PATERSON GROUP

Baseline Investigation

1850 Bantree Street

Ottawa, Ontario

Prepared for Laurent Leblanc Ltd.

Report: PE5579-1
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1.0 INTRODUCTION

At the request of Laurent Leblanc Ltd., Paterson Group (Paterson) conducted a Baseline Investigation for part of 1850 Bantree Street, in Ottawa, Ontario. The purpose of the Baseline Investigation was to establish the existing soil and groundwater conditions in the area of a proposed water sedimentation pit, for liquid soils.

This report was prepared specifically and solely for the above noted project which is described herein. It contains all our findings and results of the environmental conditions at the subject site.

2.0 BACKGROUND

The subject property is located on the south side of Bantree Street, approximately 700 m south of Innes Road, in the City of Ottawa, Ontario. The specific area of interest this assessment is concerned with is located on the southern portion of the 1850 Bantree Street property. The property is currently operated as a construction yard by Laurent Leblanc Ltd., with the trailer and scale house located in the northern part of the property. The rest of the land is used for the storage of construction equipment and materials.

It is our understanding that the intention is to acquire an environmental compliance approval (ECA) to operate a liquid soils management facility in the southern part of 1850 Bantree Street. In brief, the system will consist of a sedimentation pond and a temporary drying sediment storage area. Liquid soil is to be deposited into the pit with the water being allowed to drain into the underlying ground. The semi-dried soil will be removed as necessary from the pond and temporarily stored for further drying on site until it can be tested to determine the appropriate off-site disposal.

The purpose of this assessment has to establish the existing soil and groundwater conditions surrounding the area of the sedimentation pit and generally across the southern part of the site. These baseline conditions will be referenced as part of a routine annual groundwater sampling program to determine if any environmental impact has occurred as a result of the sedimentation pit.

A drainage pipe system along the eastern edge of the property was installed in 2014 in response to the effluent run off from the snow dump on site. A 200 mm weeping pipe with sock was installed with clear stone along the eastern property limits, with filter fabric and drainage sand overlying. Following the installation of the

pipe, web netting was installed for reduced erosion on the surface. Silt fences and catch basins were placed along the perimeter for flooding.

The subject property is bordered by light industrial businesses to the east and west. The subject property is presented on Figure 1 - Key Plan, in Appendix 3.

3.0 METHOD OF INVESTIGATION

3.1 Subsurface Investigation

Field Program

The field drilling program was conducted during the interim of February 9 through February 10, 2023 and consisted of four boreholes (BH1 to BH4) placed on the subject property, two of which at each end of the proposed sedimentation pit, one along the eastern property limit targeting the weeping drainage system, and lastly one along western property limit for general coverage purposes. All four boreholes were completed as groundwater monitoring wells.

The borehole locations are illustrated in Drawing PE5579-1 – Test Hole Location Plan in Appendix 3. The boreholes were advanced using a track-mounted drill by Downing Drilling of Hawkesbury, Ontario, under the full-time supervision of personnel from Paterson's environmental department.

The boreholes were advanced to depths ranging from 3.66 m to 6.15 m below existing grade. A total of 17 soil samples were recovered by means of split spoon and auger sampling.

The boreholes were extended into the bedrock by augering and/or rock coring. Upon recovery, all soil samples were immediately sealed in appropriate containers to facilitate the preliminary screening procedure. The depths at which split spoon, auger and rock core samples were recovered from the test holes are shown as "**SS**", "**AU**" and "**RC**" respectively, on the Soil Profile & Test Data sheets in Appendix 1.

Soil Sampling Protocol

Soil 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.

The soil samples were recovered using a stainless-steel spoon or by hand, using protective gloves (changed after each sample). The samples were placed into plastic bags upon recovery.

Sampling equipment was washed in soapy water after each split spoon to prevent cross contamination of the samples. Samples were stored in coolers to reduce analyte volatilization during transportation.

Monitoring Well Installation

Groundwater monitoring wells were constructed in all four boreholes (BH1 to BH4), to assess groundwater quality beneath the subject property. Typical monitoring well construction details are described below:

- Slotted 32 mm or 50 mm diameter PVC screen from bottom of the hole.
- 32 mm or 50 mm diameter PVC riser pipe from top of screen to just below ground surface.
- No.3 silica sand backfill within annular space around screen.
- Bentonite hole plug directly above the silica sand to ground surface.
- Clean backfill from ground surface to the top of bentonite plug.

Refer to the Soil Profile & Test Data sheets in Appendix 1 for specific well construction details.

Groundwater Sampling Protocol

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.

The groundwater samples were taken using a peristaltic pump with dedicated polytubing. At least three times the well volume was purged prior to sampling, provided sufficient water was available. Samples were stored in bottles prepared by Paracel Laboratories. Samples were stored in coolers to reduce analyte volatilization during transportation.

3.2 Soil Sample Headspace Analysis

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.

3.3 Analytical Testing

Four soil samples were submitted for analytical testing for metals, mercury, chromium VI, volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs, F_1 - F_4), polycyclic aromatic hydrocarbons (PAHs) and pH.

Eight groundwater samples were submitted for analytical testing for metals (including As, Sb and Se), mercury, chromium VI, volatile organic compounds (VOCs), PHC (F_1 - F_4), PAHs, and chloride. The results of the analytical testing are presented in Subsection 4.5. Copies of the laboratory reports are included in Appendix 2 of this report.

Paracel Laboratories (Paracel) of Ottawa, Ontario, performed the laboratory analysis of the soil and groundwater samples submitted for analytical testing. Paracel is a member of the Standards Council of Canada/Canadian Association for Environmental Analytical Laboratories (SCC/CAEAL). Paracel is accredited and certified by SCC/CAEAL for specific tests registered with the Association.

4.0 INVESTIGATION AND RESULTS

4.1 Surficial Conditions

The site ground surface consists primarily of gravelly fill that has been imported to create the storage yard. The site topography slopes slightly from west to east, with site drainage consisting of infiltration, although there is an infiltration swale/piping system located along the eastern property boundary to intercept surface water from flowing off-site to the east. This drainage structure was constructed to manage melt water from the former snow depot operate at the southern end of the property.

4.2 Subsurface Profile

The soil profile encountered generally consisted of fill material consisting of brown silty sand with gravel and crushed stone, overlying glacial till consisting of silty clay with gravel and cobbles. Boreholes were drilled to depths ranging from 3.66 to 6.15 meters below the existing grade. Shale bedrock was encountered in all boreholes

at depths ranging from 1.37 m to 1.75 mf below existing grade. All wells were installed in the bedrock.

Specific details of the soil profile at each test hole location are presented on the Soil Profile & Test Data sheets in Appendix 1.

4.3 Groundwater

Groundwater levels were measured in the monitoring wells on February 14, 2023, February 21, 2023, March 2, 2023 and March 31, 2023. Groundwater levels are summarized in Table 1.

TABLE 1 - Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
BH1	68.77	1.89	66.88	February 14, 2023
BH2	68.89	2.42	66.47	February 14, 2023
BH3	68.90	4.20	64.70	February 14, 2023
BH4	71.04	5.27	65.77	February 14, 2023
BH1	68.77	1.64	67.13	February 21, 2023
BH2	68.89	2.87	66.02	February 21, 2023
BH3	68.90	3.89	65.01	February 21, 2023
BH4	71.04	5.16	65.88	February 21, 2023
BH1	68.77	1.94	66.83	March 2, 2023
BH2	68.89	3.10	65.79	March 2, 2023
BH3	68.90	3.92	64.98	March 2, 2023
BH4	71.04	5.45	65.59	March 2, 2023
BH1	68.77	1.32	67.45	March 31, 2023
BH2	68.89	2.63	66.26	March 31, 2023
BH3	68.90	3.52	65.38	March 31, 2023
BH4	71.04	5.14	65.90	March 31, 2023

Based on the groundwater elevations, groundwater flow at the subject site is expected to be in a northerly direction (it has varied but it is our opinion that the groundwater is flowing in the north north-westerly direction).

It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

4.4 Soil Sample Headspace Results

A Photo Ionization Detector (PID) was used to measure the vapour concentrations in the headspace of all soil samples recovered from the boreholes. The technical protocol was obtained from Appendix C of the MOE document titled “Interim Guidelines for the Remediation of Petroleum Contamination at Operating Retail and Private Fuel Outlets in Ontario”, dated March 1992.

The vapour readings were measured to be between 0.1 and 2.3 ppm in the recovered samples. The vapour readings are not considered to be indicative of significant levels of volatile contaminants. Refer to the Soil Profile and Test Data sheets provided in Appendix 1, for soil sample headspace results.

No visual or olfactory indications of potential contamination were identified in the soil samples.

4.5 Analytical Test Results

Soil and Groundwater Standards

The soil and groundwater standards for the subject site were obtained from Table 7 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 and Climate Change (MECP), April 15, 2011. The MECP standards are based on the following considerations:

- ❑ Coarse-grained soil conditions
- ❑ Generic site conditions for shallow soils
- ❑ Non-Potable groundwater conditions
- ❑ Industrial land use

A well is present on the property, however, the well is not used for potable purposes and no other potable well is in the area. Thus, Table 7 MECP Standards is applicable to the property.

Soil Analysis

Based on the findings of the field screening in combination with sample depth and location, four soil samples were submitted for analysis of metals (including As, Sb and Se), mercury, chromium VI, VOCs (including BTEX), PHCs, PAHs and/or pH. The results of the analytical testing are presented in Tables 2 to 5. The laboratory certificate of analysis is provided in Appendix 2.

Table 2
Analytical Test Results – Soil
Metals and General Inorganics

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Industrial Standards (µg/g)
		February 9, 2023		February 10, 2023		
		BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2	
Antimony	1.0	nd	nd	nd	nd	40
Arsenic	1.0	5.6	6.0	4.4	3.8	18
Barium	1.0	93.5	74.7	79.5	56.2	670
Beryllium	0.5	0.6	0.6	0.6	nd	8
Boron	5.0	9.1	8.2	8.4	Nd	120
Cadmium	0.5	nd	nd	nd	nd	1.9
Chromium	5.0	20.9	19.5	24.0	15.5	160
Chromium (VI)	0.2	nd	nd	nd	nd	8
Cobalt	1.0	12.4	8.8	11.1	5.2	80
Copper	5.0	28.4	22.2	50.4	20.6	230
Lead	1.0	9.6	7.8	4.2	13.2	120
Mercury	0.1	nd	nd	nd	nd	3.9
Molybdenum	1.0	1.5	1.1	nd	nd	40
Nickel	5.0	30.6	23.3	24.3	12.1	270
Selenium	1.0	nd	nd	nd	nd	5.5
Silver	0.3	nd	nd	nd	nd	40
Thallium	1.0	nd	nd	nd	nd	3.3
Uranium	1.0	nd	nd	nd	nd	33
Vanadium	10.0	28.3	22.9	27.3	19.3	86
Zinc	20.0	49.7	43.8	44.6	28.0	340
pH	0.05	7.86	**11.37**	7.94	8.14	5 – 11

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and underlined –** Result exceeds selected MECP Standard

All detected metals concentrations in the soil samples analysed are in compliance with the selected MECP Table 7 Standards. pH was observed outside of the acceptable range in Sample BH2-SS2.

Table 3
Analytical Test Results – Soil
PHCs (F_1-F_4)

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Industrial Standards (µg/g)
		February 9, 2023		February 10, 2023		
		BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2	
PHCs – F_1	7	nd	nd	nd	nd	55
PHCs – F_2	4	nd	nd	nd	nd	230
PHCs – F_3	8	nd	44	32	37	1,700
PHCs – F_4	6	nd	49	55	60	3,300

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

All detected PHC concentrations in the soil samples analysed comply with the selected MECP Table 7 Standards.

Table 4
Analytical Test Results – Soil
VOCs

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Industrial Standards (µg/g)
		February 9, 2023		February 10, 2023		
		BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2	
Acetone	0.50	nd	nd	nd	nd	16
Benzene	0.02	nd	nd	nd	0.07	0.32
Bromodichloromethane	0.05	nd	nd	nd	nd	18
Bromoform	0.05	nd	nd	nd	nd	0.61
Bromomethane	0.05	nd	nd	nd	nd	0.05
Carbon Tetrachloride	0.05	nd	nd	nd	nd	0.21
Chlorobenzene	0.05	nd	nd	nd	nd	2.4
Chloroform	0.05	nd	nd	nd	nd	0.47
Dibromochloromethane	0.05	nd	nd	nd	nd	13
Dichlorodifluoromethane	0.05	nd	nd	nd	nd	16
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	6.8
1,3-Dichlorobenzene	0.05	nd	nd	nd	nd	9.6
1,4-Dichlorobenzene	0.05	nd	nd	nd	nd	0.2
1,1-Dichloroethane	0.05	nd	nd	nd	nd	17
1,2-Dichloroethane	0.05	nd	nd	nd	nd	0.05
1,1-Dichloroethylene	0.05	nd	nd	nd	nd	0.064
cis-1,2-Dichloroethylene	0.05	nd	nd	nd	nd	55
trans-1,2-Dichloroethylene	0.05	nd	nd	nd	nd	1.3
1,2-Dichloropropane	0.05	nd	nd	nd	nd	0.16
cis-1,3-Dichloropropylene	0.05	nd	nd	nd	nd	
trans-1,3-Dichloropropylene	0.05	nd	nd	nd	nd	
1,3-Dichloropropene, total	0.05	nd	nd	nd	nd	0.18
Ethylbenzene	0.05	nd	nd	nd	nd	9.5
Ethylene dibromide	0.05	nd	nd	nd	nd	0.05
Hexane	0.05	nd	nd	nd	nd	46
Methyl Ethyl Ketone	0.5	nd	nd	nd	nd	70
Methyl Isobutyl Ketone	0.5	nd	nd	nd	nd	31
Methyl tert-butyl ether	0.05	nd	nd	nd	nd	1.6
Methylene Chloride	0.05	nd	nd	nd	nd	1.6
Styrene	0.05	nd	nd	nd	nd	34
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	0.087
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	0.05
Tetrachloroethylene	0.05	nd	nd	nd	nd	1.9
Toluene	0.05	nd	nd	nd	0.20	6.4
1,1,1-Trichloroethane	0.05	nd	nd	nd	nd	6.1
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	0.05
Trichloroethylene	0.05	nd	nd	nd	nd	0.55
Trichlorofluoromethane	0.05	nd	nd	nd	nd	4
Vinyl Chloride	0.2	nd	nd	nd	nd	0.032
Xylenes	0.05	nd	nd	nd	0.07	26

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

All VOC parameters are in compliance with the selected MECP Table 7 Standards.

Table 5
Analytical Test Results – Soil
PAHs

Parameter	MDL (µg/g)	Soil Samples (µg/g)				MECP Table 7 Industrial Standards (µg/g)
		February 9, 2023		February 10, 2023		
		BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2	
Acenaphthene	0.02	nd	nd	nd	nd	21
Acenaphthylene	0.02	nd	nd	nd	0.03	0.15
Anthracene	0.02	nd	nd	nd	0.04	0.67
Benzo[a]anthracene	0.02	nd	nd	nd	0.10	0.96
Benzo[a]pyrene	0.02	nd	nd	nd	0.12	0.3
Benzo[b]fluoranthene	0.02	nd	nd	nd	0.22	0.96
Benzo[ghi]perylene	0.02	nd	nd	nd	0.09	9.6
Benzo[k]fluoranthene	0.02	nd	nd	nd	0.10	0.96
Chrysene	0.02	nd	nd	nd	0.13	9.6
Dibenzo[a,h]anthracene	0.02	nd	nd	nd	0.02	0.1
Fluoranthene	0.02	nd	nd	nd	0.15	9.6
Fluorene	0.02	nd	nd	nd	nd	62
Indeno[1,2,3-cd]pyrene	0.02	nd	nd	nd	0.08	0.76
1-Methylnaphthalene	0.02	nd	nd	nd	0.08	30
2-Methylnaphthalene	0.02	nd	nd	nd	0.11	30
Methylnaphthalene (1&2)	0.04	nd	nd	nd	0.20	30
Naphthalene	0.01	nd	nd	nd	0.08	9.6
Phenanthrene	0.02	nd	nd	nd	0.07	12
Pyrene	0.02	nd	nd	nd	0.16	96

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

All detected PAH concentrations are in compliance with the selected MECP Table 7 Standards.

All other parameter concentrations analyzed were below the laboratory detection limits. The laboratory certificates of analysis are provided in Appendix 2.

Groundwater Analysis

Groundwater samples recovered from BH1to BH4 on February 14, 2023 and February 21, 2023, were submitted for laboratory analysis of metals (including As, Sb and Se), mercury, chromium VI, volatile organic compounds (VOCs) and PHC (F_1 - F_4), PAHs, and chloride. An additional full round of groundwater sampling was conducted on March 2, 2023. Groundwater samples recovered from BH1 to BH4, were submitted for laboratory analysis of VOCs. Additional rounds of groundwater sampling were conducted on March 31 and April 14, 2023. Subsequent groundwater samples recovered from BH2 were submitted for laboratory analysis of VOCs.

The results of the analytical testing are presented below in Tables 6 to 10, along with the selected MECP Table 7 Standards. The laboratory certificates of analysis are included in Appendix 2 of this report.

Table 6
Analytical Test Results – Groundwater
Metals and General Inorganics

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		February 14, 2023			February 21, 2023	
		BH1-GW1	BH2-GW1	BH4-GW1	BH3-GW1	
Antimony	0.5	1.9	5.3	0.7	2.4	16,000
Arsenic	1	2	6	2	4	1,500
Barium	1	946	173	318	229	23,000
Beryllium	0.5	nd	nd	nd	nd	53
Boron	10	58	46	108	195	36,000
Cadmium	0.1	nd	nd	nd	nd	2.1
Chromium	1	nd	nd	nd	nd	640
Chromium (VI)	10	nd	nd	nd	nd	110
Cobalt	0.5	1.3	nd	nd	0.7	52
Copper	0.5	1.2	1.3	nd	1.8	69
Lead	0.1	0.2	0.2	nd	0.2	20
Mercury	0.1	nd	nd	nd	nd	0.1
Molybdenum	0.5	13.8	99.4	5	17.7	7,300
Nickel	1	3	2	nd	5	390
Selenium	1	nd	nd	nd	nd	50
Silver	0.1	nd	nd	nd	nd	1.2
Sodium	200	**2,420,000**	324,000	680,000	612,000	1,800,000
Thallium	0.1	0.3	nd	nd	nd	400
Uranium	0.1	4.8	1.3	1.1	4	330
Vanadium	0.5	nd	3.1	0.5	0.6	200
Zinc	5	nd	nd	12	nd	890
Chloride	1.0	**6,170,000**	428,000	**2,200,000**	1,320,000	1,800,000

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Sodium and chloride concentrations in Samples BH1-23-GW1 and BH4-23-GW1 were observed above the selected standards. The remaining metal and chloride parameters are in compliance with the MECP Table 7 Standards.

Table 7
Analytical Test Results – Groundwater
PHCs (F1 to F4)

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)					MECP Table 7 Industrial Standards (µg/L)
		February 14, 2023				March 31, 2023	
		BH1-GW1	BH2-GW1	BH3-GW1	BH4-GW1	Pit GW	
PHCs – F1	25	nd	nd	nd	nd	nd	420
PHCs – F2	100	nd	nd	nd	nd	nd	150
PHCs – F3	100	nd	nd	nd	nd	nd	500
PHCs – F4	100	nd	nd	nd	nd	nd	500

Notes:
- MDL - Method Detection Limit
- nd - Not detected above the MDL

No PHC concentrations were identified in any of the groundwater samples analyzed. All results comply with the MECP Table 7 Standards.

Table 8
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		February 14, 2023				
		BH1-GW1	BH2-GW1	BH3-GW1	BH4-GW1	
Acetone	5.0	168	54.5	215	nd	100,000
Benzene	0.5	**2.5**	nd	**1.9**	nd	0.5
Bromodichloromethane	0.5	nd	nd	nd	nd	67,000
Bromoform	0.5	nd	nd	nd	nd	5
Bromomethane	0.5	nd	nd	nd	nd	0.89
Carbon Tetrachloride	0.2	nd	nd	nd	nd	0.2
Chlorobenzene	0.5	nd	nd	nd	nd	140
Chloroform	0.5	nd	**2.2**	nd	0.7	2
Dibromochloromethane	0.5	nd	nd	nd	nd	65,000
Dichlorodifluoromethane	1.0	nd	nd	nd	nd	3,500
1,2-Dichlorobenzene	0.5	nd	nd	nd	nd	150
1,3-Dichlorobenzene	0.5	nd	nd	nd	nd	7,600
1,4-Dichlorobenzene	0.5	nd	nd	nd	nd	0.5
1,1-Dichloroethane	0.5	nd	nd	nd	nd	11
1,2-Dichloroethane	0.5	nd	nd	nd	nd	0.5
1,1-Dichloroethylene	0.5	nd	nd	nd	nd	0.5
cis-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
1,2-Dichloropropane	0.5	nd	nd	nd	nd	0.58
1,3-Dichloropropene, total	0.5	nd	nd	nd	nd	0.5
Ethylbenzene	0.5	nd	nd	nd	nd	54
Ethylene dibromide	0.2	nd	nd	nd	nd	0.2
Hexane	1.0	nd	nd	nd	nd	5
Methyl Ethyl Ketone	5.0	20.8	5.7	14.7	nd	21,000

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Table 8 - Continued
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		February 14, 2023				
		BH1-GW1	BH2-GW1	BH3-GW1	BH4-GW1	
Methyl Isobutyl Ketone	5.0	nd	nd	nd	nd	5,200
Methyl tert-butyl ether	2.0	nd	nd	nd	nd	15
Methylene Chloride	5.0	nd	nd	nd	nd	26
Styrene	0.5	nd	nd	nd	nd	43
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	nd	1.1
1,1,2,2-Tetrachloroethane	0.5	nd	nd	nd	nd	0.5
Tetrachloroethylene	0.5	nd	**3.6**	nd	nd	0.5
Toluene	0.5	2.3	nd	2.1	nd	320
1,1,1-Trichloroethane	0.5	nd	nd	nd	nd	23
1,1,2-Trichloroethane	0.5	nd	nd	nd	nd	0.5
Trichloroethylene	0.5	nd	nd	nd	nd	0.5
Trichlorofluoromethane	1.0	nd	nd	nd	nd	2,000
Vinyl Chloride	0.5	nd	nd	nd	nd	0.5
Xylenes, total	0.5	nd	nd	nd	nd	72

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Table 8 - Continued
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		March 2, 2023				
		BH1-GW2	BH2-GW2	BH3-GW2	BH4-GW2	
Acetone	5.0	nd	nd	60.4	nd	100,000
Benzene	0.5	nd	nd	nd	nd	0.5
Bromodichloromethane	0.5	nd	nd	nd	nd	67,000
Bromoform	0.5	nd	nd	nd	nd	5
Bromomethane	0.5	nd	nd	nd	nd	0.89
Carbon Tetrachloride	0.2	nd	nd	nd	nd	0.2
Chlorobenzene	0.5	nd	nd	nd	nd	140
Chloroform	0.5	nd	0.7	nd	nd	2
Dibromochloromethane	0.5	nd	nd	nd	nd	65,000
Dichlorodifluoromethane	1.0	nd	nd	nd	nd	3,500
1,2-Dichlorobenzene	0.5	nd	nd	nd	nd	150
1,3-Dichlorobenzene	0.5	nd	nd	nd	nd	7,600
1,4-Dichlorobenzene	0.5	nd	nd	nd	nd	0.5
1,1-Dichloroethane	0.5	nd	nd	nd	nd	11
1,2-Dichloroethane	0.5	nd	nd	nd	nd	0.5

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Table 8 - Continued
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		March 2, 2023				
		BH1-GW2	BH2-GW2	BH3-GW2	BH4-GW2	
1,1-Dichloroethylene	0.5	nd	nd	nd	nd	0.5
cis-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
1,2-Dichloropropane	0.5	nd	nd	nd	nd	0.58
1,3-Dichloropropene, total	0.5	nd	nd	nd	nd	0.5
Ethylbenzene	0.5	nd	nd	nd	nd	54
Ethylene dibromide	0.2	nd	nd	nd	nd	
Hexane	1.0	nd	nd	nd	nd	5
Methyl Ethyl Ketone	5.0	nd	nd	nd	nd	
Methyl Isobutyl Ketone	5.0	nd	nd	nd	nd	5,200
Methyl tert-butyl ether	2.0	nd	nd	nd	nd	15
Methylene Chloride	5.0	nd	nd	nd	nd	26
Styrene	0.5	nd	nd	nd	nd	43
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	nd	1.1
1,1,2,2-Tetrachloroethane	0.5	nd	nd	nd	nd	0.5
Tetrachloroethylene	0.5	nd	**1.9**	nd	nd	0.5
Toluene	0.5	nd	nd	nd	nd	320
1,1,1-Trichloroethane	0.5	nd	nd	nd	nd	23
1,1,2-Trichloroethane	0.5	nd	nd	nd	nd	0.5
Trichloroethylene	0.5	nd	nd	nd	nd	0.5
Trichlorofluoromethane	1.0	nd	nd	nd	nd	2,000
Vinyl Chloride	0.5	nd	nd	nd	nd	0.5
Xylenes, total	0.5	nd	nd	nd	nd	72

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Table 8 - Continued
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		March 31, 2023		April 14, 2023		
		BH2-GW3	DUP	BH2-GW4	BH12-GW	
Acetone	5.0	nd	nd	nd	nd	100,000
Benzene	0.5	nd	nd	nd	nd	0.5
Bromodichloromethane	0.5	nd	nd	nd	nd	67,000
Bromoform	0.5	nd	nd	nd	nd	5
Bromomethane	0.5	nd	nd	nd	nd	0.89
Carbon Tetrachloride	0.2	nd	nd	nd	nd	0.2
Chlorobenzene	0.5	nd	nd	nd	nd	140
Chloroform	0.5	nd	nd	0.7	0.7	2
Dibromochloromethane	0.5	nd	nd	nd	nd	65,000
Dichlorodifluoromethane	1.0	nd	nd	nd	nd	3,500

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Table 8 - Continued
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		March 31, 2023		April 14, 2023		
		BH2-GW3	DUP	BH2-GW4	BH12-GW	
1,2-Dichlorobenzene	0.5	nd	nd	nd	nd	150
1,3-Dichlorobenzene	0.5	nd	nd	nd	nd	7,600
1,4-Dichlorobenzene	0.5	nd	nd	nd	nd	0.5
1,1-Dichloroethane	0.5	nd	nd	nd	nd	11
1,2-Dichloroethane	0.5	nd	nd	nd	nd	0.5
1,1-Dichloroethylene	0.5	nd	nd	nd	nd	0.5
cis-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
trans-1,2-Dichloroethylene	0.5	nd	nd	nd	nd	1.6
1,2-Dichloropropane	0.5	nd	nd	nd	nd	0.58
1,3-Dichloropropene, total	0.5	nd	nd	nd	nd	0.5
Ethylbenzene	0.5	nd	nd	nd	nd	54
Ethylene dibromide	0.2	nd	nd	nd	nd	
Hexane	1.0	nd	nd	nd	nd	5
Methyl Ethyl Ketone	5.0	nd	nd	nd	nd	
Methyl Isobutyl Ketone	5.0	nd	nd	nd	nd	5,200
Methyl tert-butyl ether	2.0	nd	nd	nd	nd	15
Methylene Chloride	5.0	nd	nd	nd	nd	26
Styrene	0.5	nd	nd	nd	nd	43
1,1,1,2-Tetrachloroethane	0.5	nd	nd	nd	nd	1.1
1,1,2,2-Tetrachloroethane	0.5	nd	nd	nd	nd	0.5
Tetrachloroethylene	0.5	**0.7**	**0.7**	**0.6**	**0.7**	0.5
Toluene	0.5	nd	nd	nd	nd	320
1,1,1-Trichloroethane	0.5	nd	nd	nd	nd	23
1,1,2-Trichloroethane	0.5	nd	nd	nd	nd	0.5
Trichloroethylene	0.5	nd	nd	nd	nd	0.5
Trichlorofluoromethane	1.0	nd	nd	nd	nd	2,000
Vinyl Chloride	0.5	nd	nd	nd	nd	0.5
Xylenes, total	0.5	nd	nd	nd	nd	72

Notes:
- MDL – Method Detection Limit
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

Benzene, chloroform and tetrachloroethylene concentrations exceeded the selected MECP Table 7 Standards in Samples BH1-GW1, BH2-GW1 and BH3-GW1 in the original samples. The remaining complied with the MECP Table 7 Standards.

Additional rounds of groundwater testing were conducted for VOCs. Benzene concentrations were non-detect during the second round of testing and the chloroform levels in BH2 complied with the MECP Table 7 Standards, following the second round of testing. The tetrachloroethylene concentration in BH2 was observed to exceed the Table 7 Standard during the second round of testing although the concentration had decreased. Following additional groundwater sampling events for tetrachloroethylene in BH2, the presence of

tetrachloroethylene is considered to be anomalous, and the concentrations indicated a decreasing trend.

Groundwater was collected from the sedimentation pit on-site, as well as the catch basin associated with the drainage pipe system.

Table 9
Analytical Test Results – Groundwater
VOCs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)		MECP Table 7 Industrial Standards (µg/L)
		August 10, 2022	March 31, 2023	
		Sample #1	Pit GW	
Acetone	5.0	NA	nd	100,000
Benzene	0.5	nd	nd	0.5
Bromodichloromethane	0.5	NA	nd	67,000
Bromoform	0.5	NA	nd	5
Bromomethane	0.5	NA	nd	0.89
Carbon Tetrachloride	0.2	NA	nd	0.2
Chlorobenzene	0.5	NA	nd	140
Chloroform	0.5	nd	nd	2
Dibromochloromethane	0.5	NA	nd	65,000
Dichlorodifluoromethane	1.0	NA	nd	3,500
1,2-Dichlorobenzene	0.5	nd	nd	150
1,3-Dichlorobenzene	0.5	NA	nd	7,600
1,4-Dichlorobenzene	0.5	nd	nd	0.5
1,1-Dichloroethane	0.5	NA	nd	11
1,2-Dichloroethane	0.5	NA	nd	0.5
1,1-Dichloroethylene	0.5	NA	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	NA	nd	0.58
1,3-Dichloropropene, total	0.5	NA	nd	0.5
Ethylbenzene	0.5	nd	nd	54
Ethylene dibromide	0.2	NA	nd	0.2
Hexane	1.0	NA	nd	5
Methyl Ethyl Ketone	5.0	NA	nd	21,000
Methyl Isobutyl Ketone	5.0	NA	nd	5,200
Methyl tert-butyl ether	2.0	NA	nd	15
Methylene Chloride	5.0	nd	nd	26
Styrene	0.5	NA	nd	43
1,1,1,2-Tetrachloroethane	0.5	NA	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	320
1,1,1-Trichloroethane	0.5	NA	nd	23
1,1,2-Trichloroethane	0.5	NA	nd	0.5
Trichloroethylene	0.5	nd	nd	0.5
Trichlorofluoromethane	1.0	NA	nd	2,000
Vinyl Chloride	0.5	NA	nd	0.5
Xylenes, total	0.5	nd	nd	72

Notes:
- MDL – Method Detection Limit
- NA – parameter not analyzed
- nd – not detected above the MDL
- **Bold and Underlined** – Value exceeds selected MECP Standards

No detectable VOCs parameters were identified in the sedimentation pit water and catch basin samples. All results comply with the MECP Table 7 Standards.

Table 10
Analytical Test Results – Groundwater
PAHs

Parameter	MDL (µg/L)	Groundwater Samples (µg/L)				MECP Table 7 Industrial Standards (µg/L)
		February 14, 2023			February 21, 2023	
		BH1-23-GW1	BH2-23-GW1	BH4-23-GW1	BH3-23-GW1	
Acenaphthene	0.05	nd	nd	nd	nd	17
Acenaphthylene	0.05	nd	nd	nd	nd	1
Anthracene	0.01	0.03	nd	nd	nd	1
Benzo[a]anthracene	0.01	nd	nd	nd	nd	1.8
Benzo[a]pyrene	0.01	nd	nd	nd	nd	0.81
Benzo[b]fluoranthene	0.05	nd	nd	nd	nd	0.75
Benzo[g,h,i]perylene	0.05	nd	nd	nd	nd	0.2
Benzo[k]fluoranthene	0.05	nd	nd	nd	nd	0.4
Chrysene	0.05	nd	nd	nd	nd	0.7
Dibenzo[a,h]anthracene	0.05	nd	nd	nd	nd	0.4
Fluoranthene	0.01	0.07	nd	nd	nd	44
Fluorene	0.05	nd	nd	nd	nd	290
Indeno[1,2,3-cd]pyrene	0.05	nd	nd	nd	nd	
1-Methylnaphthalene	0.05	nd	nd	nd	nd	1,500
2-Methylnaphthalene	0.05	nd	nd	nd	nd	1,500
Methylnaphthalene (1&2)	0.10	nd	nd	nd	nd	1,500
Naphthalene	0.05	nd	nd	nd	nd	7
Phenanthrene	0.05	0.13	nd	nd	nd	380
Pyrene	0.01	0.05	nd	nd	nd	5.7

Notes:
- MDL - Method Detection Limit
- nd - Not detected above the MDL

All detected PAH concentrations in the groundwater samples analysed are in compliance with the selected MECP Table 7 Standards.

5.0 ASSESSMENT AND RECOMMENDATIONS

5.1 Assessment

A Baseline Investigation was conducted for 1850 Bantree Street in Ottawa, Ontario. The purpose of the Baseline Investigation was to establish the existing soil and groundwater conditions in the area of a proposed sedimentation pit for liquid soils.

The field drilling program consisted of placing four boreholes on the subject site, two of which were situated at each end of the proposed sedimentation pit, one

along the northeastern property limit targeting the drainage pipe system, and lastly one along western property limit for general coverage purposes, all of which were completed with groundwater monitoring wells.

Soil

The soil profile generally consisted of fill material consisting of brown silty sand with gravel, overlying glacial till consisting of silty clay, followed by shale bedrock. Boreholes were drilled to depths ranging from 3.66 to 6.15 meters below the existing grade. Shale bedrock was encountered in all boreholes at depths ranging from 1.37 to 1.75 meters below existing grade. All wells were installed in the

Four soil samples were submitted for analysis of metals (including As, Sb and Se), VOC, PHC, PAH and/or pH parameters. All detected metal, VOC, PHC, PAH and concentrations in the soil analysed are in compliance with the selected Table 7 Standards.

Groundwater

Groundwater levels were measure from the wells during the sampling events on February 14, February 21, March 2 and March 31, 2023. Groundwater was encountered at depths between 1.32 m and 5.45 m below the existing grade. It should be noted that groundwater levels are expected to fluctuate throughout the year with seasonal variations.

Based on the groundwater elevations, groundwater flow at the subject site is expected to be in a northerly direction (it has varied but it is our opinion that the groundwater is flowing in the north north-westerly direction).

Four groundwater samples were recovered from BH1 to BH4 on February 14, 2023, and February 21, 2023. No unusual visual or olfactory observations were noted at the time of the groundwater sampling.

The groundwater samples were submitted for analysis of metals, PHCs (F1-F4), VOCs (volatile organic compounds), and chloride parameters. No PHC concentrations were detected in the groundwater samples submitted for analysis. The PHC results are in compliance with the selected MECP Table 7 Standards.

Several VOC parameters were identified above the selected MECP Table 7 Standards for benzene, chloroform and tetrachloroethylene, in Samples BH1-GW1, BH2-GW1, and BH3-GW1. The remaining VOC parameters are in compliance with the selected MECP Table 7 Standards.

All results from the initial samples complied with the standards, except for benzene, chloroform and tetrachloroethylene in Samples BH1-GW1, BH2-GW1 and BH3-GW1. Following, additional rounds of groundwater testing were conducted for VOCs. Benzene concentrations were non-detect during the second round of testing and the chloroform levels in BH2 complied with the MECP Table 7 Standards, following the second round of testing. The tetrachloroethylene concentration in BH2 was observed to exceed the Table 7 Standard during the second round of testing although the concentration had decreased. Following additional groundwater sampling events for tetrachloroethylene in BH2, the presence of tetrachloroethylene was observed to marginally exceed the MECP Table 7 Standard, however it is presumed anomalous and follows a decreasing trend.

Sodium and chloride concentrations in Samples BH1-GW1 and BH4-GW1 were observed above the selected standards.

5.2 Recommendations

Monitoring Wells

It is our recommendation that the monitoring wells installed on the subject property should remain viable for future monitoring. Semi-annual groundwater monitoring and testing is recommended for the wells installed on the subject site. The monitoring wells should be tested for the same parameters previously tested unless additional parameters are expected/screened in the soils. If they are not going to be used in the future, or they should be abandoned according to Ontario Regulation 903. The wells will be registered with the MECP under this regulation.

6.0 STATEMENT OF LIMITATIONS

This Baseline Assessment report has been prepared in general accordance with the agreed scope-of-work. 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 described by the test holes themselves.

This report was prepared for the sole use of Laurent Leblanc Ltd. Permission and notification from Laurent Leblanc Ltd. and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Joshua Dempsey, B. Sc.

Mark S. D'Arcy, P.Eng.

Report Distribution:

- ❑ Laurent Leblanc Ltd.
- ❑ Paterson Group

APPENDIX 1

SOIL PROFILE & TEST DATA SHEETS

SYMBOLS AND TERMS

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1850 Bantree Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** February 9, 2023

FILE NO. PE5579

HOLE NO. BH 1

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.77
FILL: Brown silty sand with gravel		AU	1				
0.60							
GLACIAL TILL: Brown silty clay, some sand, trace gravel and shale		SS	2	100	28	1	67.77
- grey by 1.6m depth							
1.62		SS	3	100	50+		
						2	66.77
BEDROCK: Weathered shale							
						3	65.77
3.66							
End of Borehole							
(GWL @ 1.89m - Feb. 14, 2023)							

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

patersongroup Consulting Engineers

9 Auriga Drive, Ottawa, Ontario K2E 7T9

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1850 Bantree Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

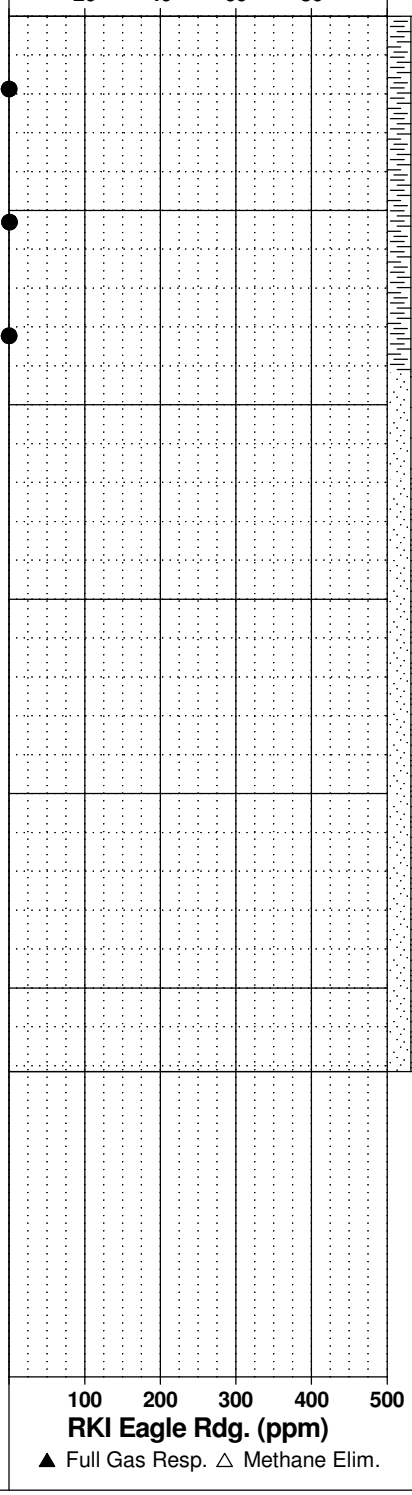
BORINGS BY Track-Mount Power Auger **DATE** February 9, 2023

FILE NO. PE5579

HOLE NO. BH 2

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.89
FILL: Brown silty sand with gravel		AU	1				
1.12		SS	2	71	22	1	67.89
GLACIAL TILL: Brown silty clay with sand and shale fragments							
- grey by 1.7m depth		SS	3	90	50+		
1.75						2	66.89
						3	65.89
BEDROCK: Very poor quality, black shale						4	64.89
		RC	4	100	17	5	63.89
5.43							
End of Borehole							
(GWL @ 2.42m - Feb. 14, 2023)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**



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SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
1850 Bantree Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** February 10, 2023

FILE NO. PE5579

HOLE NO. BH 3

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	68.90
FILL: Brown silty sand with gravel and crushed stone		AU	1				
- some shale, trace clay by 0.6m depth		SS	2	71	33	1	67.90
1.37							
GLACIAL TILL: Brown silty clay with sand, trace gravel		SS	3	50	50+		
1.68						2	66.90
		G	4				
						3	65.90
BEDRCK: Weathered shale						4	64.90
		G	5				
						5	63.90
						6	62.90
6.10							
End of Borehole							
(GWL @ 3.89m - Feb. 21, 2023)							

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
1850 Bantree Street
Ottawa, Ontario

DATUM Geodetic

REMARKS

BORINGS BY Track-Mount Power Auger **DATE** February 10, 2023

FILE NO. PE5579

HOLE NO. BH 4

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	71.04
FILL: Brown silty sand with gravel and crushed stone		AU	1				
0.60							
FILL: Brown silty sand with clay and shale		SS	2	50	32	1	70.04
1.37							
BEDROCK: Weathered shale						2	69.04
2.29		G	3				
		RC	1	100	44	3	68.04
BEDROCK: Poor to good quality, black shale		RC	2	100	84	4	67.04
		RC	3	100	84	5	66.04
						6	65.04
6.15							
End of Borehole							
(GWL @ 5.27m - Feb. 14, 2023)							

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 strength of cohesionless soils is the relative density, 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.

Relative Density	'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 vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

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 is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

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 NXL size core. However, it can be used on smaller core sizes, such as BX, 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
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture 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 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 x 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

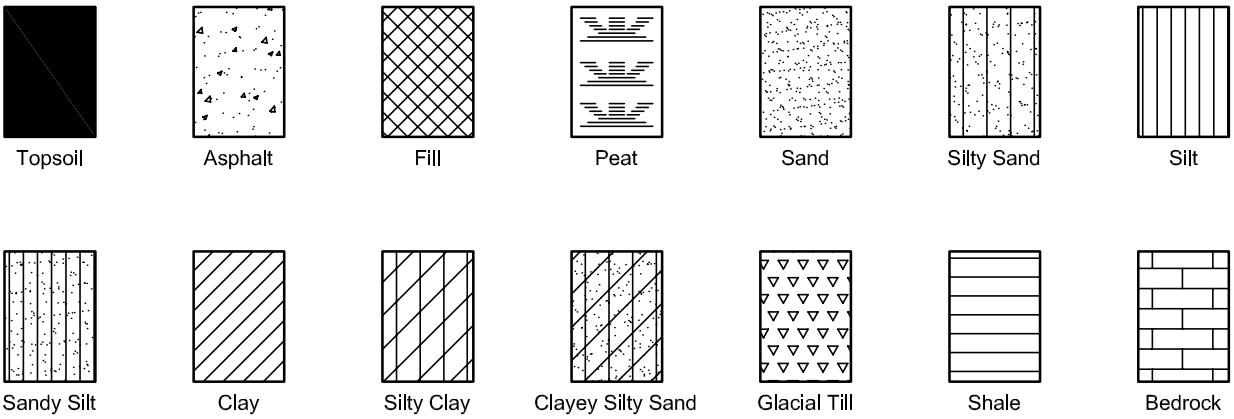
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void 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.

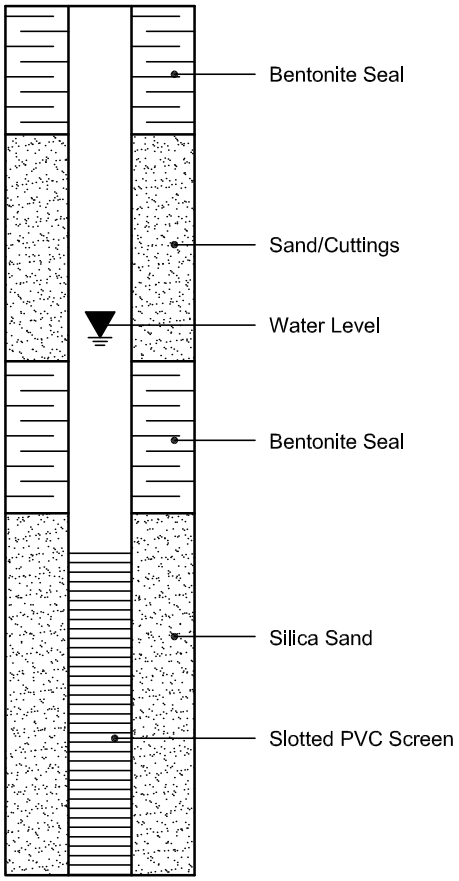
SYMBOLS AND TERMS (continued)

STRATA PLOT

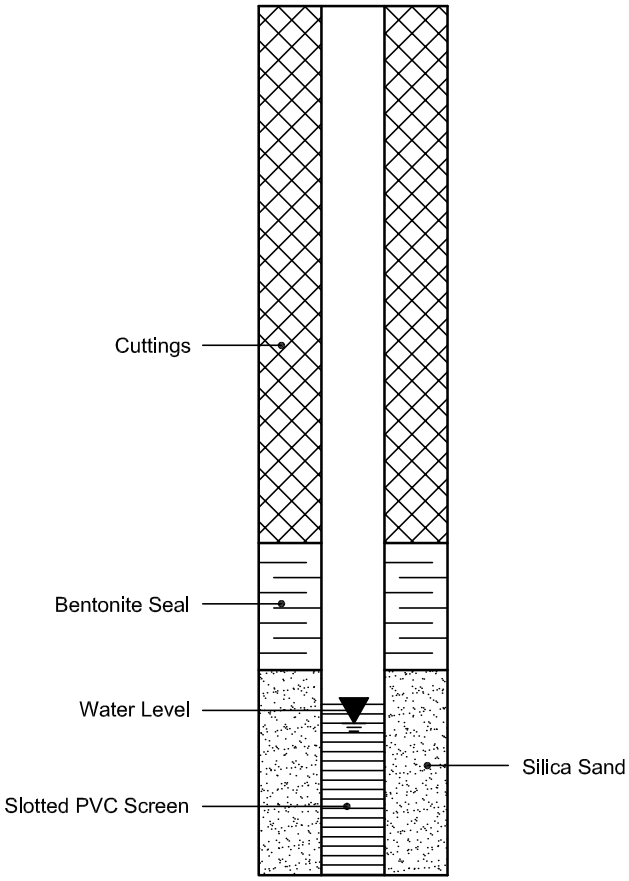


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



APPENDIX 2

ANALYTICAL TEST RESULTS

PARACEL LABORATORIES LTD.

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 56816
Project: PE5579
Custody:

Report Date: 16-Feb-2023
Order Date: 13-Feb-2023

Order #: 2307076

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

Paracel ID	Client ID
2307076-01	BH1-SS2
2307076-02	BH2-SS2
2307076-03	BH3-SS3
2307076-04	BH4-SS2

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Report Date: 16-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 13-Feb-2023

Client PO: 56816

Project Description: PE5579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	15-Feb-23	16-Feb-23
Mercury by CVAA	EPA 7471B - CVAA, digestion	15-Feb-23	16-Feb-23
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	15-Feb-23	15-Feb-23
PHC F1	CWS Tier 1 - P&T GC-FID	14-Feb-23	14-Feb-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	13-Feb-23	15-Feb-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	15-Feb-23	15-Feb-23
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	10-Feb-23	15-Feb-23
REG 153: VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	14-Feb-23	14-Feb-23
Solids, %	CWS Tier 1 - Gravimetric	14-Feb-23	15-Feb-23

Certificate of Analysis

Report Date: 16-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 13-Feb-2023

Client PO: 56816

Project Description: PE5579

	Client ID:	BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2
	Sample Date:	09-Feb-23 00:00	09-Feb-23 00:00	10-Feb-23 00:00	10-Feb-23 00:00
	Sample ID:	2307076-01	2307076-02	2307076-03	2307076-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	88.3	80.6	85.7	89.0
General Inorganics					
pH	0.05 pH Units	7.86	11.37	7.94	8.14
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	5.6	6.0	4.4	3.8
Barium	1.0 ug/g dry	93.5	74.7	79.5	56.2
Beryllium	0.5 ug/g dry	0.6	0.6	0.6	<0.5
Boron	5.0 ug/g dry	9.1	8.2	8.4	<5.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	20.9	19.5	24.0	15.5
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	12.4	8.8	11.1	5.2
Copper	5.0 ug/g dry	28.4	22.2	50.4	20.6
Lead	1.0 ug/g dry	9.6	7.8	4.2	13.2
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	1.5	1.1	<1.0	<1.0
Nickel	5.0 ug/g dry	30.6	23.3	24.3	12.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	28.3	22.9	27.3	19.3
Zinc	20.0 ug/g dry	49.7	43.8	44.6	28.0
Volatiles					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.07
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

Certificate of Analysis

Report Date: 16-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 13-Feb-2023

Client PO: 56816

Project Description: PE5579

	Client ID:	BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2
	Sample Date:	09-Feb-23 00:00	09-Feb-23 00:00	10-Feb-23 00:00	10-Feb-23 00:00
	Sample ID:	2307076-01	2307076-02	2307076-03	2307076-04
	MDL/Units	Soil	Soil	Soil	Soil
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide (dibromoethane, 1,2-)	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	0.20
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	0.07
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	0.07
4-Bromofluorobenzene	Surrogate	106%	113%	108%	105%
Dibromofluoromethane	Surrogate	96.1%	100%	97.3%	95.3%
Toluene-d8	Surrogate	117%	123%	118%	117%
Hydrocarbons					

Certificate of Analysis

Report Date: 16-Feb-2023

Client: **Paterson Group Consulting Engineers**

Order Date: 13-Feb-2023

Client PO: **56816**

Project Description: PE5579

	Client ID:	BH1-SS2	BH2-SS2	BH3-SS3	BH4-SS2
	Sample Date:	09-Feb-23 00:00	09-Feb-23 00:00	10-Feb-23 00:00	10-Feb-23 00:00
	Sample ID:	2307076-01	2307076-02	2307076-03	2307076-04
	MDL/Units	Soil	Soil	Soil	Soil
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	44	32	37
F4 PHCs (C34-C50)	6 ug/g dry	<6	49	55	60
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.03
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.04
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.10
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.12
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.22
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.09
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.10
Chrysene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.13
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.02
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.15
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.08
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.08
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.11
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	0.20
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	0.08
Phenanthrene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.07
Pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.16
2-Fluorobiphenyl	Surrogate	68.0%	68.1%	80.7%	74.6%
Terphenyl-d14	Surrogate	85.0%	86.6%	99.4%	89.7%

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 (VI)	ND	0.2	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						
Mercury	ND	0.1	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	*1.03*		*ug/g*		*77.1*	*50-140*			
Surrogate: Terphenyl-d14	*1.33*		*ug/g*		*100*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*8.10*		*ug/g*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*6.79*		*ug/g*		*84.9*	*50-140*			
Surrogate: Toluene-d8	*8.70*		*ug/g*		*109*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	8.35	0.05	pH Units	8.42			0.8	2.3	
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	ND	1.0	ug/g	ND			NC	30	
Arsenic	3.8	1.0	ug/g	3.6			4.0	30	
Barium	25.5	1.0	ug/g	18.9			29.8	30	
Beryllium	ND	0.5	ug/g	ND			NC	30	
Boron	ND	5.0	ug/g	ND			NC	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	8.4	5.0	ug/g	8.0			5.3	30	
Cobalt	2.9	1.0	ug/g	2.8			3.6	30	
Copper	10.0	5.0	ug/g	9.8			2.0	30	
Lead	6.6	1.0	ug/g	6.0			9.2	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	8.1	5.0	ug/g	7.8			3.3	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	14.8	10.0	ug/g	14.5			2.0	30	
Zinc	21.4	20.0	ug/g	21.0			1.7	30	
Physical Characteristics									
% Solids	91.8	0.1	% by Wt.	91.3			0.5	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	*1.11*		*ug/g*		*66.1*	*50-140*			
Surrogate: Terphenyl-d14	*1.29*		*ug/g*		*77.1*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g	ND			NC	50	
Benzene	ND	0.02	ug/g	ND			NC	50	
Bromodichloromethane	ND	0.05	ug/g	ND			NC	50	
Bromoform	ND	0.05	ug/g	ND			NC	50	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromomethane	ND	0.05	ug/g	ND			NC	50	
Carbon Tetrachloride	ND	0.05	ug/g	ND			NC	50	
Chlorobenzene	ND	0.05	ug/g	ND			NC	50	
Chloroform	ND	0.05	ug/g	ND			NC	50	
Dibromochloromethane	ND	0.05	ug/g	ND			NC	50	
Dichlorodifluoromethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,3-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,4-Dichlorobenzene	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g	ND			NC	50	
1,2-Dichloropropane	ND	0.05	ug/g	ND			NC	50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Ethylene dibromide (dibromoethane, 1,2	ND	0.05	ug/g	ND			NC	50	
Hexane	ND	0.05	ug/g	ND			NC	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g	ND			NC	50	
Methyl Isobutyl Ketone	ND	0.50	ug/g	ND			NC	50	
Methyl tert-butyl ether	ND	0.05	ug/g	ND			NC	50	
Methylene Chloride	ND	0.05	ug/g	ND			NC	50	
Styrene	ND	0.05	ug/g	ND			NC	50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g	ND			NC	50	
Tetrachloroethylene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
1,1,1-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
1,1,2-Trichloroethane	ND	0.05	ug/g	ND			NC	50	
Trichloroethylene	ND	0.05	ug/g	ND			NC	50	
Trichlorofluoromethane	ND	0.05	ug/g	ND			NC	50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*8.49*		*ug/g*		*101*	*50-140*			
Surrogate: Dibromofluoromethane	*7.73*		*ug/g*		*92.0*	*50-140*			
Surrogate: Toluene-d8	*9.30*		*ug/g*		*111*	*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)	171	7	ug/g	ND	85.3	80-120			
F2 PHCs (C10-C16)	96	4	ug/g	ND	112	60-140			
F3 PHCs (C16-C34)	257	8	ug/g	ND	123	60-140			
F4 PHCs (C34-C50)	169	6	ug/g	ND	128	60-140			
Metals									
Arsenic	40.4	1.0	ug/g	1.4	78.0	70-130			
Barium	48.1	1.0	ug/g	7.5	81.2	70-130			
Beryllium	39.2	0.5	ug/g	ND	78.2	70-130			
Boron	38.9	5.0	ug/g	ND	75.7	70-130			
Cadmium	37.5	0.5	ug/g	ND	74.9	70-130			
Chromium (VI)	4.8	0.2	ug/g	ND	87.0	70-130			
Chromium	43.5	5.0	ug/g	ND	80.6	70-130			
Cobalt	39.8	1.0	ug/g	1.1	77.3	70-130			
Copper	42.4	5.0	ug/g	ND	76.9	70-130			
Lead	38.7	1.0	ug/g	2.4	72.5	70-130			
Mercury	1.29	0.1	ug/g	ND	86.2	70-130			
Molybdenum	38.6	1.0	ug/g	ND	76.8	70-130			
Nickel	42.0	5.0	ug/g	ND	77.7	70-130			
Selenium	37.5	1.0	ug/g	ND	75.0	70-130			
Silver	38.4	0.3	ug/g	ND	76.8	70-130			
Thallium	37.2	1.0	ug/g	ND	74.4	70-130			
Uranium	37.5	1.0	ug/g	ND	74.8	70-130			
Vanadium	45.7	10.0	ug/g	ND	79.8	70-130			
Zinc	45.5	20.0	ug/g	ND	74.2	70-130			
Semi-Volatiles									
Acenaphthene	0.188	0.02	ug/g	ND	89.7	50-140			
Acenaphthylene	0.161	0.02	ug/g	ND	76.8	50-140			
Anthracene	0.164	0.02	ug/g	ND	78.2	50-140			
Benzo [a] anthracene	0.153	0.02	ug/g	ND	73.1	50-140			
Benzo [a] pyrene	0.149	0.02	ug/g	ND	71.4	50-140			
Benzo [b] fluoranthene	0.196	0.02	ug/g	ND	93.9	50-140			
Benzo [g,h,i] perylene	0.129	0.02	ug/g	ND	61.8	50-140			
Benzo [k] fluoranthene	0.172	0.02	ug/g	ND	82.4	50-140			
Chrysene	0.188	0.02	ug/g	ND	89.8	50-140			
Dibenzo [a,h] anthracene	0.124	0.02	ug/g	ND	59.3	50-140			
Fluoranthene	0.154	0.02	ug/g	ND	73.5	50-140			
Fluorene	0.158	0.02	ug/g	ND	75.8	50-140			
Indeno [1,2,3-cd] pyrene	0.129	0.02	ug/g	ND	61.5	50-140			
1-Methylnaphthalene	0.175	0.02	ug/g	ND	83.8	50-140			
2-Methylnaphthalene	0.194	0.02	ug/g	ND	92.8	50-140			
Naphthalene	0.184	0.01	ug/g	ND	88.0	50-140			
Phenanthrene	0.170	0.02	ug/g	ND	81.4	50-140			
Pyrene	0.156	0.02	ug/g	ND	74.5	50-140			
Surrogate: 2-Fluorobiphenyl	*1.14*		*ug/g*		*68.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.46*		*ug/g*		*87.4*	*50-140*			
Volatiles									
Acetone	11.0	0.50	ug/g	ND	110	50-140			
Benzene	3.42	0.02	ug/g	ND	85.6	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromodichloromethane	2.82	0.05	ug/g	ND	70.5	60-130			
Bromoform	3.48	0.05	ug/g	ND	86.9	60-130			
Bromomethane	4.38	0.05	ug/g	ND	110	50-140			
Carbon Tetrachloride	3.00	0.05	ug/g	ND	75.1	60-130			
Chlorobenzene	3.39	0.05	ug/g	ND	84.8	60-130			
Chloroform	3.13	0.05	ug/g	ND	78.2	60-130			
Dibromochloromethane	2.95	0.05	ug/g	ND	73.7	60-130			
Dichlorodifluoromethane	4.20	0.05	ug/g	ND	105	50-140			
1,2-Dichlorobenzene	3.25	0.05	ug/g	ND	81.3	60-130			
1,3-Dichlorobenzene	3.04	0.05	ug/g	ND	76.0	60-130			
1,4-Dichlorobenzene	2.96	0.05	ug/g	ND	74.0	60-130			
1,1-Dichloroethane	3.20	0.05	ug/g	ND	79.9	60-130			
1,2-Dichloroethane	3.44	0.05	ug/g	ND	85.9	60-130			
1,1-Dichloroethylene	3.75	0.05	ug/g	ND	93.8	60-130			
cis-1,2-Dichloroethylene	3.09	0.05	ug/g	ND	77.1	60-130			
trans-1,2-Dichloroethylene	3.61	0.05	ug/g	ND	90.3	60-130			
1,2-Dichloropropane	3.30	0.05	ug/g	ND	82.6	60-130			
cis-1,3-Dichloropropylene	3.92	0.05	ug/g	ND	98.0	60-130			
trans-1,3-Dichloropropylene	3.43	0.05	ug/g	ND	85.7	60-130			
Ethylbenzene	3.48	0.05	ug/g	ND	87.0	60-130			
Ethylene dibromide (dibromoethane, 1,2	2.85	0.05	ug/g	ND	71.4	60-130			
Hexane	3.20	0.05	ug/g	ND	79.9	60-130			
Methyl Ethyl Ketone (2-Butanone)	8.90	0.50	ug/g	ND	89.0	50-140			
Methyl Isobutyl Ketone	8.51	0.50	ug/g	ND	85.1	50-140			
Methyl tert-butyl ether	7.69	0.05	ug/g	ND	76.9	50-140			
Methylene Chloride	3.72	0.05	ug/g	ND	92.9	60-130			
Styrene	2.87	0.05	ug/g	ND	71.7	60-130			
1,1,1,2-Tetrachloroethane	2.86	0.05	ug/g	ND	71.6	60-130			
1,1,2,2-Tetrachloroethane	3.03	0.05	ug/g	ND	75.8	60-130			
Tetrachloroethylene	3.17	0.05	ug/g	ND	79.3	60-130			
Toluene	3.49	0.05	ug/g	ND	87.2	60-130			
1,1,1-Trichloroethane	2.71	0.05	ug/g	ND	67.8	60-130			
1,1,2-Trichloroethane	3.15	0.05	ug/g	ND	78.8	60-130			
Trichloroethylene	2.99	0.05	ug/g	ND	74.7	60-130			
Trichlorofluoromethane	3.51	0.05	ug/g	ND	87.8	50-140			
Vinyl chloride	2.74	0.02	ug/g	ND	68.6	50-140			
m,p-Xylenes	6.68	0.05	ug/g	ND	83.5	60-130			
o-Xylene	3.39	0.05	ug/g	ND	84.8	60-130			
Surrogate: 4-Bromofluorobenzene	*8.00*		*ug/g*		*100*	*50-140*			
Surrogate: Dibromofluoromethane	*8.24*		*ug/g*		*103*	*50-140*			
Surrogate: Toluene-d8	*8.34*		*ug/g*		*104*	*50-140*			

Qualifier Notes:

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.

PARACEL LABORATORIES LTD.

Paracel ID: 2307076

Paracel Order Number (Lab Use Only)	**Chain Of Custody** (Lab Use Only)

Client Name: PATERSON GROUP
Contact Name: Mark D'Arcy
Address: 9 Auriga Drive
Telephone: 613-226-7381

Project Ref: PE5579
Quote #:
PO #: 56816
E-mail: mdarcy@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)	ORPs + PHCs	pH			
1	BH1-SS2	S		3	Feb 9/2023		X	X	X	X	X	X			X			
2	BH2-SS2	↓		3	Feb 9/2023		↓	↓	↓	↓	↓	↓			↓			
3	BH3-SS3	↓		2	Feb 10/2023		↓	↓	↓	↓	↓	↓			↓			
4	BH4-SS2	↓		3	Feb 10/2023		↓	↓	↓	↓	↓	↓			↓			
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign):	Received By Driver/Depot: M. TOURIE	Received at Lab:	Verified By:
Relinquished By (Print): Joshua Dempsey	Date/Time: 13/02/23 1605	Date/Time: 13/02/23 4:29pm	Date/Time: 13/02/23 4:40pm
Date/Time: Feb 13/2023	Temperature: °C	Temperature: 6.7	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 56822
Project: PE5579
Custody:

Report Date: 22-Feb-2023
Order Date: 15-Feb-2023

Order #: 2307291

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

Paracel ID	Client ID
2307291-01	BH1-23-GW1
2307291-02	BH2-23-GW1
2307291-03	BH3-23-GW1
2307291-04	BH4-23-GW1
2307291-05	DUP1-GW1

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 56822

Report Date: 22-Feb-2023

Order Date: 15-Feb-2023

Project Description: PE5579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	16-Feb-23	16-Feb-23
Chromium, hexavalent - water	MOE E3056 - colourimetric	22-Feb-23	22-Feb-23
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	17-Feb-23	17-Feb-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Feb-23	17-Feb-23
PHC F1	CWS Tier 1 - P&T GC-FID	16-Feb-23	16-Feb-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	17-Feb-23	17-Feb-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	17-Feb-23	17-Feb-23
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	16-Feb-23	16-Feb-23

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 56822

Report Date: 22-Feb-2023

Order Date: 15-Feb-2023

Project Description: PE5579

	Client ID:	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1
	Sample Date:	14-Feb-23 13:00	14-Feb-23 12:20	14-Feb-23 11:40	14-Feb-23 11:00
	Sample ID:	2307291-01	2307291-02	2307291-03	2307291-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
Anions					
Chloride	1 mg/L	6170	428	-	2200
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	-	<0.1
Antimony	0.5 ug/L	1.9	5.3	-	0.7
Arsenic	1 ug/L	2	6	-	2
Barium	1 ug/L	946	173	-	318
Beryllium	0.5 ug/L	<0.5	<0.5	-	<0.5
Boron	10 ug/L	58	46	-	108
Cadmium	0.1 ug/L	<0.1	<0.1	-	<0.1
Chromium	1 ug/L	<1	<1	-	<1
Chromium (VI)	10 ug/L	<10	<10	-	<10
Cobalt	0.5 ug/L	1.3	<0.5	-	<0.5
Copper	0.5 ug/L	1.2	1.3	-	<0.5
Lead	0.1 ug/L	0.2	0.2	-	<0.1
Molybdenum	0.5 ug/L	13.8	99.4	-	5.0
Nickel	1 ug/L	3	2	-	<1
Selenium	1 ug/L	<1	<1	-	<1
Silver	0.1 ug/L	<0.1	<0.1	-	<0.1
Sodium	200 ug/L	2420000	324000	-	680000
Thallium	0.1 ug/L	0.3	<0.1	-	<0.1
Uranium	0.1 ug/L	4.8	1.3	-	1.1
Vanadium	0.5 ug/L	<0.5	3.1	-	0.5
Zinc	5 ug/L	<5	<5	-	12
Volatiles					
Acetone	5.0 ug/L	168	54.5	215	<5.0
Benzene	0.5 ug/L	2.5	<0.5	1.9	<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	2.2	<0.5	0.7
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

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 56822

Report Date: 22-Feb-2023

Order Date: 15-Feb-2023

Project Description: PE5579

	Client ID:	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1
	Sample Date:	14-Feb-23 13:00	14-Feb-23 12:20	14-Feb-23 11:40	14-Feb-23 11:00
	Sample ID:	2307291-01	2307291-02	2307291-03	2307291-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
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	20.8	5.7	14.7	<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	3.6	<0.5	<0.5
Toluene	0.5 ug/L	2.3	<0.5	2.1	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
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	101%	104%	105%	104%
Dibromofluoromethane	Surrogate	108%	108%	113%	110%
Toluene-d8	Surrogate	106%	106%	105%	105%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25

Certificate of Analysis

Report Date: 22-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2023

Client PO: 56822

Project Description: PE5579

	Client ID:	BH1-23-GW1	BH2-23-GW1	BH3-23-GW1	BH4-23-GW1
	Sample Date:	14-Feb-23 13:00	14-Feb-23 12:20	14-Feb-23 11:40	14-Feb-23 11:00
	Sample ID:	2307291-01	2307291-02	2307291-03	2307291-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	<0.05	-	<0.05
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	<0.05
Anthracene	0.01 ug/L	0.03	<0.01	-	<0.01
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	-	<0.01
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	-	<0.01
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	-	<0.05
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	-	<0.05
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	-	<0.05
Chrysene	0.05 ug/L	<0.05	<0.05	-	<0.05
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	-	<0.05
Fluoranthene	0.01 ug/L	0.07	<0.01	-	<0.01
Fluorene	0.05 ug/L	<0.05	<0.05	-	<0.05
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	-	<0.05
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	<0.05
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	<0.05
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	-	<0.10
Naphthalene	0.05 ug/L	<0.05	<0.05	-	<0.05
Phenanthrene	0.05 ug/L	0.13	<0.05	-	<0.05
Pyrene	0.01 ug/L	0.05	<0.01	-	<0.01
2-Fluorobiphenyl	Surrogate	103%	94.0%	-	85.8%
Terphenyl-d14	Surrogate	135%	120%	-	123%

Certificate of Analysis

Report Date: 22-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2023

Client PO: 56822

Project Description: PE5579

	Client ID:	DUP1-GW1	-	-	-
	Sample Date:	14-Feb-23 00:00	-	-	-
	Sample ID:	2307291-05	-	-	-
	MDL/Units	Ground Water	-	-	-
Anions					
Chloride	1 mg/L	6110	-	-	-
Metals					
Mercury	0.1 ug/L	<0.1	-	-	-
Antimony	0.5 ug/L	1.4	-	-	-
Arsenic	1 ug/L	2	-	-	-
Barium	1 ug/L	750	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	51	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	0.5 ug/L	1.1	-	-	-
Copper	0.5 ug/L	1.0	-	-	-
Lead	0.1 ug/L	<0.1	-	-	-
Molybdenum	0.5 ug/L	12.4	-	-	-
Nickel	1 ug/L	3	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	2490000	-	-	-
Thallium	0.1 ug/L	0.3	-	-	-
Uranium	0.1 ug/L	4.2	-	-	-
Vanadium	0.5 ug/L	<0.5	-	-	-
Zinc	5 ug/L	<5	-	-	-
Volatiles					
Acetone	5.0 ug/L	122	-	-	-
Benzene	0.5 ug/L	2.1	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	-	-	-
Bromoform	0.5 ug/L	<0.5	-	-	-
Bromomethane	0.5 ug/L	<0.5	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	-	-	-
Chloroform	0.5 ug/L	<0.5	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-

Certificate of Analysis

Report Date: 22-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2023

Client PO: 56822

Project Description: PE5579

	Client ID:	DUP1-GW1	-	-	-
	Sample Date:	14-Feb-23 00:00	-	-	-
	Sample ID:	2307291-05	-	-	-
	MDL/Units	Ground Water	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Ethylene dibromide (dibromoethane, 1	0.2 ug/L	<0.2	-	-	-
Hexane	1.0 ug/L	<1.0	-	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	12.6	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	-	-	-
Methylene Chloride	5.0 ug/L	<5.0	-	-	-
Styrene	0.5 ug/L	<0.5	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	2.1	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-
4-Bromofluorobenzene	Surrogate	102%	-	-	-
Dibromofluoromethane	Surrogate	90.2%	-	-	-
Toluene-d8	Surrogate	106%	-	-	-

Hydrocarbons

Certificate of Analysis

Report Date: 22-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2023

Client PO: 56822

Project Description: PE5579

	Client ID:	DUP1-GW1	-	-	-
	Sample Date:	14-Feb-23 00:00	-	-	-
	Sample ID:	2307291-05	-	-	-
	MDL/Units	Ground Water	-	-	-
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-
Anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-
Fluoranthene	0.01 ug/L	0.02	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-
Phenanthrene	0.05 ug/L	<0.05	-	-	-
Pyrene	0.01 ug/L	0.02	-	-	-
2-Fluorobiphenyl	Surrogate	92.3%	-	-	-
Terphenyl-d14	Surrogate	125%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
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						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*16.8*		*ug/L*		*84.1*	*50-140*			
Surrogate: Terphenyl-d14	*23.4*		*ug/L*		*117*	*50-140*			
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						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*80.1*		*ug/L*		*100*	*50-140*			
Surrogate: Dibromofluoromethane	*66.4*		*ug/L*		*83.0*	*50-140*			
Surrogate: Toluene-d8	*87.9*		*ug/L*		*110*	*50-140*			

Certificate of Analysis

Report Date: 22-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2023

Client PO: 56822

Project Description: PE5579

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	26.1	1	mg/L	26.0			0.4	20	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Mercury	0.35	0.1	ug/L	0.36			2.5	20	
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Barium	21.3	1	ug/L	20.8			2.1	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	18	10	ug/L	16			12.4	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium (VI)	ND	10	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	ND	0.5	ug/L	ND			NC	20	
Copper	0.94	0.5	ug/L	0.96			2.2	20	
Lead	ND	0.1	ug/L	ND			NC	20	
Molybdenum	1.04	0.5	ug/L	1.03			0.3	20	
Nickel	ND	1	ug/L	ND			NC	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	18200	200	ug/L	19800			8.5	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	ND	0.1	ug/L	ND			NC	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	7	5	ug/L	8			4.0	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	5.10	0.5	ug/L	4.16			20.3	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	4.48	0.5	ug/L	3.95			12.6	30	
Dibromochloromethane	3.06	0.5	ug/L	2.48			20.9	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	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*83.0*		*ug/L*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*91.3*		*ug/L*		*114*	*50-140*			
Surrogate: Toluene-d8	*84.5*		*ug/L*		*106*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	35.3	1	mg/L	26.0	92.7	70-124			
Hydrocarbons									
F1 PHCs (C6-C10)	1820	25	ug/L	ND	91.0	68-117			
F2 PHCs (C10-C16)	1470	100	ug/L	ND	91.9	60-140			
F3 PHCs (C16-C34)	3710	100	ug/L	ND	94.7	60-140			
F4 PHCs (C34-C50)	2520	100	ug/L	ND	102	60-140			
Metals									
Mercury	1.58	0.1	ug/L	0.36	81.1	70-130			
Arsenic	50.1	1	ug/L	ND	99.7	80-120			
Barium	62.4	1	ug/L	20.8	83.2	80-120			
Beryllium	47.7	0.5	ug/L	ND	95.3	80-120			
Boron	61	10	ug/L	16	89.6	80-120			
Cadmium	44.0	0.1	ug/L	ND	88.0	80-120			
Chromium (VI)	174	10	ug/L	ND	87.0	70-130			
Chromium	51.1	1	ug/L	ND	102	80-120			
Cobalt	48.1	0.5	ug/L	ND	96.2	80-120			
Copper	47.4	0.5	ug/L	0.96	92.8	80-120			
Lead	42.4	0.1	ug/L	ND	84.8	80-120			
Molybdenum	47.2	0.5	ug/L	1.03	92.4	80-120			
Nickel	48.0	1	ug/L	ND	94.9	80-120			
Selenium	45.7	1	ug/L	ND	91.0	80-120			
Silver	42.8	0.1	ug/L	ND	85.6	80-120			
Sodium	26400	200	ug/L	19800	66.5	80-120			QM-07
Thallium	43.0	0.1	ug/L	ND	86.1	80-120			
Uranium	44.5	0.1	ug/L	ND	89.0	80-120			
Vanadium	51.0	0.5	ug/L	ND	102	80-120			
Zinc	51	5	ug/L	8	87.0	80-120			
Semi-Volatiles									
Acenaphthene	4.56	0.05	ug/L	ND	91.2	50-140			
Acenaphthylene	4.08	0.05	ug/L	ND	81.5	50-140			
Anthracene	4.36	0.01	ug/L	ND	87.1	50-140			
Benzo [a] anthracene	4.36	0.01	ug/L	ND	87.2	50-140			
Benzo [a] pyrene	4.62	0.01	ug/L	ND	92.4	50-140			
Benzo [b] fluoranthene	5.94	0.05	ug/L	ND	119	50-140			
Benzo [g,h,i] perylene	4.41	0.05	ug/L	ND	88.1	50-140			
Benzo [k] fluoranthene	5.97	0.05	ug/L	ND	119	50-140			
Chrysene	4.82	0.05	ug/L	ND	96.3	50-140			
Dibenzo [a,h] anthracene	4.63	0.05	ug/L	ND	92.6	50-140			
Fluoranthene	3.97	0.01	ug/L	ND	79.4	50-140			
Fluorene	4.32	0.05	ug/L	ND	86.5	50-140			
Indeno [1,2,3-cd] pyrene	4.78	0.05	ug/L	ND	95.7	50-140			
1-Methylnaphthalene	4.39	0.05	ug/L	ND	87.8	50-140			
2-Methylnaphthalene	4.70	0.05	ug/L	ND	94.0	50-140			
Naphthalene	4.60	0.05	ug/L	ND	92.1	50-140			
Phenanthrene	4.27	0.05	ug/L	ND	85.5	50-140			
Pyrene	4.11	0.01	ug/L	ND	82.1	50-140			
Surrogate: 2-Fluorobiphenyl	*17.3*		*ug/L*		*86.6*	*50-140*			
Surrogate: Terphenyl-d14	*24.1*		*ug/L*		*121*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	110	5.0	ug/L	ND	110	50-140			
Benzene	41.2	0.5	ug/L	ND	103	60-130			
Bromodichloromethane	36.4	0.5	ug/L	ND	90.9	60-130			
Bromoform	41.6	0.5	ug/L	ND	104	60-130			
Bromomethane	39.6	0.5	ug/L	ND	98.9	50-140			
Carbon Tetrachloride	33.6	0.2	ug/L	ND	84.0	60-130			
Chlorobenzene	40.5	0.5	ug/L	ND	101	60-130			
Chloroform	37.6	0.5	ug/L	ND	94.0	60-130			
Dibromochloromethane	36.3	0.5	ug/L	ND	90.7	60-130			
Dichlorodifluoromethane	42.4	1.0	ug/L	ND	106	50-140			
1,2-Dichlorobenzene	38.5	0.5	ug/L	ND	96.2	60-130			
1,3-Dichlorobenzene	36.2	0.5	ug/L	ND	90.6	60-130			
1,4-Dichlorobenzene	35.7	0.5	ug/L	ND	89.2	60-130			
1,1-Dichloroethane	34.4	0.5	ug/L	ND	86.0	60-130			
1,2-Dichloroethane	40.8	0.5	ug/L	ND	102	60-130			
1,1-Dichloroethylene	45.4	0.5	ug/L	ND	114	60-130			
cis-1,2-Dichloroethylene	36.1	0.5	ug/L	ND	90.2	60-130			
trans-1,2-Dichloroethylene	33.6	0.5	ug/L	ND	84.0	60-130			
1,2-Dichloropropane	40.0	0.5	ug/L	ND	100	60-130			
cis-1,3-Dichloropropylene	32.0	0.5	ug/L	ND	80.1	60-130			
trans-1,3-Dichloropropylene	29.0	0.5	ug/L	ND	72.6	60-130			
Ethylbenzene	42.2	0.5	ug/L	ND	106	60-130			
Ethylene dibromide (dibromoethane, 1,2	33.4	0.2	ug/L	ND	83.6	60-130			
Hexane	40.3	1.0	ug/L	ND	101	60-130			
Methyl Ethyl Ketone (2-Butanone)	104	5.0	ug/L	ND	104	50-140			
Methyl Isobutyl Ketone	101	5.0	ug/L	ND	101	50-140			
Methyl tert-butyl ether	72.8	2.0	ug/L	ND	72.8	50-140			
Methylene Chloride	45.6	5.0	ug/L	ND	114	60-130			
Styrene	33.2	0.5	ug/L	ND	83.1	60-130			
1,1,1,2-Tetrachloroethane	34.3	0.5	ug/L	ND	85.7	60-130			
1,1,2,2-Tetrachloroethane	33.8	0.5	ug/L	ND	84.4	60-130			
Tetrachloroethylene	38.1	0.5	ug/L	ND	95.2	60-130			
Toluene	42.0	0.5	ug/L	ND	105	60-130			
1,1,1-Trichloroethane	37.8	0.5	ug/L	ND	94.4	60-130			
1,1,2-Trichloroethane	36.3	0.5	ug/L	ND	90.8	60-130			
Trichloroethylene	35.5	0.5	ug/L	ND	88.8	60-130			
Trichlorofluoromethane	47.0	1.0	ug/L	ND	117	60-130			
Vinyl chloride	32.9	0.5	ug/L	ND	82.2	50-140			
m,p-Xylenes	79.7	0.5	ug/L	ND	99.6	60-130			
o-Xylene	41.1	0.5	ug/L	ND	103	60-130			
Surrogate: 4-Bromofluorobenzene	*79.9*		*ug/L*		*99.9*	*50-140*			
Surrogate: Dibromofluoromethane	*80.6*		*ug/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*84.7*		*ug/L*		*106*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Not preserved - Metals 250ml

Applies to samples: BH1-23-GW1, BH2-23-GW1, BH4-23-GW1, DUP1-GW1

Sample preserved upon receipt at the lab.
Metals 250ml

Applies to samples: BH1-23-GW1, BH2-23-GW1, BH4-23-GW1, DUP1-GW1

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.

PARACEL LABORATORIES LTD.

Paracel ID: 2307291

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2307291	

Client Name: PATERSON GROUP
Contact Name: Mark D'Arcy; Joshua Dempsey
Address: 9 Auriga Drive
Telephone: 613-226-7381

Project Ref: PE5579
Quote #:
PO #: 56822
E-mail: mdarcy@patersongroup.ca; jdempsey@patersongroup.ca

Page 1 of 1

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

☒ REG 153/04 ☐ REG 406/19

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

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No
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)	Sodium	Chloride			
1	BH1-23-GW1	GW		8	Feb 14/23	1:00p	X	X	X	X	X	X		X	X			
2	BH2-23-GW1	↓		8	↓	12:20p	X	X	X	X	X	X		X	X			
3	BH3-23-GW1			3		11:40A	X	X										
4	BH4-23-GW1			8		11:00A	X	X	X	X	X	X		X	X			
5	DUP1-GW1	↓		8	↓		X	X	X	X	X	X		X	X			
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign):	Received By Driver/Depot: M. Tessier	Received at Lab:	Verified By: Sandra Demchuk
Relinquished By (Print): Joshua Dempsey	Date/Time: 15/02/23 16:17	Date/Time: 15/02/23 17:00	Date/Time: Feb 16, 8:50
Date/Time: Feb 15/2023	Temperature: °C	Temperature: 6.2	pH Verified: ☑ By: Sandra Demchuk

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 56852
Project: PE5579
Custody:

Report Date: 27-Feb-2023
Order Date: 21-Feb-2023

Order #: 2308090

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

Paracel ID	Client ID
2308090-01	BH3-23-GW

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	22-Feb-23	22-Feb-23
Chromium, hexavalent - water	MOE E3056 - colourimetric	22-Feb-23	22-Feb-23
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	22-Feb-23	22-Feb-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	23-Feb-23	23-Feb-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	24-Feb-23	25-Feb-23

Certificate of Analysis

Report Date: 27-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 21-Feb-2023

Client PO: 56852

Project Description: PE5579

	Client ID:	BH3-23-GW	-	-	-
	Sample Date:	21-Feb-23 00:00	-	-	-
	Sample ID:	2308090-01	-	-	-
	MDL/Units	Ground Water	-	-	-
Anions					
Chloride	1 mg/L	1320	-	-	-
Metals					
Mercury	0.1 ug/L	<0.1	-	-	-
Antimony	0.5 ug/L	2.4	-	-	-
Arsenic	1 ug/L	4	-	-	-
Barium	1 ug/L	229	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	195	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	0.5 ug/L	0.7	-	-	-
Copper	0.5 ug/L	1.8	-	-	-
Lead	0.1 ug/L	0.2	-	-	-
Molybdenum	0.5 ug/L	17.7	-	-	-
Nickel	1 ug/L	5	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	612000	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	4.0	-	-	-
Vanadium	0.5 ug/L	0.6	-	-	-
Zinc	5 ug/L	<5	-	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-
Anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-
Fluoranthene	0.01 ug/L	<0.01	-	-	-

Certificate of Analysis

Report Date: 27-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 21-Feb-2023

Client PO: 56852

Project Description: PE5579

	Client ID:	BH3-23-GW	-	-	-
	Sample Date:	21-Feb-23 00:00	-	-	-
	Sample ID:	2308090-01	-	-	-
	MDL/Units	Ground Water	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-
Phenanthrene	0.05 ug/L	<0.05	-	-	-
Pyrene	0.01 ug/L	<0.01	-	-	-
2-Fluorobiphenyl	Surrogate	106%	-	-	-
Terphenyl-d14	Surrogate	127%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	1	mg/L						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*20.1*		*ug/L*		*101*	*50-140*			
Surrogate: Terphenyl-d14	*24.5*		*ug/L*		*122*	*50-140*			

Certificate of Analysis

Report Date: 27-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 21-Feb-2023

Client PO: 56852

Project Description: PE5579

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	1380	5	mg/L	1390			0.3	20	
Metals									
Mercury	ND	0.1	ug/L	ND			NC	20	
Antimony	2.40	0.5	ug/L	2.39			0.4	20	
Arsenic	4.2	1	ug/L	4.4			3.0	20	
Barium	232	1	ug/L	229			1.5	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	196	10	ug/L	195			0.6	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium (VI)	ND	10	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	0.66	0.5	ug/L	0.68			3.1	20	
Copper	1.83	0.5	ug/L	1.84			0.4	20	
Lead	0.20	0.1	ug/L	0.20			2.4	20	
Molybdenum	18.0	0.5	ug/L	17.7			1.5	20	
Nickel	5.6	1	ug/L	5.4			2.4	20	
Selenium	1.0	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	528000	200	ug/L	612000			14.7	20	
Thallium	0.11	0.1	ug/L	ND			NC	20	
Uranium	4.0	0.1	ug/L	4.0			0.9	20	
Vanadium	0.62	0.5	ug/L	0.61			2.1	20	
Zinc	ND	5	ug/L	ND			NC	20	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.86	1	mg/L	ND	98.6	78-114			
Metals									
Mercury	2.13	0.1	ug/L	ND	71.0	70-130			
Arsenic	50.6	1	ug/L	4.4	92.4	80-120			
Barium	43.1	1	ug/L	ND	86.1	80-120			
Beryllium	36.6	0.5	ug/L	ND	73.3	80-120			QM-07
Boron	44	10	ug/L	ND	87.7	80-120			
Cadmium	37.4	0.1	ug/L	ND	74.7	80-120			QM-07
Chromium (VI)	174	10	ug/L	ND	87.0	70-130			
Chromium	58.5	1	ug/L	ND	116	80-120			
Cobalt	51.3	0.5	ug/L	0.68	101	80-120			
Copper	46.5	0.5	ug/L	1.84	89.4	80-120			
Lead	37.9	0.1	ug/L	0.20	75.4	80-120			QM-07
Molybdenum	64.9	0.5	ug/L	17.7	94.4	80-120			
Nickel	52.6	1	ug/L	5.4	94.3	80-120			
Selenium	42.8	1	ug/L	ND	85.7	80-120			
Silver	45.4	0.1	ug/L	ND	90.8	80-120			
Sodium	8580	200	ug/L	ND	85.8	80-120			
Thallium	39.1	0.1	ug/L	0.10	77.9	80-120			QM-07
Uranium	45.9	0.1	ug/L	4.0	83.8	80-120			
Vanadium	60.6	0.5	ug/L	0.61	120	80-120			
Zinc	44	5	ug/L	ND	88.5	80-120			
Semi-Volatiles									
Acenaphthene	4.72	0.05	ug/L	ND	94.3	50-140			
Acenaphthylene	4.16	0.05	ug/L	ND	83.1	50-140			
Anthracene	4.48	0.01	ug/L	ND	89.7	50-140			
Benzo [a] anthracene	4.71	0.01	ug/L	ND	94.3	50-140			
Benzo [a] pyrene	4.63	0.01	ug/L	ND	92.6	50-140			
Benzo [b] fluoranthene	6.49	0.05	ug/L	ND	130	50-140			
Benzo [g,h,i] perylene	4.24	0.05	ug/L	ND	84.9	50-140			
Benzo [k] fluoranthene	5.34	0.05	ug/L	ND	107	50-140			
Chrysene	5.14	0.05	ug/L	ND	103	50-140			
Dibenzo [a,h] anthracene	4.43	0.05	ug/L	ND	88.5	50-140			
Fluoranthene	4.25	0.01	ug/L	ND	84.9	50-140			
Fluorene	4.68	0.05	ug/L	ND	93.6	50-140			
Indeno [1,2,3-cd] pyrene	4.73	0.05	ug/L	ND	94.7	50-140			
1-Methylnaphthalene	4.71	0.05	ug/L	ND	94.1	50-140			
2-Methylnaphthalene	5.27	0.05	ug/L	ND	105	50-140			
Naphthalene	4.75	0.05	ug/L	ND	95.0	50-140			
Phenanthrene	4.27	0.05	ug/L	ND	85.4	50-140			
Pyrene	4.47	0.01	ug/L	ND	89.4	50-140			
Surrogate: 2-Fluorobiphenyl	*22.8*		*ug/L*		*114*	*50-140*			
Surrogate: Terphenyl-d14	*26.9*		*ug/L*		*135*	*50-140*			

Certificate of Analysis

Report Date: 27-Feb-2023

Client: Paterson Group Consulting Engineers

Order Date: 21-Feb-2023

Client PO: 56852

Project Description: PE5579

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

PARACEL LABORATORIES LTD.

Paracel ID: 2308090

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2308090	

Client Name: Paterson
Contact Name: Mark D'Arcy + Josh Dempsey
Address: 9 Auriga
Telephone: 613 226 7381

Project Ref: PE5579
Quote #:
PO #: 56862
E-mail: mdarcy@patersongroup.ca
JDempsey@patersongroup.ca

Page __ of __

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)	Sodium	chlorides			
1	BH3-23-GW	GW		5	Feb 21 2023				X	X	X	X		X	X			
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: PACKED COURIER

Relinquished By (Sign): GPat	Received By Driver/Depot: A Tourie	Received at Lab:
Relinquished By (Print): Grant Paterson	Date/Time: 21/02/23 1520	Date/Time: Feb 21/23 5:20
Date/Time: Feb 21 2023	Temperature: °C	Temperature: 1.4

Verified By:
Date/Time: Feb 21/23
pH Verified: By: 825

Chain of Custody (Blank).xlsx
Revision 4.0

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 56948
Project: PE5579
Custody:

Report Date: 8-Mar-2023
Order Date: 6-Mar-2023

Order #: 2310068

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

Paracel ID	Client ID
2310068-01	BH1-23-GW2
2310068-02	BH2-23-GW2
2310068-03	BH3-23-GW2
2310068-04	BH4-23-GW2

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 56948

Report Date: 08-Mar-2023

Order Date: 6-Mar-2023

Project Description: PE5579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	7-Mar-23	7-Mar-23

Certificate of Analysis

Report Date: 08-Mar-2023

Client: Paterson Group Consulting Engineers

Order Date: 6-Mar-2023

Client PO: 56948

Project Description: PE5579

	Client ID:	BH1-23-GW2	BH2-23-GW2	BH3-23-GW2	BH4-23-GW2
	Sample Date:	02-Mar-23 09:00	02-Mar-23 09:00	02-Mar-23 09:00	02-Mar-23 09:00
	Sample ID:	2310068-01	2310068-02	2310068-03	2310068-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground Water
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	60.4	<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	0.7	<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	1.9	<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: 08-Mar-2023

Client: Paterson Group Consulting Engineers

Order Date: 6-Mar-2023

Client PO: 56948

Project Description: PE5579

	Client ID:	BH1-23-GW2	BH2-23-GW2	BH3-23-GW2	BH4-23-GW2
	Sample Date:	02-Mar-23 09:00	02-Mar-23 09:00	02-Mar-23 09:00	02-Mar-23 09:00
	Sample ID:	2310068-01	2310068-02	2310068-03	2310068-04
	MDL/Units	Ground Water	Ground Water	Ground Water	Ground 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%	106%	106%	104%
Dibromofluoromethane	Surrogate	80.0%	89.4%	89.8%	92.0%
Toluene-d8	Surrogate	110%	111%	111%	111%

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*84.4*		*ug/L*		*106*	*50-140*			
Surrogate: Dibromofluoromethane	*66.7*		*ug/L*		*83.3*	*50-140*			
Surrogate: Toluene-d8	*90.4*		*ug/L*		*113*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*83.7*		*ug/L*		*105*	*50-140*			
Surrogate: Dibromofluoromethane	*73.8*		*ug/L*		*92.2*	*50-140*			
Surrogate: Toluene-d8	*88.9*		*ug/L*		*111*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	127	5.0	ug/L	ND	127	50-140			
Benzene	47.1	0.5	ug/L	ND	118	60-130			
Bromodichloromethane	41.0	0.5	ug/L	ND	103	60-130			
Bromoform	32.6	0.5	ug/L	ND	81.4	60-130			
Bromomethane	48.2	0.5	ug/L	ND	120	50-140			
Carbon Tetrachloride	34.5	0.2	ug/L	ND	86.2	60-130			
Chlorobenzene	41.3	0.5	ug/L	ND	103	60-130			
Chloroform	41.5	0.5	ug/L	ND	104	60-130			
Dibromochloromethane	32.9	0.5	ug/L	ND	82.2	60-130			
Dichlorodifluoromethane	45.3	1.0	ug/L	ND	113	50-140			
1,2-Dichlorobenzene	37.4	0.5	ug/L	ND	93.5	60-130			
1,3-Dichlorobenzene	36.0	0.5	ug/L	ND	89.9	60-130			
1,4-Dichlorobenzene	35.1	0.5	ug/L	ND	87.8	60-130			
1,1-Dichloroethane	35.0	0.5	ug/L	ND	87.4	60-130			
1,2-Dichloroethane	47.0	0.5	ug/L	ND	118	60-130			
1,1-Dichloroethylene	46.9	0.5	ug/L	ND	117	60-130			
cis-1,2-Dichloroethylene	47.2	0.5	ug/L	ND	118	60-130			
trans-1,2-Dichloroethylene	30.8	0.5	ug/L	ND	76.9	60-130			
1,2-Dichloropropane	47.3	0.5	ug/L	ND	118	60-130			
cis-1,3-Dichloropropylene	36.0	0.5	ug/L	ND	90.0	60-130			
trans-1,3-Dichloropropylene	31.6	0.5	ug/L	ND	78.9	60-130			
Ethylbenzene	47.5	0.5	ug/L	ND	119	60-130			
Ethylene dibromide (dibromoethane, 1,2	34.4	0.2	ug/L	ND	86.0	60-130			
Hexane	48.8	1.0	ug/L	ND	122	60-130			
Methyl Ethyl Ketone (2-Butanone)	136	5.0	ug/L	ND	136	50-140			
Methyl Isobutyl Ketone	127	5.0	ug/L	ND	127	50-140			
Methyl tert-butyl ether	79.0	2.0	ug/L	ND	79.0	50-140			
Methylene Chloride	48.3	5.0	ug/L	ND	121	60-130			
Styrene	32.0	0.5	ug/L	ND	79.9	60-130			
1,1,1,2-Tetrachloroethane	33.0	0.5	ug/L	ND	82.4	60-130			
1,1,2,2-Tetrachloroethane	34.8	0.5	ug/L	ND	87.1	60-130			
Tetrachloroethylene	37.3	0.5	ug/L	ND	93.2	60-130			
Toluene	44.8	0.5	ug/L	ND	112	60-130			
1,1,1-Trichloroethane	40.9	0.5	ug/L	ND	102	60-130			
1,1,2-Trichloroethane	39.9	0.5	ug/L	ND	99.7	60-130			
Trichloroethylene	37.2	0.5	ug/L	ND	93.1	60-130			
Trichlorofluoromethane	46.4	1.0	ug/L	ND	116	60-130			
Vinyl chloride	40.4	0.5	ug/L	ND	101	50-140			
m,p-Xylenes	83.8	0.5	ug/L	ND	105	60-130			
o-Xylene	42.9	0.5	ug/L	ND	107	60-130			
Surrogate: 4-Bromofluorobenzene	*82.6*		*ug/L*		*103*	*50-140*			
Surrogate: Dibromofluoromethane	*83.5*		*ug/L*		*104*	*50-140*			
Surrogate: Toluene-d8	*86.8*		*ug/L*		*109*	*50-140*			

Qualifier Notes:

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

PARACEL LABORATORIES LTD.

Paracel ID: 2310068

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2310068	

Client Name: PATERSON GROUP	Project Ref: 7E5579	Page 1 of 1
Contact Name: MARC D'ARCY ; Joshua Dempsey	Quote #:	Turnaround Time
Address: 9 Auriga Drive	PO #: 56948	☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca jdempsey@patersongroup.ca	☐ 2 day ☒ Regular
Telephone: 613-226-7381		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) 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	BH1-23-GW2	GW		2	March 2/23			X					
2	BH2-23-GW2	↓		↓	↓			↓					
3	BH3-23-GW2												
4	BH4-23-GW2												
5													
6													
7													
8													
9													
10													

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): Joshua Dempsey	Received By Driver/Depot: A. TOUHE	Received at Lab: Sandra Demarais	Verified By: Sandra Demarais
Relinquished By (Print): Joshua Dempsey	Date/Time: 06/03/23 1500	Date/Time: Mar 6, 3:30	Date/Time: Mar 6, 3:42
Date/Time: March 6 / 2023	Temperature: °C	Temperature: 17.1	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 57146
Project: PE5579
Custody:

Report Date: 10-Apr-2023
Order Date: 3-Apr-2023

Order #: 2314066

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

Paracel ID	Client ID
2314066-01	BH2-23-GW
2314066-02	Pit GW
2314066-03	DUP

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 57146

Report Date: 10-Apr-2023

Order Date: 3-Apr-2023

Project Description: PE5579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PHC F1	CWS Tier 1 - P&T GC-FID	4-Apr-23	4-Apr-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	5-Apr-23	6-Apr-23
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	4-Apr-23	4-Apr-23

Certificate of Analysis

Report Date: 10-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 3-Apr-2023

Client PO: 57146

Project Description: PE5579

	Client ID:	BH2-23-GW	Pit GW	DUP	-
	Sample Date:	31-Mar-23 09:00	31-Mar-23 09:00	31-Mar-23 09:00	-
	Sample ID:	2314066-01	2314066-02	2314066-03	-
	MDL/Units	Ground Water	Ground Water	Ground 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	0.7	<0.5	0.7	-
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: 10-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 3-Apr-2023

Client PO: 57146

Project Description: PE5579

	Client ID:	BH2-23-GW	Pit GW	DUP	-
	Sample Date:	31-Mar-23 09:00	31-Mar-23 09:00	31-Mar-23 09:00	-
	Sample ID:	2314066-01	2314066-02	2314066-03	-
	MDL/Units	Ground Water	Ground Water	Ground 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	96.6%	98.6%	97.3%	-
Dibromofluoromethane	Surrogate	81.5%	92.7%	80.3%	-
Toluene-d8	Surrogate	103%	104%	103%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	-	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	-	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	-	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	-	<100	-	-

Certificate of Analysis

Report Date: 10-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 3-Apr-2023

Client PO: 57146

Project Description: PE5579

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	*75.6*		*ug/L*		*94.5*	*50-140*			
Surrogate: Dibromofluoromethane	*68.6*		*ug/L*		*85.8*	*50-140*			
Surrogate: Toluene-d8	*83.4*		*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	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	*78.4*		*ug/L*		*98.0*	*50-140*			
Surrogate: Dibromofluoromethane	*71.7*		*ug/L*		*89.6*	*50-140*			
Surrogate: Toluene-d8	*82.4*		*ug/L*		*103*	*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)	1860	25	ug/L	ND	93.2	68-117			
F2 PHCs (C10-C16)	1930	100	ug/L	ND	120	60-140			
F3 PHCs (C16-C34)	4730	100	ug/L	ND	121	60-140			
F4 PHCs (C34-C50)	2440	100	ug/L	ND	98.5	60-140			
Volatiles									
Acetone	108	5.0	ug/L	ND	108	50-140			
Benzene	37.7	0.5	ug/L	ND	94.2	60-130			
Bromodichloromethane	36.6	0.5	ug/L	ND	91.6	60-130			
Bromoform	34.8	0.5	ug/L	ND	86.9	60-130			
Bromomethane	46.6	0.5	ug/L	ND	117	50-140			
Carbon Tetrachloride	32.2	0.2	ug/L	ND	80.4	60-130			
Chlorobenzene	40.6	0.5	ug/L	ND	102	60-130			
Chloroform	37.1	0.5	ug/L	ND	92.7	60-130			
Dibromochloromethane	29.4	0.5	ug/L	ND	73.6	60-130			
Dichlorodifluoromethane	32.5	1.0	ug/L	ND	81.3	50-140			
1,2-Dichlorobenzene	39.7	0.5	ug/L	ND	99.2	60-130			
1,3-Dichlorobenzene	38.8	0.5	ug/L	ND	97.1	60-130			
1,4-Dichlorobenzene	37.4	0.5	ug/L	ND	93.5	60-130			
1,1-Dichloroethane	37.2	0.5	ug/L	ND	93.0	60-130			
1,2-Dichloroethane	34.6	0.5	ug/L	ND	86.4	60-130			
1,1-Dichloroethylene	38.4	0.5	ug/L	ND	96.0	60-130			
cis-1,2-Dichloroethylene	37.2	0.5	ug/L	ND	93.0	60-130			
trans-1,2-Dichloroethylene	37.3	0.5	ug/L	ND	93.2	60-130			
1,2-Dichloropropane	36.0	0.5	ug/L	ND	90.0	60-130			
cis-1,3-Dichloropropylene	33.9	0.5	ug/L	ND	84.6	60-130			
trans-1,3-Dichloropropylene	46.2	0.5	ug/L	ND	115	60-130			
Ethylbenzene	40.8	0.5	ug/L	ND	102	60-130			
Ethylene dibromide (dibromoethane, 1,2-	29.5	0.2	ug/L	ND	73.8	60-130			
Hexane	36.0	1.0	ug/L	ND	90.1	60-130			
Methyl Ethyl Ketone (2-Butanone)	88.3	5.0	ug/L	ND	88.3	50-140			
Methyl Isobutyl Ketone	90.3	5.0	ug/L	ND	90.3	50-140			
Methyl tert-butyl ether	87.2	2.0	ug/L	ND	87.2	50-140			
Methylene Chloride	41.1	5.0	ug/L	ND	103	60-130			
Styrene	34.0	0.5	ug/L	ND	85.0	60-130			
1,1,1,2-Tetrachloroethane	30.2	0.5	ug/L	ND	75.5	60-130			
1,1,2,2-Tetrachloroethane	29.1	0.5	ug/L	ND	72.8	60-130			
Tetrachloroethylene	40.1	0.5	ug/L	ND	100	60-130			
Toluene	39.9	0.5	ug/L	ND	99.8	60-130			
1,1,1-Trichloroethane	33.9	0.5	ug/L	ND	84.8	60-130			
1,1,2-Trichloroethane	33.4	0.5	ug/L	ND	83.5	60-130			
Trichloroethylene	29.4	0.5	ug/L	ND	73.4	60-130			
Trichlorofluoromethane	39.1	1.0	ug/L	ND	97.8	60-130			
Vinyl chloride	41.4	0.5	ug/L	ND	104	50-140			
m,p-Xylenes	79.8	0.5	ug/L	ND	99.8	60-130			
o-Xylene	40.8	0.5	ug/L	ND	102	60-130			
Surrogate: 4-Bromofluorobenzene	*76.6*		*ug/L*		*95.7*	*50-140*			
Surrogate: Dibromofluoromethane	*78.4*		*ug/L*		*98.0*	*50-140*			
Surrogate: Toluene-d8	*80.1*		*ug/L*		*100*	*50-140*			

Qualifier Notes:

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 LABORATORIES LTD.

Paracel ID: 2314066

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2314066	

Client Name: Paterson	Project Ref: PE5579
Contact Name: Mark D'Arcy	Quote #:
Address: 9 Auriga	PO #: 57146
Telephone: 613 226 7381	E-mail: MDarcy@patersongroup.ca GPaterson@patersongroup.ca

Page 1 of 1

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	BH2-23-GW	GW		2	Mar 31			X										
2	Pit GW			3			X	X										
3	DUP			2				X										
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments:

Method of Delivery: Swift

Relinquished By (Sign): GPat	Received By Driver/Depot:	Received at Lab: Junegayan Ohrmai	Verified By: Sandra Dancsins
Relinquished By (Print): Grant Paterson	Date/Time:	Date/Time: Apr 03, 2023 04:17	Date/Time: April 3/4:23
Date/Time: APr 3 2023	Temperature: °C	Temperature: 13.7	pH Verified: ☐ By:

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www.paracellabs.com

Certificate of Analysis

Paterson Group Consulting Engineers

9 Auriga Drive
Ottawa, ON K2E 7T9
Attn: Mark D'Arcy

Client PO: 57283
Project: PE5579
Custody:

Report Date: 24-Apr-2023
Order Date: 19-Apr-2023

Order #: 2316343

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

Paracel ID	Client ID
2316343-01	BH2-23-GW
2316343-02	BH12-23-GW

Approved By:

Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 57283

Report Date: 24-Apr-2023

Order Date: 19-Apr-2023

Project Description: PE5579

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	21-Apr-23	21-Apr-23

Certificate of Analysis

Report Date: 24-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2023

Client PO: 57283

Project Description: PE5579

	Client ID:	BH2-23-GW	BH12-23-GW	-	-
	Sample Date:	14-Apr-23 09:00	14-Apr-23 09:00	-	-
	Sample ID:	2316343-01	2316343-02	-	-
	MDL/Units	Ground Water	Ground Water	-	-
Volatiles					
Acetone	5.0 ug/L	<5.0	<5.0	-	-
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	-
Bromoform	0.5 ug/L	<0.5	<0.5	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
Chloroform	0.5 ug/L	0.7	0.7	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylene dibromide (dibromoethane, 1,2-)	0.2 ug/L	<0.2	<0.2	-	-
Hexane	1.0 ug/L	<1.0	<1.0	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	-
Styrene	0.5 ug/L	<0.5	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	0.6	0.7	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-

Certificate of Analysis

Report Date: 24-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2023

Client PO: 57283

Project Description: PE5579

	Client ID:	BH2-23-GW	BH12-23-GW	-	-
	Sample Date:	14-Apr-23 09:00	14-Apr-23 09:00	-	-
	Sample ID:	2316343-01	2316343-02	-	-
	MDL/Units	Ground Water	Ground Water	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-
4-Bromofluorobenzene	Surrogate	110%	110%	-	-
Dibromofluoromethane	Surrogate	111%	112%	-	-
Toluene-d8	Surrogate	104%	103%	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*86.9*		*ug/L*		*109*	*50-140*			
Surrogate: Dibromofluoromethane	*86.6*		*ug/L*		*108*	*50-140*			
Surrogate: Toluene-d8	*84.2*		*ug/L*		*105*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*87.2*		*ug/L*		*109*	*50-140*			
Surrogate: Dibromofluoromethane	*90.5*		*ug/L*		*113*	*50-140*			
Surrogate: Toluene-d8	*82.3*		*ug/L*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Volatiles									
Acetone	108	5.0	ug/L	ND	108	50-140			
Benzene	38.5	0.5	ug/L	ND	96.4	60-130			
Bromodichloromethane	40.8	0.5	ug/L	ND	102	60-130			
Bromoform	38.0	0.5	ug/L	ND	95.0	60-130			
Bromomethane	36.7	0.5	ug/L	ND	91.8	50-140			
Carbon Tetrachloride	39.9	0.2	ug/L	ND	99.7	60-130			
Chlorobenzene	39.1	0.5	ug/L	ND	97.8	60-130			
Chloroform	30.9	0.5	ug/L	ND	77.4	60-130			
Dibromochloromethane	39.0	0.5	ug/L	ND	97.5	60-130			
Dichlorodifluoromethane	41.7	1.0	ug/L	ND	104	50-140			
1,2-Dichlorobenzene	37.3	0.5	ug/L	ND	93.2	60-130			
1,3-Dichlorobenzene	36.7	0.5	ug/L	ND	91.7	60-130			
1,4-Dichlorobenzene	35.4	0.5	ug/L	ND	88.5	60-130			
1,1-Dichloroethane	40.9	0.5	ug/L	ND	102	60-130			
1,2-Dichloroethane	38.9	0.5	ug/L	ND	97.3	60-130			
1,1-Dichloroethylene	38.3	0.5	ug/L	ND	95.7	60-130			
cis-1,2-Dichloroethylene	32.6	0.5	ug/L	ND	81.6	60-130			
trans-1,2-Dichloroethylene	36.0	0.5	ug/L	ND	90.0	60-130			
1,2-Dichloropropane	37.7	0.5	ug/L	ND	94.2	60-130			
cis-1,3-Dichloropropylene	44.5	0.5	ug/L	ND	111	60-130			
trans-1,3-Dichloropropylene	47.3	0.5	ug/L	ND	118	60-130			
Ethylbenzene	38.3	0.5	ug/L	ND	95.7	60-130			
Ethylene dibromide (dibromoethane, 1,2	40.6	0.2	ug/L	ND	101	60-130			
Hexane	41.6	1.0	ug/L	ND	104	60-130			
Methyl Ethyl Ketone (2-Butanone)	109	5.0	ug/L	ND	109	50-140			
Methyl Isobutyl Ketone	106	5.0	ug/L	ND	106	50-140			
Methyl tert-butyl ether	124	2.0	ug/L	ND	124	50-140			
Methylene Chloride	38.5	5.0	ug/L	ND	96.2	60-130			
Styrene	36.4	0.5	ug/L	ND	91.0	60-130			
1,1,1,2-Tetrachloroethane	41.5	0.5	ug/L	ND	104	60-130			
1,1,2,2-Tetrachloroethane	45.6	0.5	ug/L	ND	114	60-130			
Tetrachloroethylene	39.0	0.5	ug/L	ND	97.4	60-130			
Toluene	39.0	0.5	ug/L	ND	97.6	60-130			
1,1,1-Trichloroethane	40.9	0.5	ug/L	ND	102	60-130			
1,1,2-Trichloroethane	40.0	0.5	ug/L	ND	100	60-130			
Trichloroethylene	37.1	0.5	ug/L	ND	92.7	60-130			
Trichlorofluoromethane	41.0	1.0	ug/L	ND	102	60-130			
Vinyl chloride	35.6	0.5	ug/L	ND	89.1	50-140			
m,p-Xylenes	75.3	0.5	ug/L	ND	94.1	60-130			
o-Xylene	37.7	0.5	ug/L	ND	94.3	60-130			
Surrogate: 4-Bromofluorobenzene	*87.0*		*ug/L*		*109*	*50-140*			
Surrogate: Dibromofluoromethane	*74.9*		*ug/L*		*93.7*	*50-140*			
Surrogate: Toluene-d8	*79.9*		*ug/L*		*99.9*	*50-140*			

Certificate of Analysis

Report Date: 24-Apr-2023

Client: Paterson Group Consulting Engineers

Order Date: 19-Apr-2023

Client PO: 57283

Project Description: PE5579

Qualifier Notes:

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

Paracel ID: 2316343

PARACEL LABORATORIES LTD.

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2316343	

Client Name: Paterson	Project Ref: PE5579
Contact Name: Mark D'Arcy	Quote #:
Address: 9 Auriga	PO #: 57283
Telephone: 613 226 7381	E-mail: MDarcy@Patersongroup.ca GPaterson@Patersongroup.ca

Page 1 of 1

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)

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	BH2-23-GW	GW		2	Apr 14 2023			X					
2	BH12-23-GW	↓		↓	↓			X					
3													
4													
5													
6													
7													
8													
9													
10													

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): GPat	Received By Driver/Depot: M. Pease	Received at Lab:	Verified By:
Relinquished By (Print): Grant Paterson	Date/Time: 19/04/23 1031	Date/Time: 19/04/23 5pm	Date/Time: 19/04/2023 1538
Date/Time: 04/19/2023	Temperature: °C	Temperature: 15	pH Verified: ☐ By:

Chain of Custody (Blank).xlsx

Revsion 4.0

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Certificate of Analysis

Laurent Leblanc Limited
3000 Navan Rd
Ottawa, ON K1C 7G4
Attn: Ron Barr

Client PO: RB030
Project: Bantree Site
Custody: 138046

Report Date: 18-Aug-2022
Order Date: 10-Aug-2022

Order #: 2233331

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

Paracel ID	Client ID
2233331-01	Sample #1

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Biochemical Oxygen Demand	SM 5210B - DO Probe	10-Aug-22	15-Aug-22
Cyanide, total	MOE E3015 - Auto Colour	15-Aug-22	16-Aug-22
Mercury by CVAA	EPA 245.2 - Cold Vapour AA	16-Aug-22	16-Aug-22
Metals, ICP-MS	EPA 200.8 - ICP-MS	12-Aug-22	12-Aug-22
Ottawa - Storm: VOCs	EPA 624 - P&T GC-MS	12-Aug-22	12-Aug-22
PAHs by GC-MS, SU Addnl	based on EPA 8270 - GC-MS, extraction	15-Aug-22	18-Aug-22
PAHs by GC-MS, Sewer Use	based on EPA 8270 - GC-MS, extraction	15-Aug-22	17-Aug-22
PCBs, total	EPA 608 - GC-ECD	16-Aug-22	17-Aug-22
PHC F1	CWS Tier 1 - P&T GC-FID	12-Aug-22	12-Aug-22
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	12-Aug-22	13-Aug-22
Phenolics	EPA 420.2 - Auto Colour, 4AAP	12-Aug-22	12-Aug-22
Phosphorus, total, water	EPA 365.4 - Auto Colour, digestion	12-Aug-22	15-Aug-22
Total Suspended Solids	SM 2540D - Gravimetric	11-Aug-22	11-Aug-22

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Sewer Use - Ottawa: Storm	-

Certificate of Analysis

Report Date: 18-Aug-2022

Client: **Laurent Leblanc Limited**

Order Date: 10-Aug-2022

Client PO: **RB030**

Project Description: Bantree Site

	Client ID:	Sample #1	-	-	-	Criteria:	
	Sample Date:	10-Aug-22 13:34	-	-	-	Sewer Use - Ottawa: Storm	-
	Sample ID:	2233331-01	-	-	-		
	Matrix:	Water	-	-	-		
	MDL/Units						
General Inorganics							
BOD	2 mg/L	<2	-	-	-	25 mg/L	-
Cyanide, total	0.01 mg/L	<0.01	-	-	-	0.02 mg/L	-
Phenolics	0.001 mg/L	<0.001	-	-	-	0.008 mg/L	-
Phosphorus, total	0.01 mg/L	0.05	-	-	-	0.4 mg/L	-
Total Suspended Solids	2 mg/L	<2	-	-	-	15 mg/L	-
Metals - Total							
Arsenic	0.01 mg/L	<0.01	-	-	-	0.02 mg/L	-
Cadmium	0.001 mg/L	<0.001	-	-	-	0.008 mg/L	-
Chromium	0.05 mg/L	<0.05	-	-	-	0.08 mg/L	-
Copper	0.005 mg/L	<0.005	-	-	-	0.04 mg/L	-
Lead	0.001 mg/L	<0.001	-	-	-	0.12 mg/L	-
Manganese	0.05 mg/L	<0.05	-	-	-	0.05 mg/L	-
Mercury	0.0001 mg/L	0.0001	-	-	-	0.0004 mg/L	-
Nickel	0.005 mg/L	<0.005	-	-	-	0.08 mg/L	-
Selenium	0.005 mg/L	<0.005	-	-	-	0.02 mg/L	-
Silver	0.001 mg/L	<0.001	-	-	-	0.12 mg/L	-
Zinc	0.02 mg/L	<0.02	-	-	-	0.04 mg/L	-
Volatiles							
Benzene	0.0005 mg/L	<0.0005	-	-	-	0.002 mg/L	-
Chloroform	0.0005 mg/L	<0.0005	-	-	-	0.002 mg/L	-
1,2-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	0.0056 mg/L	-
1,4-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	0.0068 mg/L	-
cis-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	0.0056 mg/L	-
trans-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	-	-	-	0.0056 mg/L	-
Ethylbenzene	0.0005 mg/L	<0.0005	-	-	-	0.002 mg/L	-

Certificate of Analysis

Report Date: 18-Aug-2022

Client: **Laurent Leblanc Limited**

Order Date: 10-Aug-2022

Client PO: **RB030**

Project Description: Bantree Site

	Client ID:	Sample #1	-	-	-	Criteria:	
	Sample Date:	10-Aug-22 13:34	-	-	-	Sewer Use - Ottawa: Storm	-
	Sample ID:	2233331-01	-	-	-		
	Matrix:	Water	-	-	-		
	MDL/Units						
Volatiles							
Methylene Chloride	0.005 mg/L	<0.005	-	-	-	0.0052 mg/L	-
1,1,2,2-Tetrachloroethane	0.0005 mg/L	<0.0005	-	-	-	0.017 mg/L	-
Tetrachloroethylene	0.0005 mg/L	<0.0005	-	-	-	0.0044 mg/L	-
Toluene	0.0005 mg/L	<0.0005	-	-	-	0.002 mg/L	-
Trichloroethylene	0.0005 mg/L	<0.0005	-	-	-	0.0076 mg/L	-
Xylenes, total	0.0005 mg/L	<0.0005	-	-	-	0.0044 mg/L	-
4-Bromofluorobenzene	Surrogate	98.6%	-	-	-	-	-
Toluene-d8	Surrogate	107%	-	-	-	-	-
Dibromofluoromethane	Surrogate	101%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	0.025 mg/L	<0.025	-	-	-	-	-
F2 PHCs (C10-C16)	0.1 mg/L	<0.1	-	-	-	-	-
F3 PHCs (C16-C34)	0.1 mg/L	<0.1	-	-	-	-	-
F4 PHCs (C34-C50)	0.1 mg/L	<0.1	-	-	-	-	-
Semi-Volatiles							
PAHs, total		<0.00340	-	-	-	0.006 mg/L	-
1-Methylnaphthalene	0.00005 mg/L	<0.00005	-	-	-	-	-
2-Methylnaphthalene	0.00005 mg/L	<0.00005	-	-	-	-	-
7H-Dibenzo[c,g]carbazole	0.0005 mg/L	<0.0005	-	-	-	-	-
Anthracene	0.00001 mg/L	<0.00001	-	-	-	-	-
Benzo [a] anthracene	0.00001 mg/L	<0.00001	-	-	-	-	-
Benzo [a] pyrene	0.00001 mg/L	<0.00001	-	-	-	-	-
Benzo [b] fluoranthene	0.00005 mg/L	<0.00005	-	-	-	-	-
Benzo [e] pyrene	0.0005 mg/L	<0.0005	-	-	-	-	-
Benzo [g,h,i] perylene	0.00005 mg/L	<0.00005	-	-	-	-	-

	Client ID:	Sample #1	-	-	-	Criteria:	
	Sample Date:	10-Aug-22 13:34	-	-	-	Sewer Use - Ottawa: Storm	-
	Sample ID:	2233331-01	-	-	-		
	Matrix:	Water	-	-	-		
	MDL/Units						
Semi-Volatiles							
Benzo [j] fluoranthene	0.0005 mg/L	<0.0005	-	-	-	-	-
Benzo [k] fluoranthene	0.00005 mg/L	<0.00005	-	-	-	-	-
Biphenyl	0.00005 mg/L	<0.00005	-	-	-	-	-
Chrysene	0.00005 mg/L	<0.00005	-	-	-	-	-
Dibenzo [a,h] anthracene	0.00005 mg/L	<0.00005	-	-	-	-	-
Dibenzo [a,i] pyrene	0.0005 mg/L	<0.0005	-	-	-	-	-
Dibenzo [a,j] acridine	0.0005 mg/L	<0.0005	-	-	-	-	-
Fluoranthene	0.00001 mg/L	<0.00001	-	-	-	-	-
Fluorene	0.00005 mg/L	<0.00005	-	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.00005 mg/L	<0.00005	-	-	-	-	-
Naphthalene	0.00005 mg/L	<0.00005	-	-	-	0.0064 mg/L	-
Perylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Phenanthrene	0.00005 mg/L	<0.00005	-	-	-	-	-
Pyrene	0.00001 mg/L	<0.00001	-	-	-	-	-
2-Fluorobiphenyl	Surrogate	94.3%	-	-	-	-	-
Terphenyl-d14	Surrogate	106%	-	-	-	-	-
PCBs							
PCBs, total	0.05 ug/L	<0.05	-	-	-	0.0004 mg/L	-
Decachlorobiphenyl	Surrogate	96.4%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics								
BOD	ND	2	mg/L					
Cyanide, total	ND	0.01	mg/L					
Phenolics	ND	0.001	mg/L					
Phosphorus, total	ND	0.01	mg/L					
Total Suspended Solids	ND	2	mg/L					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	0.025	mg/L					
F2 PHCs (C10-C16)	ND	0.1	mg/L					
F3 PHCs (C16-C34)	ND	0.1	mg/L					
F4 PHCs (C34-C50)	ND	0.1	mg/L					
Metals - Total								
Arsenic	ND	0.01	mg/L					
Cadmium	ND	0.001	mg/L					
Chromium	ND	0.05	mg/L					
Copper	ND	0.005	mg/L					
Lead	ND	0.001	mg/L					
Mercury	ND	0.0001	mg/L					
Manganese	ND	0.05	mg/L					
Nickel	ND	0.005	mg/L					
Selenium	ND	0.005	mg/L					
Silver	ND	0.001	mg/L					
Zinc	ND	0.02	mg/L					
PCBs								
PCBs, total	ND	0.05	ug/L					
Surrogate: Decachlorobiphenyl	*0.421*		*ug/L*	*84.1*	*60-140*			
Semi-Volatiles								
1-Methylnaphthalene	ND	0.00005	mg/L					
2-Methylnaphthalene	ND	0.00005	mg/L					
7H-Dibenzo[c,g]carbazole	ND	0.0005	mg/L					
Anthracene	ND	0.00001	mg/L					
Benzo [a] anthracene	ND	0.00001	mg/L					
Benzo [a] pyrene	ND	0.00001	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	ND	0.00005	mg/L					
Benzo [e] pyrene	ND	0.0005	mg/L					
Benzo [g,h,i] perylene	ND	0.00005	mg/L					
Benzo [j] fluoranthene	ND	0.0005	mg/L					
Benzo [k] fluoranthene	ND	0.00005	mg/L					
Biphenyl	ND	0.00005	mg/L					
Chrysene	ND	0.00005	mg/L					
Dibenzo [a,h] anthracene	ND	0.00005	mg/L					
Dibenzo [a,i] pyrene	ND	0.0005	mg/L					
Dibenzo [a,j] acridine	ND	0.0005	mg/L					
Fluoranthene	ND	0.00001	mg/L					
Fluorene	ND	0.00005	mg/L					
Indeno [1,2,3-cd] pyrene	ND	0.00005	mg/L					
Naphthalene	ND	0.00005	mg/L					
Perylene	ND	0.0005	mg/L					
Phenanthrene	ND	0.00005	mg/L					
Pyrene	ND	0.00001	mg/L					
Surrogate: 2-Fluorobiphenyl	*0.0141*		*mg/L*	*70.5*	*76-125*			S-GC
Surrogate: Terphenyl-d14	*0.0226*		*mg/L*	*113*	*70-125*			
Volatiles								
Benzene	ND	0.0005	mg/L					
Chloroform	ND	0.0005	mg/L					
1,2-Dichlorobenzene	ND	0.0005	mg/L					
1,4-Dichlorobenzene	ND	0.0005	mg/L					
cis-1,2-Dichloroethylene	ND	0.0005	mg/L					
trans-1,3-Dichloropropylene	ND	0.0005	mg/L					
Ethylbenzene	ND	0.0005	mg/L					
Methylene Chloride	ND	0.005	mg/L					
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L					
Tetrachloroethylene	ND	0.0005	mg/L					
Toluene	ND	0.0005	mg/L					
Trichloroethylene	ND	0.0005	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Xylenes, total	ND	0.0005	mg/L					
Surrogate: 4-Bromofluorobenzene	*0.0799*		*mg/L*	*99.9*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0811*		*mg/L*	*101*	*50-140*			
Surrogate: Toluene-d8	*0.0862*		*mg/L*	*108*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
BOD	ND	240	mg/L	ND			NC	20	BOD01
Cyanide, total	ND	0.50	mg/L	ND			NC	20	GEN02
Phenolics	ND	0.001	mg/L	ND			NC	10	
Phosphorus, total	ND	0.01	mg/L	ND			NC	15	
Total Suspended Solids	ND	2	mg/L	ND			NC	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.025	mg/L	ND			NC	30	
Metals - Total									
Arsenic	ND	0.01	mg/L	ND			NC	20	
Cadmium	ND	0.001	mg/L	ND			NC	20	
Chromium	ND	0.05	mg/L	ND			NC	20	
Copper	0.035	0.005	mg/L	0.031			9.7	20	
Lead	0.013	0.001	mg/L	0.012			7.1	20	
Mercury	0.0001	0.0001	mg/L	0.0001			5.0	20	
Manganese	1.89	0.05	mg/L	1.69			11.1	20	
Nickel	0.015	0.005	mg/L	0.014			9.9	20	
Selenium	0.006	0.005	mg/L	0.006			9.6	20	
Silver	ND	0.001	mg/L	ND			NC	20	
Zinc	0.068	0.02	mg/L	0.059			13.9	20	
Volatiles									
Benzene	ND	0.0005	mg/L	ND			NC	30	
Chloroform	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
Ethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Methylene Chloride	ND	0.005	mg/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
Tetrachloroethylene	ND	0.0005	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.0005	mg/L	ND			NC	30	
Trichloroethylene	ND	0.0005	mg/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*0.0718*		*mg/L*		*89.7*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0803*		*mg/L*		*100*	*50-140*			
Surrogate: Toluene-d8	*0.0864*		*mg/L*		*108*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
BOD	156	2	mg/L	ND	77.9	71-121			
Cyanide, total	0.065	0.01	mg/L	0.016	97.6	64-136			
Phenolics	0.029	0.001	mg/L	ND	114	67-133			
Phosphorus, total	0.474	0.01	mg/L	ND	94.9	80-120			
Total Suspended Solids	21.0	2	mg/L	ND	105	75-125			
Hydrocarbons									
F1 PHCs (C6-C10)	2.03	0.025	mg/L	ND	102	68-117			
F2 PHCs (C10-C16)	1.5	0.1	mg/L	ND	96.1	60-140			
F3 PHCs (C16-C34)	3.9	0.1	mg/L	ND	98.4	60-140			
F4 PHCs (C34-C50)	2.2	0.1	mg/L	ND	90.5	60-140			
Metals - Total									
Arsenic	50.2	0.01	mg/L	0.645	99.1	80-120			
Cadmium	44.5	0.001	mg/L	0.009	89.0	80-120			
Chromium	55.1	0.05	mg/L	1.32	108	80-120			
Copper	51.5	0.005	mg/L	3.14	96.6	80-120			
Lead	45.4	0.001	mg/L	1.19	88.4	80-120			
Mercury	0.0031	0.0001	mg/L	0.0001	99.8	70-130			
Manganese	53.0	0.05	mg/L	ND	106	80-120			
Nickel	52.5	0.005	mg/L	1.36	102	80-120			
Selenium	44.6	0.005	mg/L	0.552	88.1	80-120			
Silver	44.6	0.001	mg/L	0.008	89.2	80-120			
Zinc	49.9	0.02	mg/L	5.91	87.9	80-120			
PCBs									
PCBs, total	0.650	0.05	ug/L	ND	65.0	65-135			
Surrogate: Decachlorobiphenyl	*0.352*		*ug/L*		*70.4*	*60-140*			
Semi-Volatiles									
1-Methylnaphthalene	0.00352	0.00005	mg/L	ND	70.4	25-127			
2-Methylnaphthalene	0.00372	0.00005	mg/L	ND	74.5	21-119			
7H-Dibenzo[c,g]carbazole	0.00606	0.0005	mg/L	ND	121	30-130			
Anthracene	0.00356	0.00001	mg/L	ND	71.1	29-126			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [a] anthracene	0.00315	0.00001	mg/L	ND	63.0	29-126			
Benzo [a] pyrene	0.00339	0.00001	mg/L	ND	67.8	29-111			
Benzo [b] fluoranthene	0.00454	0.00005	mg/L	ND	90.8	26-111			
Benzo [e] pyrene	0.00281	0.0005	mg/L	ND	56.2	30-130			
Benzo [g,h,i] perylene	0.00326	0.00005	mg/L	ND	65.3	23-128			
Benzo [j] fluoranthene	0.00368	0.0005	mg/L	ND	73.6	30-130			
Benzo [k] fluoranthene	0.00471	0.00005	mg/L	ND	94.3	23-135			
Biphenyl	0.00255	0.00005	mg/L	ND	51.0	50-140			
Chrysene	0.00313	0.00005	mg/L	ND	62.7	29-137			
Dibenzo [a,h] anthracene	0.00386	0.00005	mg/L	ND	77.3	20-131			
Dibenzo [a,i] pyrene	0.00565	0.0005	mg/L	ND	113	30-130			
Dibenzo [a,j] acridine	0.00434	0.0005	mg/L	ND	86.8	30-130			
Fluoranthene	0.00379	0.00001	mg/L	ND	75.7	24-131			
Fluorene	0.00316	0.00005	mg/L	ND	63.1	28-123			
Indeno [1,2,3-cd] pyrene	0.00377	0.00005	mg/L	ND	75.4	20-128			
Naphthalene	0.00314	0.00005	mg/L	ND	62.8	29-118			
Perylene	0.00344	0.0005	mg/L	ND	68.8	30-130			
Phenanthrene	0.00330	0.00005	mg/L	ND	65.9	34-108			
Pyrene	0.00378	0.00001	mg/L	ND	75.6	29-131			
Surrogate: 2-Fluorobiphenyl	*0.0166*		*mg/L*		*82.9*	*76-125*			
Surrogate: Terphenyl-d14	*0.0218*		*mg/L*		*109*	*70-125*			
Volatiles									
Benzene	0.035	0.0005	mg/L	ND	87.6	60-130			
Chloroform	0.034	0.0005	mg/L	ND	86.2	60-130			
1,2-Dichlorobenzene	0.032	0.0005	mg/L	ND	79.9	60-130			
1,4-Dichlorobenzene	0.037	0.0005	mg/L	ND	91.6	60-130			
cis-1,2-Dichloroethylene	0.031	0.0005	mg/L	ND	78.5	60-130			
trans-1,3-Dichloropropylene	0.033	0.0005	mg/L	ND	81.4	60-130			
Ethylbenzene	0.035	0.0005	mg/L	ND	88.1	60-130			
Methylene Chloride	0.039	0.005	mg/L	ND	97.2	60-130			
1,1,2,2-Tetrachloroethane	0.039	0.0005	mg/L	ND	97.2	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Tetrachloroethylene	0.036	0.0005	mg/L	ND	91.0	60-130			
Toluene	0.035	0.0005	mg/L	ND	87.8	60-130			
Trichloroethylene	0.033	0.0005	mg/L	ND	83.0	60-130			
Surrogate: 4-Bromofluorobenzene	*0.0756*		*mg/L*		*94.6*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0809*		*mg/L*		*101*	*50-140*			
Surrogate: Toluene-d8	*0.0738*		*mg/L*		*92.2*	*50-140*			

Qualifier Notes:

QC Qualifiers:

BOD01	Raised Reporting Limits for BOD due to dilutions based on preliminary COD screening results.
GEN02	Elevated Reporting Limit due to matrix interference.
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

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.

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

PARACEL LABORATORIES LTD.

Paracel ID: 2233331

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2233331	№ 138046

Client Name: LAVRENT LEBLANC LIMITED	Project Ref: BANTREE SITE	Page 1 of 1
Contact Name: RON BARR	Quote #:	Turnaround Time
Address: 3000 NAVAN ROAD OTTAWA, ONTARO K1C 7G4	PO #: RB030	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: 613 830-0066 OFFICE 6138845731 mobile	E-mail: ronbarre@rogers.com	Date Required:

Regulation	Other Regulation
☐ REG 153/04 ☐ REG 406/19	☐ REG 558 ☐ PWQO
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ MISA
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ SU - Sani ☒ SU - Storm
☐ Table 3 ☐ Agri/Other	Mun: Ottawa
☐ Table	☐ Other:
For RSC: ☐ Yes ☐ No	

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	Required Analysis: PHCs (F4+BTEX)	BOD	CYANIDE (TOTAL)	PAHs/NAPHTHALENE	PHENOLICS	PHOSPHORUS	SUSPENDED SOLIDS	METALS	VOCs	PCBs	PHCs (F1+F4)
1	SAMPLE #1	SS		12	AUG 10/22	1:34pm	/	/	/	/	/	/	/	/	/	/	/
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Pd $950.22 by VISA. SC

Method of Delivery: walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): RON BARR	Date/Time:	Date/Time: AUG 10/22 2:17pm	Date/Time: AUG 10, 22 14:58
Date/Time: 2:17pm	Temperature: °C	Temperature: 22.6 °C	pH Verified: ☑ By: SS

APPENDIX 3

FIGURE 1 - KEY PLAN

DRAWING PE5579-1 - TEST HOLE LOCATION PLAN

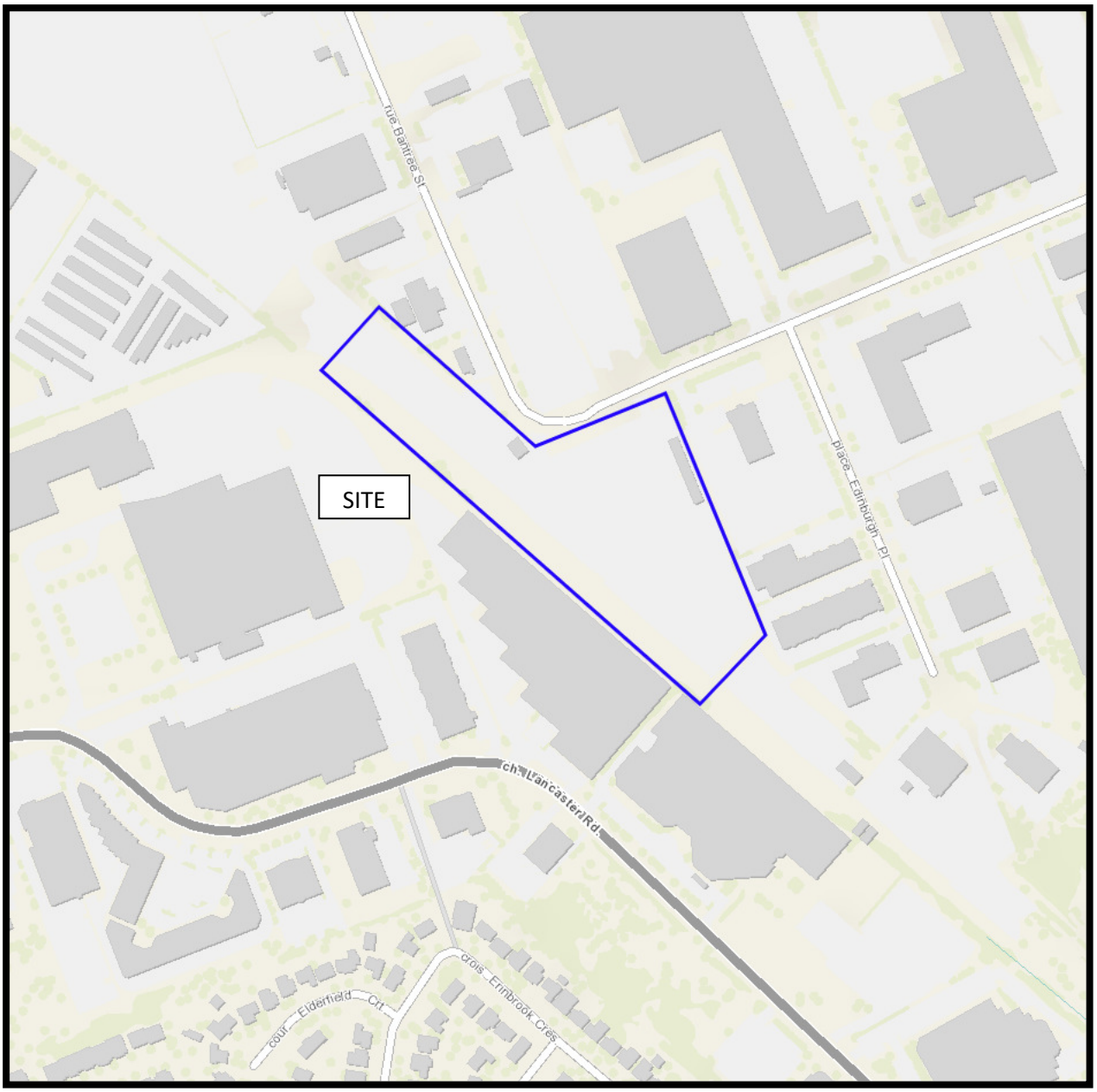
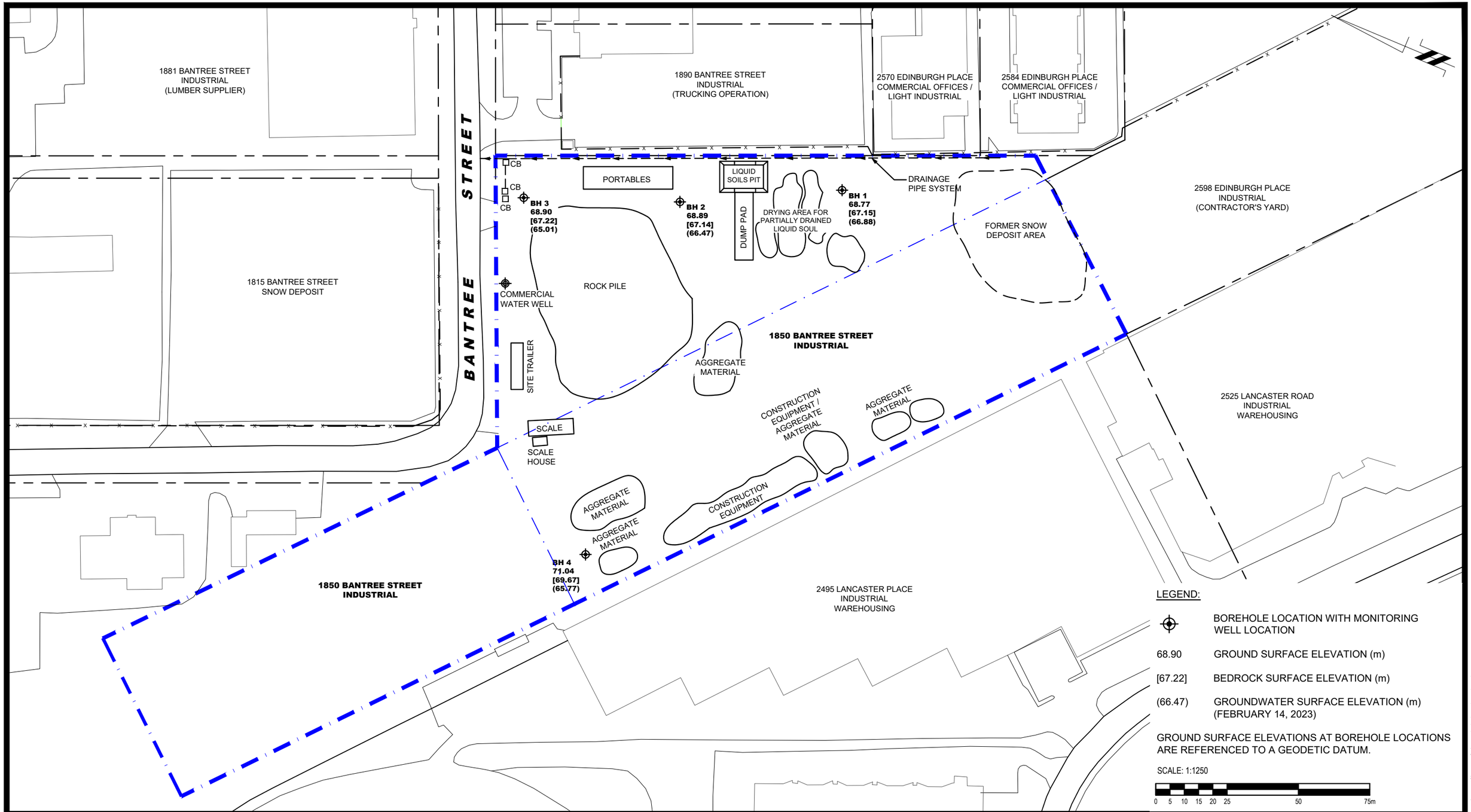


FIGURE 1

KEY PLAN



LEGEND:

⊕	BOREHOLE LOCATION WITH MONITORING WELL LOCATION
68.90	GROUND SURFACE ELEVATION (m)
[67.22]	BEDROCK SURFACE ELEVATION (m)
(66.47)	GROUNDWATER SURFACE ELEVATION (m) (FEBRUARY 14, 2023)

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

SCALE: 1:1250

0 5 10 15 20 25 50 75m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

LAURENT LEBLANC LTD.

BASELINE INVESTIGATION
1850 BANTREE STREET

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:1250	Date: 05/2023
Drawn by: YA	Report No.: PE5579-1
Checked by: JD	Dwg. No.: PE5579-1
Approved by: MSD	Revision No.:

p:\autocad drawings\environmental\pe55xx\pe5579\pe5579-1-test hole location plan.dwg

11x17