dry	0.19	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.04	-	-	-
Fluoranthene	0.02 ug/g dry	0.22	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.13	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	0.01	-	-	-
Phenanthrene	0.02 ug/g dry	0.08	-	-	-
Pyrene	0.02 ug/g dry	0.21	-	-	-
2-Fluorobiphenyl	Surrogate	88.3%	-	-	-
Terphenyl-d14	Surrogate	82.6%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.65*		*ug/g*		*124*	*50-140*			
Surrogate: Terphenyl-d14	*1.71*		*ug/g*		*128*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*2.70*		*ug/g*		*84.5*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	1.7	1.0	ug/g	2.1			25.5	30	
Arsenic	5.0	1.0	ug/g	6.2			20.7	30	
Barium	92.7	1.0	ug/g	115			21.5	30	
Beryllium	0.5	0.5	ug/g	0.6			21.5	30	
Boron	12.9	5.0	ug/g	13.1			1.9	30	
Cadmium	1.6	0.5	ug/g	2.0			26.7	30	
Chromium	19.7	5.0	ug/g	22.5			13.2	30	
Cobalt	5.9	1.0	ug/g	6.8			13.8	30	
Copper	124	5.0	ug/g	157			23.4	30	
Lead	74.9	1.0	ug/g	84.2			11.8	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	15.2	5.0	ug/g	17.6			14.3	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	ND	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	25.5	10.0	ug/g	29.7			15.2	30	
Zinc	331	20.0	ug/g	378			13.2	30	
Physical Characteristics									
% Solids	66.6	0.1	% by Wt.	67.7			1.6	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g	ND			NC	40	
Acenaphthylene	ND	0.02	ug/g	ND			NC	40	
Anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] anthracene	ND	0.02	ug/g	ND			NC	40	
Benzo [a] pyrene	ND	0.02	ug/g	ND			NC	40	
Benzo [b] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g	ND			NC	40	
Benzo [k] fluoranthene	ND	0.02	ug/g	ND			NC	40	
Chrysene	ND	0.02	ug/g	ND			NC	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g	ND			NC	40	
Fluoranthene	ND	0.02	ug/g	ND			NC	40	
Fluorene	ND	0.02	ug/g	ND			NC	40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g	ND			NC	40	
1-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
2-Methylnaphthalene	ND	0.02	ug/g	ND			NC	40	
Naphthalene	ND	0.01	ug/g	ND			NC	40	
Phenanthrene	ND	0.02	ug/g	ND			NC	40	
Pyrene	ND	0.02	ug/g	ND			NC	40	
Surrogate: 2-Fluorobiphenyl	*1.12*		*ug/g*		*77.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.10*		*ug/g*		*76.5*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*4.31*		*ug/g*		*106*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	213	7	ug/g	ND	107	80-120			
F2 PHCs (C10-C16)	106	4	ug/g	ND	110	60-140			
F3 PHCs (C16-C34)	248	8	ug/g	ND	105	60-140			
F4 PHCs (C34-C50)	156	6	ug/g	ND	104	60-140			
Metals									
Antimony	35.3	1.0	ug/g	ND	70.6	70-130			
Arsenic	52.1	1.0	ug/g	2.5	99.2	70-130			
Barium	66.9	1.0	ug/g	20.0	94.0	70-130			
Beryllium	53.9	0.5	ug/g	ND	107	70-130			
Boron	55.6	5.0	ug/g	5.2	101	70-130			
Cadmium	37.9	0.5	ug/g	0.8	74.2	70-130			
Chromium	61.3	5.0	ug/g	9.0	105	70-130			
Cobalt	53.5	1.0	ug/g	2.7	102	70-130			
Copper	96.1	5.0	ug/g	62.8	66.5	70-130			QM-07
Lead	81.5	1.0	ug/g	33.7	95.7	70-130			
Molybdenum	49.4	1.0	ug/g	ND	98.0	70-130			
Nickel	55.8	5.0	ug/g	7.0	97.5	70-130			
Selenium	46.7	1.0	ug/g	ND	92.9	70-130			
Silver	38.0	0.3	ug/g	ND	75.7	70-130			
Thallium	39.6	1.0	ug/g	ND	79.1	70-130			
Uranium	56.7	1.0	ug/g	ND	113	70-130			
Vanadium	64.1	10.0	ug/g	11.9	105	70-130			
Zinc	71.3	20.0	ug/g	23.3	96.0	70-130			
Semi-Volatiles									
Acenaphthene	0.142	0.02	ug/g	ND	78.7	50-140			
Acenaphthylene	0.136	0.02	ug/g	ND	75.5	50-140			
Anthracene	0.142	0.02	ug/g	ND	78.9	50-140			
Benzo [a] anthracene	0.164	0.02	ug/g	ND	91.1	50-140			
Benzo [a] pyrene	0.207	0.02	ug/g	ND	115	50-140			
Benzo [b] fluoranthene	0.206	0.02	ug/g	ND	114	50-140			
Benzo [g,h,i] perylene	0.152	0.02	ug/g	ND	84.6	50-140			
Benzo [k] fluoranthene	0.174	0.02	ug/g	ND	96.9	50-140			
Chrysene	0.159	0.02	ug/g	ND	88.4	50-140			
Dibenzo [a,h] anthracene	0.152	0.02	ug/g	ND	84.5	50-140			
Fluoranthene	0.143	0.02	ug/g	ND	79.3	50-140			
Fluorene	0.146	0.02	ug/g	ND	81.3	50-140			
Indeno [1,2,3-cd] pyrene	0.159	0.02	ug/g	ND	88.4	50-140			
1-Methylnaphthalene	0.195	0.02	ug/g	ND	108	50-140			
2-Methylnaphthalene	0.210	0.02	ug/g	ND	116	50-140			
Naphthalene	0.178	0.01	ug/g	ND	98.7	50-140			
Phenanthrene	0.147	0.02	ug/g	ND	81.6	50-140			
Pyrene	0.145	0.02	ug/g	ND	80.7	50-140			
Surrogate: 2-Fluorobiphenyl	*1.32*		*ug/g*		*91.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.26*		*ug/g*		*87.2*	*50-140*			
Volatiles									
Benzene	3.32	0.02	ug/g	ND	83.1	60-130			
Ethylbenzene	3.57	0.05	ug/g	ND	89.2	60-130			
Toluene	3.78	0.05	ug/g	ND	94.6	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	7.88	0.05	ug/g	ND	98.4	60-130			
o-Xylene	4.06	0.05	ug/g	ND	102	60-130			
Surrogate: Toluene-d8	*2.94*		*ug/g*		*91.8*	*50-140*			

Qualifier Notes:

QC Qualifiers :

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

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Paracel ID: 2229286

Chain Of Custody
(Lab Use Only)

Client Name: Paterson Group

Contact Name: Mandy Witteman

Address: 9 Auriga Dr. Ottawa.

Telephone: (613) 800-5575 (direct).

Project Ref: PE5397

Quote #:

PO #: 55265

E-mail: mwitteman@patersongroup.ca

Page 1 of 1

Turnaround Time

☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular

Date Required:

☒ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☒ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☒ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)						
1	BH1-22-SS2	S		1	July 11/22				X	X									
2	BH1-22-SS6	S		2	↓		X												
3	BH1-22-SS7	S		2	↓		X		[HOLD]										
4	BH2-22-SS5	S		2	↓		X												
5	DUP	S		2	↓		X												
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): [signature]

Relinquished By (Print): Mandy Witteman

Date/Time: July 12/2022

Received By Driver/Depot: M. Slouie

Date/Time: 12/07/22 4:21

Temperature: °C PH

Received at Lab: [signature]

Date/Time: July 12/22 17:10

Temperature: 14.3

Verified By: [signature]

Date/Time: July 13/22 9:47a

pH Verified: ☐ By: N/A

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Mark D'Arcy

Client PO: 32090
Project: PE5397
Custody: 132410

Report Date: 31-Aug-2021
Order Date: 25-Aug-2021

Order #: 2135472

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2135472-01	BH1-21-GW
2135472-02	BH2-21-GW
2135472-03	BH3-21-GW
2135472-04	DUP

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32090

Report Date: 31-Aug-2021

Order Date: 25-Aug-2021

Project Description: PE5397

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	27-Aug-21	28-Aug-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	30-Aug-21	30-Aug-21
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	27-Aug-21	28-Aug-21

Certificate of Analysis

Report Date: 31-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 25-Aug-2021

Client PO: 32090

Project Description: PE5397

	Client ID:	BH1-21-GW	BH2-21-GW	BH3-21-GW	DUP
	Sample Date:	24-Aug-21 09:00	24-Aug-21 09:00	24-Aug-21 09:00	24-Aug-21 09:00
	Sample ID:	2135472-01	2135472-02	2135472-03	2135472-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 31-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 25-Aug-2021

Client PO: 32090

Project Description: PE5397

	Client ID:	BH1-21-GW	BH2-21-GW	BH3-21-GW	DUP
	Sample Date:	24-Aug-21 09:00	24-Aug-21 09:00	24-Aug-21 09:00	24-Aug-21 09:00
	Sample ID:	2135472-01	2135472-02	2135472-03	2135472-04
	MDL/Units	Water	Water	Water	Water
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
4-Bromofluorobenzene	Surrogate	102%	99.4%	102%	102%
Dibromofluoromethane	Surrogate	88.0%	86.2%	86.7%	87.6%
Toluene-d8	Surrogate	103%	103%	103%	103%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-

Certificate of Analysis

Report Date: 31-Aug-2021

Client: Paterson Group Consulting Engineers

Order Date: 25-Aug-2021

Client PO: 32090

Project Description: PE5397

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*68.6*		*ug/L*		*85.7*	*50-140*			
Surrogate: Dibromofluoromethane	*59.2*		*ug/L*		*74.0*	*50-140*			
Surrogate: Toluene-d8	*82.8*		*ug/L*		*104*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L				NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*80.9*		*ug/L*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*69.2*		*ug/L*		*86.4*	*50-140*			
Surrogate: Toluene-d8	*83.0*		*ug/L*		*104*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1790	25	ug/L	ND	89.3	68-117			
F2 PHCs (C10-C16)	1370	100	ug/L	ND	85.4	60-140			
F3 PHCs (C16-C34)	3220	100	ug/L	ND	82.2	60-140			
F4 PHCs (C34-C50)	2080	100	ug/L	ND	83.9	60-140			
Volatiles									
Acetone	110	5.0	ug/L	ND	110	50-140			
Benzene	31.6	0.5	ug/L	ND	79.1	60-130			
Bromodichloromethane	29.0	0.5	ug/L	ND	72.6	60-130			
Bromoform	39.5	0.5	ug/L	ND	98.6	60-130			
Bromomethane	28.0	0.5	ug/L	ND	70.0	50-140			
Carbon Tetrachloride	30.3	0.2	ug/L	ND	75.8	60-130			
Chlorobenzene	31.5	0.5	ug/L	ND	78.8	60-130			
Chloroform	31.2	0.5	ug/L	ND	78.1	60-130			
Dibromochloromethane	39.9	0.5	ug/L	ND	99.7	60-130			
Dichlorodifluoromethane	32.8	1.0	ug/L	ND	82.1	50-140			
1,2-Dichlorobenzene	28.3	0.5	ug/L	ND	70.8	60-130			
1,3-Dichlorobenzene	29.1	0.5	ug/L	ND	72.8	60-130			
1,4-Dichlorobenzene	29.0	0.5	ug/L	ND	72.4	60-130			
1,1-Dichloroethane	33.5	0.5	ug/L	ND	83.6	60-130			
1,2-Dichloroethane	34.1	0.5	ug/L	ND	85.4	60-130			
1,1-Dichloroethylene	29.3	0.5	ug/L	ND	73.3	60-130			
cis-1,2-Dichloroethylene	28.1	0.5	ug/L	ND	70.4	60-130			
trans-1,2-Dichloroethylene	28.2	0.5	ug/L	ND	70.4	60-130			
1,2-Dichloropropane	30.9	0.5	ug/L	ND	77.4	60-130			
cis-1,3-Dichloropropylene	34.2	0.5	ug/L	ND	85.6	60-130			
trans-1,3-Dichloropropylene	27.5	0.5	ug/L	ND	68.8	60-130			
Ethylbenzene	29.4	0.5	ug/L	ND	73.6	60-130			
Ethylene dibromide (dibromoethane, 1,2-	39.7	0.2	ug/L	ND	99.4	60-130			
Hexane	37.1	1.0	ug/L	ND	92.8	60-130			
Methyl Ethyl Ketone (2-Butanone)	73.1	5.0	ug/L	ND	73.1	50-140			
Methyl Isobutyl Ketone	108	5.0	ug/L	ND	108	50-140			
Methyl tert-butyl ether	70.5	2.0	ug/L	ND	70.5	50-140			
Methylene Chloride	28.9	5.0	ug/L	ND	72.3	60-130			
Styrene	33.9	0.5	ug/L	ND	84.6	60-130			
1,1,1,2-Tetrachloroethane	41.9	0.5	ug/L	ND	105	60-130			
1,1,2,2-Tetrachloroethane	34.1	0.5	ug/L	ND	85.2	60-130			
Tetrachloroethylene	40.4	0.5	ug/L	ND	101	60-130			
Toluene	32.7	0.5	ug/L	ND	81.8	60-130			
1,1,1-Trichloroethane	28.4	0.5	ug/L	ND	71.0	60-130			
1,1,2-Trichloroethane	30.3	0.5	ug/L	ND	75.6	60-130			
Trichloroethylene	27.1	0.5	ug/L	ND	67.8	60-130			
Trichlorofluoromethane	33.9	1.0	ug/L	ND	84.7	60-130			
Vinyl chloride	31.0	0.5	ug/L	ND	77.6	50-140			
m,p-Xylenes	61.5	0.5	ug/L	ND	76.9	60-130			
o-Xylene	30.3	0.5	ug/L	ND	75.8	60-130			
Surrogate: 4-Bromofluorobenzene	*79.8*		*ug/L*		*99.7*	*50-140*			
Surrogate: Dibromofluoromethane	*72.4*		*ug/L*		*90.5*	*50-140*			
Surrogate: Toluene-d8	*82.1*		*ug/L*		*103*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

PARACE LABORATORIES L

Paracel ID: 2135472

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2135472	№ 132410

Client Name: Paterson Group
Project Ref: PE5397
Page 1 of 1

Contact Name: Mark D'Arcy
Quote #:

Address: 154 Colonnade Rd S
PO #: 32090

E-mail: jandrechek@patersongroup.ca
mdarcy @ " " "

Telephone: 613-226-7381

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

Regulation 153/04: ☐ Table 1 ☐ Res/Park ☐ Med/Fine ☒ Table 2 ☒ Ind/Comm ☒ Coarse ☐ Table 3 ☐ Agri/Other ☐ Table
For RSC: ☐ Yes ☒ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis: PHCs F1-F4+BTEX, VOCs, PAHs, Metals by ICP, Hg, CrVI, B (HWS)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)
1	BH1-21-GW	GW		3	24-AUG-21		X	X					
2	BH2-21-GW	GW		3	↓		X	X					
3	BH3-21-GW	GW		3			X	X					
4	DUP	GW		2				X					
5													
6													
7													
8													
9													
10													

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): J. Andrechek
Relinquished By (Print): Jesse Andrechek
Date/Time: 25-AUG-21 12PM

Received By Driver/Depot: M. FLOURE
Date/Time: 25/08/21 3:07
Temperature: °C

Received at Lab:
Date/Time: Aug 25 2021 5:00
Temperature: 18.2 °C

Verified By:
Date/Time: Aug 26/21 8:56a
pH Verified: ☐ By: N/A

Chain of Custody (Env).xlsx
Revision 3.0

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Curtis Black

Client PO: 55304
Project: PE4397
Custody: 136592

Report Date: 25-Jul-2022
Order Date: 18-Jul-2022

Order #: 2230061

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2230061-01	BH1-22-GW1
2230061-02	BH2-22-GW1
2230061-03	DUP1-22-GW1

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 55304

Report Date: 25-Jul-2022

Order Date: 18-Jul-2022

Project Description: PE4397

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	19-Jul-22	19-Jul-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	22-Jul-22	22-Jul-22
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	19-Jul-22	19-Jul-22

Certificate of Analysis

Report Date: 25-Jul-2022

Client: Paterson Group Consulting Engineers

Order Date: 18-Jul-2022

Client PO: 55304

Project Description: PE4397

	Client ID:	BH1-22-GW1	BH2-22-GW1	DUP1-22-GW1	-
	Sample Date:	15-Jul-22 09:00	15-Jul-22 09:00	15-Jul-22 09:00	-
	Sample ID:	2230061-01	2230061-02	2230061-03	-
	MDL/Units	Water	Water	Water	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	<0.2	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-

Certificate of Analysis

Report Date: 25-Jul-2022

Client: Paterson Group Consulting Engineers

Order Date: 18-Jul-2022

Client PO: 55304

Project Description: PE4397

	Client ID:	BH1-22-GW1	BH2-22-GW1	DUP1-22-GW1	-
	Sample Date:	15-Jul-22 09:00	15-Jul-22 09:00	15-Jul-22 09:00	-
	Sample ID:	2230061-01	2230061-02	2230061-03	-
	MDL/Units	Water	Water	Water	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
4-Bromofluorobenzene	Surrogate	93.8%	93.2%	92.5%	-
Dibromofluoromethane	Surrogate	83.0%	78.2%	80.4%	-
Toluene-d8	Surrogate	103%	104%	104%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane, 1,2	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: 4-Bromofluorobenzene	*75.4*		*ug/L*		*94.3*	*50-140*			
Surrogate: Dibromofluoromethane	*67.0*		*ug/L*		*83.8*	*50-140*			
Surrogate: Toluene-d8	*83.9*		*ug/L*		*105*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*74.2*		*ug/L*		*92.7*	*50-140*			
Surrogate: Dibromofluoromethane	*65.3*		*ug/L*		*81.6*	*50-140*			
Surrogate: Toluene-d8	*83.3*		*ug/L*		*104*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1640	25	ug/L	ND	82.1	68-117			
F2 PHCs (C10-C16)	1620	100	ug/L	ND	101	60-140			
F3 PHCs (C16-C34)	4310	100	ug/L	ND	110	60-140			
F4 PHCs (C34-C50)	2630	100	ug/L	ND	106	60-140			
Volatiles									
Acetone	88.3	5.0	ug/L	ND	88.3	50-140			
Benzene	38.8	0.5	ug/L	ND	97.1	60-130			
Bromodichloromethane	33.5	0.5	ug/L	ND	83.8	60-130			
Bromoform	42.6	0.5	ug/L	ND	106	60-130			
Bromomethane	35.4	0.5	ug/L	ND	88.4	50-140			
Carbon Tetrachloride	37.2	0.2	ug/L	ND	93.0	60-130			
Chlorobenzene	38.5	0.5	ug/L	ND	96.2	60-130			
Chloroform	32.3	0.5	ug/L	ND	80.8	60-130			
Dibromochloromethane	42.0	0.5	ug/L	ND	105	60-130			
Dichlorodifluoromethane	46.5	1.0	ug/L	ND	116	50-140			
1,2-Dichlorobenzene	37.1	0.5	ug/L	ND	92.8	60-130			
1,3-Dichlorobenzene	33.4	0.5	ug/L	ND	83.5	60-130			
1,4-Dichlorobenzene	35.0	0.5	ug/L	ND	87.4	60-130			
1,1-Dichloroethane	34.2	0.5	ug/L	ND	85.5	60-130			
1,2-Dichloroethane	40.3	0.5	ug/L	ND	101	60-130			
1,1-Dichloroethylene	30.0	0.5	ug/L	ND	75.0	60-130			
cis-1,2-Dichloroethylene	31.4	0.5	ug/L	ND	78.4	60-130			
trans-1,2-Dichloroethylene	34.8	0.5	ug/L	ND	87.1	60-130			
1,2-Dichloropropane	38.9	0.5	ug/L	ND	97.3	60-130			
cis-1,3-Dichloropropylene	43.5	0.5	ug/L	ND	109	60-130			
trans-1,3-Dichloropropylene	43.8	0.5	ug/L	ND	109	60-130			
Ethylbenzene	39.2	0.5	ug/L	ND	98.1	60-130			
Ethylene dibromide (dibromoethane, 1,2-	39.2	0.2	ug/L	ND	98.0	60-130			
Hexane	45.3	1.0	ug/L	ND	113	60-130			
Methyl Ethyl Ketone (2-Butanone)	102	5.0	ug/L	ND	102	50-140			
Methyl Isobutyl Ketone	117	5.0	ug/L	ND	117	50-140			
Methyl tert-butyl ether	112	2.0	ug/L	ND	112	50-140			
Methylene Chloride	35.5	5.0	ug/L	ND	88.7	60-130			
Styrene	31.1	0.5	ug/L	ND	77.8	60-130			
1,1,1,2-Tetrachloroethane	44.0	0.5	ug/L	ND	110	60-130			
1,1,2,2-Tetrachloroethane	45.8	0.5	ug/L	ND	114	60-130			
Tetrachloroethylene	34.6	0.5	ug/L	ND	86.4	60-130			
Toluene	38.7	0.5	ug/L	ND	96.7	60-130			
1,1,1-Trichloroethane	39.2	0.5	ug/L	ND	98.1	60-130			
1,1,2-Trichloroethane	38.3	0.5	ug/L	ND	95.8	60-130			
Trichloroethylene	34.9	0.5	ug/L	ND	87.2	60-130			
Trichlorofluoromethane	29.7	1.0	ug/L	ND	74.2	60-130			
Vinyl chloride	26.4	0.5	ug/L	ND	66.1	50-140			
m,p-Xylenes	75.7	0.5	ug/L	ND	94.7	60-130			
o-Xylene	39.0	0.5	ug/L	ND	97.6	60-130			
Surrogate: 4-Bromofluorobenzene	*73.8*		*ug/L*		*92.2*	*50-140*			
Surrogate: Dibromofluoromethane	*55.5*		*ug/L*		*69.4*	*50-140*			
Surrogate: Toluene-d8	*81.3*		*ug/L*		*102*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.

Paracel ID: 2230061

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Chain Of Custody (Lab Use Only)

Nº 136592

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Client Name: Paterson	Project Ref: PE4397
Contact Name: Curtis Black.	Quote #:
Address: 9 Auriga Drive, Nepean.	PO #: 55304
	E-mail: CBlack@Patersongroup.ca mwitteman@patersongroup.ca
Telephone: ~~613-226-7381~~ 613-282-7570	

Turnaround Time
- ☐ 1 day
- ☐ 3 day
- ☐ 2 day
- ☒ Regular

Date Required:

☒ REG 153/04 ☐ REG 406/19 — Other Regulation

☐ Table 1 ☒ Res/Park ☐ Med/Fine ☐ REG 558 ☐ PWQO

☒ Table 2 ☐ Ind/Comm ☒ Coarse ☐ CCME ☐ MISA

☐ Table 3 ☐ Agri/Other ☐ SU - Sani ☐ SU - Storm

☐ Table ____ Mun:

For RSC: ☐ Yes ☐ No ☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) [circled] SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)					
1	BH1-22-GW1	GW		3	July 15	9:00AM	X	X										
2	BH2-22-GW1	GW		3	↓	↓	X	X										
3	DUP1-22-GW1	GW		3			X	X										
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Paracel Courier

Relinquished By (Sign): CBlack	Received By Driver/Depot: M. Strouse	Received at Lab: [signature]	Verified By: [signature]
Relinquished By (Print): Curtis Black	Date/Time: 18/07/22 1:43	Date/Time: July 18/22 2:20pm	Date/Time: July 18/22 3:02p
Date/Time: July 18, 2022 12:00PM.	Temperature: °C PH.	Temperature: 11.3 °C	pH Verified: ☐ By: N/A