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November 17, 2021
File: PE4737-LET.02

8417709 Canada Inc.
310 – 430 de l'Hopital Boulevard
Gatineau, Quebec
J8V 1T7

Attention: **Mr. Paul-Andre Charbonneau**

Subject: **Phase II - Environmental Site Assessment Update**
3459 and 3479 St. Joseph Boulevard
Ottawa, Ontario

Dear Sir,

Further to your request, Paterson Group (Paterson) carried out a Phase II - Environmental Site Assessment (ESA) Update for the aforementioned properties. This report updates a previous Phase II-ESA report entitled, "Phase II Environmental Site Assessment, 3459 and 3479 St. Joseph Boulevard Ottawa, Ontario," completed by Paterson, dated January 9, 2020. This Phase II ESA Update has been completed in accordance with O.Reg. 153/04, as amended, under the Environmental Protection Act. This report is to be read in conjunction with the Phase II ESA Report (PE4737-2).

Background Information

Physical Setting

The Phase II Property is located on the north side of St Joseph Boulevard, approximately 350m west of the intersection with 2nd Avenue and is located at the northeast corner of the intersection between St. Joseph Boulevard and an onramp of Regional Road 174. The subject site has remained largely undeveloped with only two residential dwellings, constructed around 1972/73. One of these buildings was demolished between 2002 and 2005.

Past Investigations

- ‘Phase I Environmental Site Assessment, 3459 and 3479 St. Joseph Boulevard Ottawa, Ontario’, dated November 5, 2019, prepared by Paterson Group;

The 2019 Phase I ESA identified potentially historical on- and off-site potentially contaminating activities (PCAs) and were considered to result in areas of potential environmental concern (APECs) on the Phase I and Phase II Property, as presented in Table 1.

Table 1
Area of Potential Environmental Concern

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern with respect to Phase I Property	Potentially Contaminating Activity	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	kMedia Potentially Impacted (Groundwater, Soil, and/or Sediment)
RV servicing	Southwestern portion of the site.	Item 52 - Commercial vehicle servicing	On-site	PHCs, BTEX	Soil/ Groundwater
Landfill	Western portion of the site.	Item 58 - Landfilling	Off-site	PHCs, BTEX, Metals	Soil, Groundwater

Paterson subsequently completed a Phase II ESA in January 2020 to address the aforementioned APECs.

- ‘Phase II Environmental Site Assessment, 3459 and 3479 St. Joseph Boulevard Ottawa, Ontario.’

The subsurface investigation consisted of drilling three (3) boreholes, all of which were constructed with groundwater monitoring well installations. Additional boreholes were conducted on site for geotechnical purposes.

Twenty (20) soil samples were obtained from the boreholes and screened using visual observations and organic vapour measurements. A total of three (3) soil samples were submitted for laboratory analysis of a combination of Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), petroleum hydrocarbons (PHCs, F_1-F_4), and/or metals. The vanadium concentrations in soil samples BH2-SS4 and BH3-SS5, marginally exceeded the MECP Table 3 standard. Vanadium is known to occur naturally at concentrations in excess of the Table 3 standards in the Ottawa Region clays and as such the results are not considered to be indicative of contamination.

Groundwater samples obtained from three (3) monitoring wells were submitted for laboratory analysis of PHC (F1-F4), BTEX and/or metal parameters. The groundwater results were in compliance with the MECP Table 3 Standards.

A Phase I ESA Update was completed by Paterson in October of 2021. Based on the findings of the assessment, no new or materially changed APECs were identified on the subject property. As such, the findings of the 2020 Phase II ESA were considered to be representative of the current site conditions. It was recommended that the 2020 Phase II ESA be updated in accordance with O.Reg. 153/04, as amended.

Impediments

No impediments were encountered during this Phase II ESA Update.

Investigation Method

A groundwater and soil sampling event took place on October 5, 2021, as well as groundwater monitoring from all three (3) wells. A groundwater sample and duplicate were collected from BH1 and submitted for benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs, F1-F4) analysis. A soil sample and duplicate were collected near BH1 and submitted for benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbons (PHCs, F1-F4).

Review and Evaluation

Geology

The soil profile consists of surficial grass and topsoil overlying silty clay glaciomarine deposits. Bedrock is inferred to be around 21.87 m below the existing grade.

Groundwater at the Phase II Property was encountered within the overburden soil. This unit is interpreted to function as a local aquifer at the subject site.

Groundwater Elevations, Flow Direction and Hydraulic Gradient

Groundwater levels were measured during the groundwater sampling event on October 5, 2021, using an electronic water level meter. Groundwater levels are summarized below in Table 2. All elevations are relative to the catch basin located on St. Joseph Boulevard with a geodetic elevation of 61.30 m asl.

Table 2
Groundwater Level Measurements

Borehole Location	Ground Surface Elevation (m)	Water Level Depth (m below grade)	Water Level Elevation (m ASL)	Date of Measurement
BH1	58.69	1.12	57.57	October 5, 2021
BH2	57.33	0.960	56.37	
BH3	58.23	0.940	57.29	

Based on the groundwater levels recorded, the groundwater flow direction is to the west as shown on Drawing PE4737-4A – Groundwater Contour Plan.

Soil Quality

A soil sample (TP1-G1) and a duplicate were collected near the APEC associated with the former vehicle servicing location and were submitted for laboratory analysis of BTEX and PHCs (F1-F4). The results of the analytical testing are presented in Table 3. The laboratory certificate of analysis is appended to this report.

TABLE 3: Analytical Test Results – Soil – BTEX and PHCs (F1-F4)

Parameter	MDL (µg/g)	Soil Samples (µg/g) October 5, 2021		MECP Table 3 Residential Standards (µg/g)
		TP1-G1	DUPA (TP1-G1)	
Benzene	0.02	nd	nd	0.21
Ethylbenzene	0.05	nd	nd	2
Toluene	0.05	nd	nd	2.3
Xylenes (Total)	0.05	nd	nd	3.1
PHC F1	7	nd	nd	55
PHC F2	4	nd	nd	98
PHC F3	8	nd	nd	300
PHC F4	6	nd	nd	2800

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

No detectable BTEX or PHCs (F1-F4) concentrations were identified in the soil samples analyzed. The results comply with the selected MECP Table 3 Standards.

Groundwater Quality

A groundwater sample and a duplicate sample were recovered from monitoring well BH1 and were submitted for laboratory analysis of BTEX and PHCs, F1-F4. The results of the

analytical testing are presented in Table 4. The laboratory certificate of analysis is appended to this report.

TABLE 4: Analytical Test Results – Groundwater – BTEX and PHCs (F1-F4)

Parameter	MDL (µg/L)	Groundwater Samples (µg/L) October 5, 2021		MECP Table 3 Residential Standards (µg/L)
		BH1-GW2	DUPA (BH1-GW2)	
Benzene	0.5	nd	nd	44
Ethylbenzene	0.5	nd	nd	2300
Toluene	0.5	nd	nd	18000
Xylenes (Total)	0.5	nd	nd	4200
PHC F1	25	nd	nd	750
PHC F2	100	nd	nd	150
PHC F3	100	nd	nd	500
PHC F4	100	nd	nd	500

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

No detectable BTEX or PHCs (F1-F4) concentrations were identified in the groundwater samples analyzed. The results comply with the selected MECP Table 3 Standards.

Quality Assurance and Quality Control Results

All samples submitted as part of this recent sampling event were handled in accordance with the Analytical Protocol with respect to holding time, preservation method, storage requirement, and container type.

A duplicate of a soil sample was submitted for BTEX and PHC (F1-F4). No detectable concentrations were identified in the original sample, or the duplicate sample recovered from TP1.

A duplicate of a groundwater Sample was submitted for BTEX and PHC (F1-F4). No detectable concentrations were identified in the original sample, or the duplicate sample recovered from BH1.

As per Subsection 47(3) of O.Reg. 153/04 as amended by O.Reg. 269/11, a Certificate of Analysis has been received for each sample submitted for analysis and all Certificates of Analysis are appended to this report.

Phase II Conceptual Site Model

Potentially Contaminating Activities and Areas of Potential Environmental Concern

As per Table 1 in the Past Investigations Section of this report, PCAs considered to result in APECs on the Phase II Property include:

- Item 52: Commercial vehicle servicing, resulting in APEC 1 with in the southeast corner of the Phase II Property.
- Item 58: Unnamed landfill, resulting in APEC 2 on the northwest portion of the Phase II Property.

Contaminants of Potential Concern

Contaminants of potential concern identified in association with the aforementioned APECs include BTEX and PHCs (F1-F4) and/or Metals in the soil and/or groundwater.

Subsurface Structures and Utilities

Underground utilities on the Phase II Property include electrical, and sewage services. No active private potable water wells or septic systems are present on the Phase II Property. Based on the municipally supplied area and age of the wells, all domestic water wells are assumed to be obsolete.

Physical Setting

Site Stratigraphy

The site stratigraphy consists of:

- Approximately 0.4 m of topsoil.
- Brown and grey silty clay (glaciomarine deposits) found to a depth of 6.4 m.
- A DCP test was completed in one geotechnical borehole, terminating on the inferred bedrock surface at 21.87 m below the existing grade during a 2019 geotechnical study on site.

Hydrogeological Characteristics

Groundwater was encountered in the silty clay beneath the Phase II Property. This unit is interpreted to function as a local aquifer at the subject site.

Water levels were measured at the subject site on October 5, 2021, at depths ranging from 0.94 to 1.12 m below grade. The groundwater is believed to be flowing in a generally north-ward direction.

Approximate Depth to Bedrock

Bedrock is inferred to be present at 21.87 m below the existing grade.

Approximate Depth to Water Table

Depth to water table at the subject site varies between approximately 0.94 to 1.12 m below existing grade.

Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation (Site Condition Standards, Environmentally Sensitive Areas) does not apply to the Phase II Property.

Section 43.1 of the Regulation does not apply to the subject site in that the subject site is not a Shallow Soil Property.

Fill Placement

No fill was identified in any of the boreholes.

Proposed Buildings and Other Structures

It is our understanding that the site is to be redeveloped with three blocks of stacked townhouses and six blocks of terraced back-to-back townhouses.

Existing Buildings and Structures

The subject site is largely vacant except for a single-storey residential dwelling constructed around 1972/73, located on the southern portion of the subject site, fronting on to St. Joseph Boulevard.

Water Bodies

Two drainage ditches lie 70 m and 80 m east and west of the subject site, flowing north to enter the Ottawa River near Taylors Creek

Areas of Natural Significance

There are no areas of natural or scientific interest on the subject site. Areas of natural or scientific interest within the Phase I ESA study area consist of two areas of woodland; one located 45 m south and the other 130 m west of the subject site.

Environmental Condition

Areas Where Contaminants are Present

The soil and groundwater were determined to be in compliance with the MECP Table 3 Standards except the vanadium concentrations identified in two samples which are considered to be naturally occurring and therefore they are not representative of contamination. Analytical test results are shown Drawing PE4737-5A– Analytical Testing Plan- Soil and Drawing PE4737-6A- Analytical Testing Plan-Groundwater.

No concentrations were identified in the October 2021 sampling analysis.

Types of Contaminants

The soil and groundwater at the Phase II Property is in compliance with the selected MECP Standards.

Contaminated Media

The soil and groundwater at the Phase II Property are in compliance with the selected MECP Standards.

Known Areas Where Contaminants Are Present

The soil and groundwater at the Phase II Property are in compliance with the selected MECP Standards.

Distribution and Migration of Contaminants

All soil and groundwater samples were in compliance with MECP Standards.

Discharge of Contaminants

The soil and groundwater were determined to be in compliance with the MECP Table 3 Standards.

Climatic and Meteorological Conditions

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

Leaching is not considered an issue since the groundwater is in compliance with MECP Table 3 Standards.

The fluctuation of groundwater levels is not considered to have significantly affected contaminant transport as the soil and groundwater beneath the Phase II Property are in compliance with MECP Table 3 Standards.

Potential for Vapour Intrusion

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

Conclusions

Based on the findings of the Phase II ESA, soil and groundwater concentrations are in compliance with MECP Table 3 Standards. No further Phase II ESA work is required.

It is expected that the groundwater monitoring wells will be abandoned in accordance with O.Reg.903, at the time of construction excavation. It is recommended that the integrity of the monitoring wells be maintained, prior to future construction, for possible further groundwater monitoring purposes.

Statement of Limitations

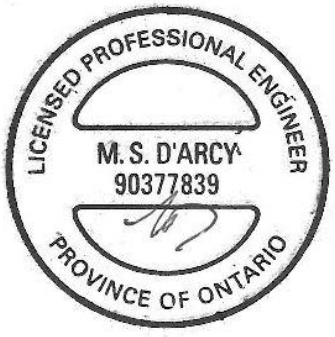
This Phase II - Environmental Site Assessment Update report has been prepared under the supervision of a Qualified Person in general accordance with Ontario Regulation 153/04, as amended, by O.Reg. 269/11 under the Environmental Protection Act. The conclusions presented herein are based on information gathered from a limited historical review and field inspection program. The findings of the Phase II - ESA Update are based on a review of readily available geological, historical and regulatory information and a cursory review made at the time of the field assessment.

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

This report was prepared for the sole use of 8417709 Canada Inc. Notification from the 8417709 Canada Inc. and Paterson Group will be required to release this report to any other party.

Paterson Group Inc.

Beau Drieschner, B.Sc



Mark S. D'Arcy, P. Eng., QP$_{ESA}$

Report Distribution

- ❑ 8417709 Canada Inc.
- ❑ Paterson Group

Appendix

- ❑ Figure 1 - Key Plan
- ❑ Drawing PE4737-4A - Groundwater Contour Plan
- ❑ Drawing PE4737 -5A -Analytical Testing Plan – Soil
- ❑ Drawing PE4737-6A - Analytical Testing Plan – Groundwater
- ❑ Soil Profile and Test Data Sheets
- ❑ Laboratory Certificates of Analysis

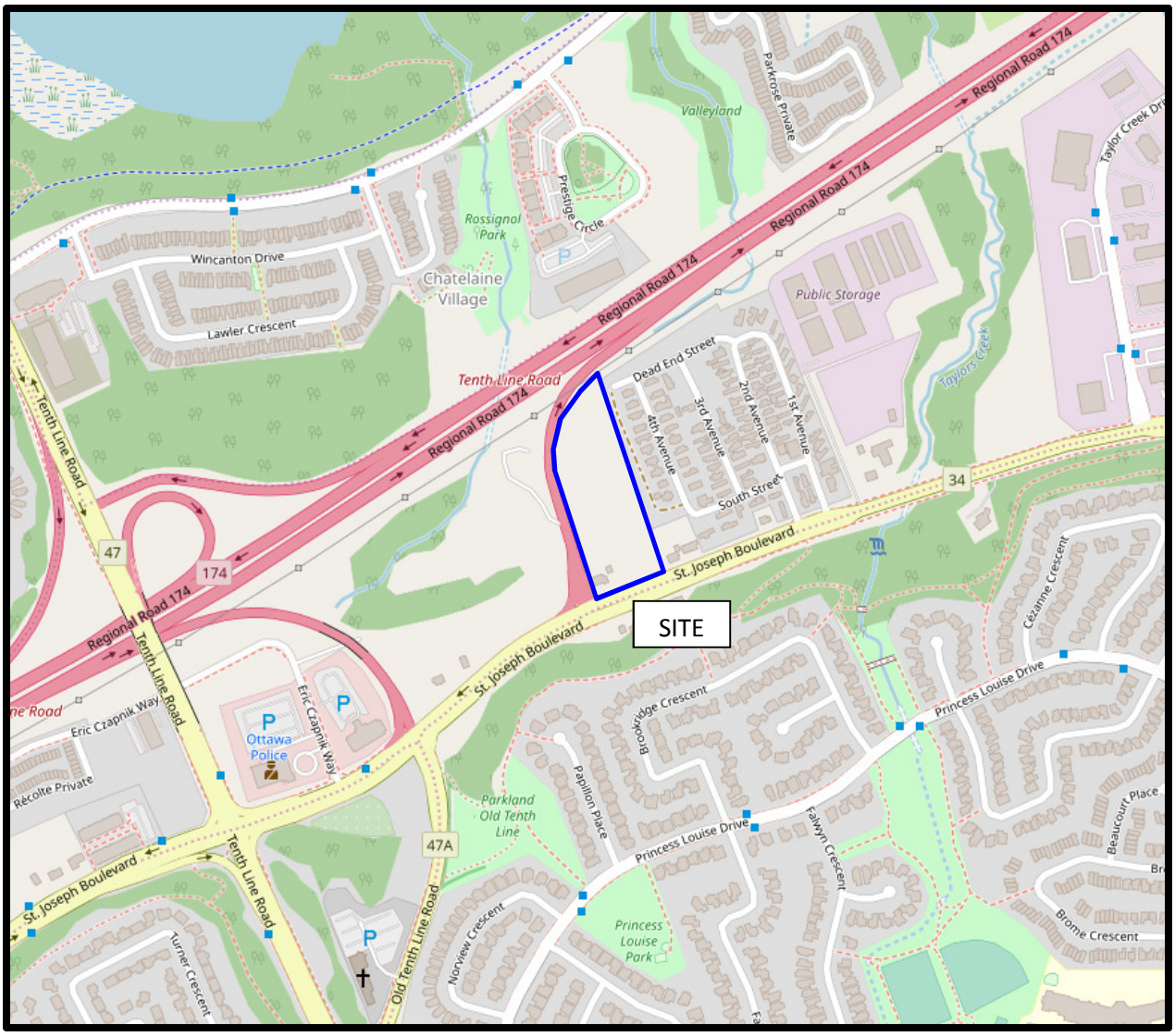
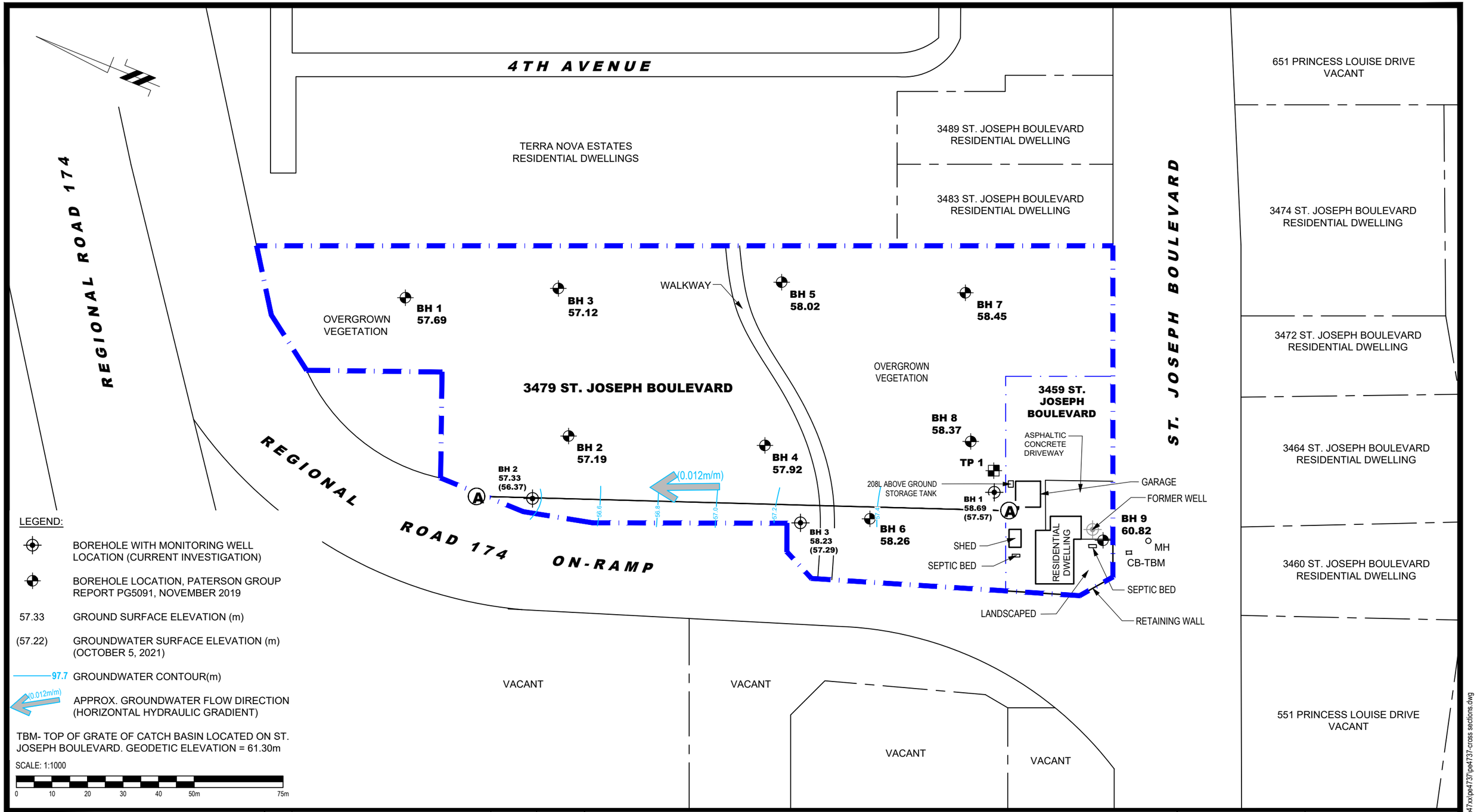


FIGURE 1

KEY PLAN



LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION (CURRENT INVESTIGATION)
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG5091, NOVEMBER 2019
- 57.33 GROUND SURFACE ELEVATION (m)
- (57.22) GROUNDWATER SURFACE ELEVATION (m) (OCTOBER 5, 2021)
- 97.7 GROUNDWATER CONTOUR(m)
- (0.012m/m) APPROX. GROUNDWATER FLOW DIRECTION (HORIZONTAL HYDRAULIC GRADIENT)

TBM- TOP OF GRATE OF CATCH BASIN LOCATED ON ST. JOSEPH BOULEVARD. GEODETIC ELEVATION = 61.30m

SCALE: 1:1000

0 10 20 30 40 50m 75m

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NO.	REVISIONS	DATE	INITIAL

8417709 CANADA INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
3459 AND 3479 ST. JOSEPH BOULEVARD

OTTAWA, ONTARIO

Title:

GROUNDWATER CONTOUR PLAN

Scale: 1:1000	Date: 11/2021
Drawn by: YA	Report No.: PE4737-2
Checked by: NS	Dwg. No.: PE4737-4A
Approved by: MSD	Revision No.:

11x17

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4TH AVENUE

REGIONAL ROAD 174

REGIONAL ROAD 174 ON-RAMP

ST. JOSEPH BOULEVARD

TERRA NOVA ESTATES
RESIDENTIAL DWELLINGS

3489 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

3483 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

651 PRINCESS LOUISE DRIVE
VACANT

3474 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

3472 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

3464 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

3460 ST. JOSEPH BOULEVARD
RESIDENTIAL DWELLING

551 PRINCESS LOUISE DRIVE
VACANT

VACANT

VACANT

VACANT

VACANT

OVERGROWN VEGETATION

WALKWAY

OVERGROWN VEGETATION

ASPHALTIC CONCRETE DRIVEWAY

208L ABOVE GROUND STORAGE TANK

GARAGE

FORMER WELL

SHED

SEPTIC BED

RESIDENTIAL DWELLING

MH

CB-TBM

SEPTIC BED

LANDSCAPED

RETAINING WALL

3479 ST. JOSEPH BOULEVARD

3459 ST. JOSEPH BOULEVARD

BH 1
57.69

BH 2
57.19

BH 2
57.33
(56.37)

BH 3
57.12

BH 3
58.23
(57.29)

BH 4
57.92

BH 5
58.02

BH 6
58.26

BH 7
58.45

BH 8
58.37

BH 1
58.69
(57.57)

BH 9
60.82

TP 1

A

A'

TP1-G1 (0.00-0.25m) October 5th, 2021
BTEX, PHCs (F1 to F4), comply with MECP Table 3 Standards

BH01-SS5 (3.05-3.66m) November 14, 2019
Metals,BTEX, PHCs (F1 to F4), comply with MECP Table 3 Standards

BH2-SS4	(2.29-2.90m)	November 14, 2019
Parameter	Result (µg/g)	Standard (µg/g)
Vanadium	88.5	86

Remaining Metals,BTEX, PHCs (F1 to F4), comply with MECP Table 3 Standards

BH3-SS5	(3.05-3.66m)	November 14, 2019
Parameter	Result (µg/g)	Standard (µg/g)
Vanadium	101	86

Remaining Metals,BTEX, PHCs (F1 to F4), comply with MECP Table 3 Standards

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION (CURRENT INVESTIGATION)
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG5091, NOVEMBER 2019
- 57.33 GROUND SURFACE ELEVATION (m)
- (57.22) GROUNDWATER SURFACE ELEVATION (m) (OCTOBER 5, 2021)

TBM- TOP OF GRATE OF CATCH BASIN LOCATED ON ST. JOSEPH BOULEVARD. GEODETIC ELEVATION = 61.30m

SCALE: 1:1000

0 10 20 30 40 50m 75m

SOIL RESULTS COMPLY WITH MECP TABLE 3 STANDARDS

SOIL RESULTS EXCEED WITH MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

8417709 CANADA INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
3459 AND 3479 ST. JOSEPH BOULEVARD

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN-SOIL (METALS,BTEX AND PHC)

Scale: 1:1000	Date: 10/2021
Drawn by: YA	Report No.: PE4737-2
Checked by: PP	Dwg. No.: PE4737-5A
Approved by: MSD	Revision No.:

11x17

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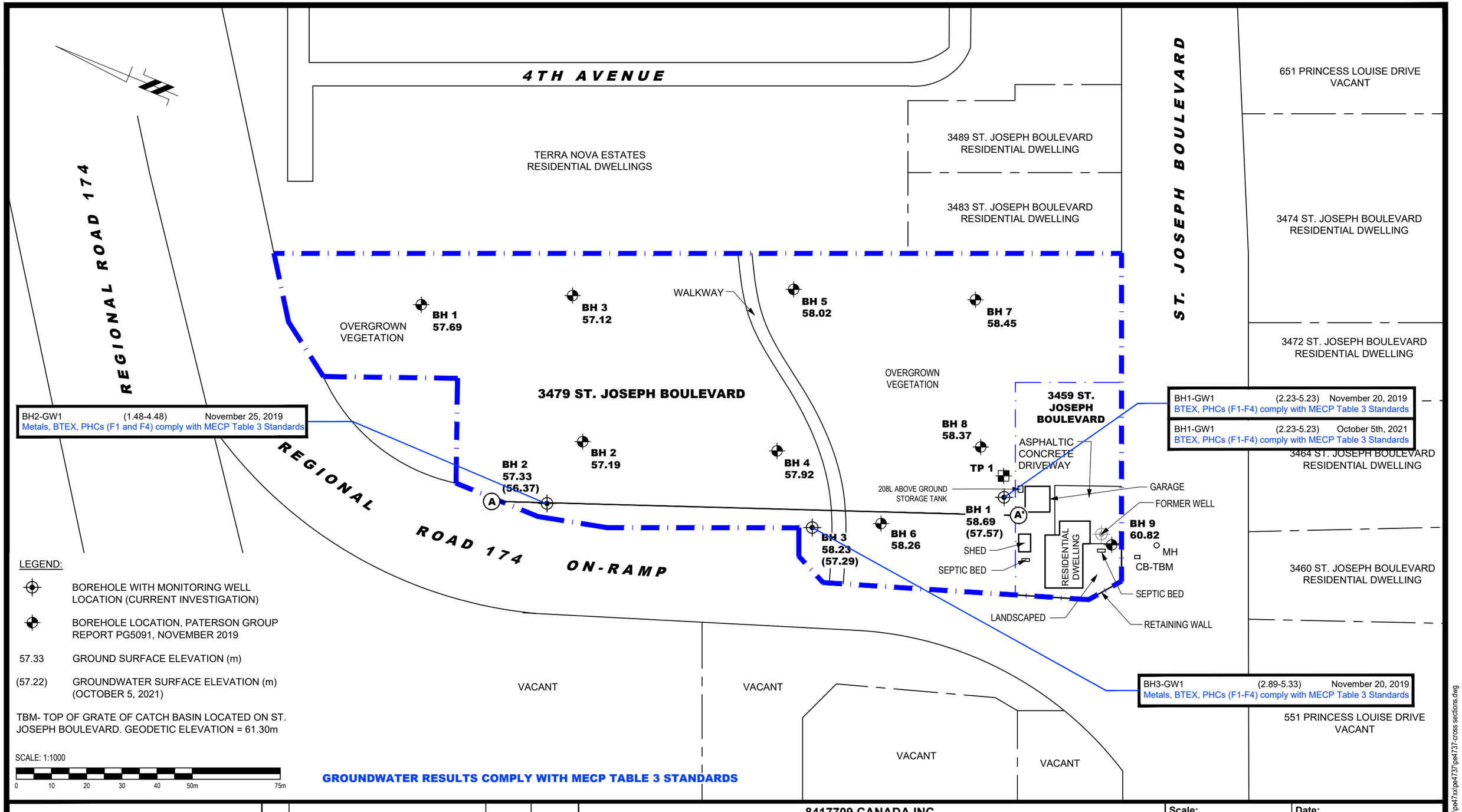

LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION (CURRENT INVESTIGATION)
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG5091, NOVEMBER 2019
- 57.33 GROUND SURFACE ELEVATION (m)
- (57.22) GROUNDWATER SURFACE ELEVATION (m) (OCTOBER 5, 2021)

TBM- TOP OF GRATE OF CATCH BASIN LOCATED ON ST. JOSEPH BOULEVARD. GEODETIC ELEVATION = 61.30m

SCALE: 1:1000

0 10 20 30 40 50m 75m

GROUNDWATER RESULTS COMPLY WITH MECP TABLE 3 STANDARDS

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NO.	REVISIONS	DATE	INITIAL

8417709 CANADA INC.

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
3459 AND 3479 ST. JOSEPH BOULEVARD

OTTAWA, ONTARIO

Title:
ANALYTICAL TESTING PLAN-GROUNDWATER (METALS, BTEX AND PHC)

Scale: 1:1000	Date: 11/2021
Drawn by: YA	Report No.: PE4737-2
Checked by: PP	Dwg. No.: PE4737-6A
Approved by: MSD	Revision No.:

11x17

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3459 and 3479 St. Joseph Boulevard
Ottawa, Ontario

DATUM BM - Top of grate of catch basin located near the southwest corner of subject site. Geodetic elevation = 61.30m.

FILE NO. PE4737

REMARKS

HOLE NO. TP 1-21

BORINGS BY Hand Shovel **DATE** October 5, 2021

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Photo Ionization Detector: Volatile Organic Rdg. (ppm) / Lower Explosive Limit %	Monitoring Well Construction
GROUND SURFACE						0			
TOPSOIL trace organics		G	1					△	
0.25									
End of Test Pit									

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.

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3459 and 3479 St. Joseph Boulevard
Ottawa, Ontario

DATUM BM - Top of grate of catch basin located near the southwest corner of subject site. Geodetic elevation = 61.30m.

FILE NO. PE4737

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 2019 November 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	58.69
TOPSOIL		AU	1				
0.25							
		SS	2	92	6	1	57.69
		SS	3	96	5	2	56.69
Brown **SILTY CLAY**							
		SS	4	88	1	3	55.69
		SS	5	100	1		
- grey by 3.8m depth						4	54.69
		SS	6	100	W		
		SS	7	100	1	5	53.69
5.33							
End of Borehole							
(GWL @ 0.22m - Nov. 20, 2019)							

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

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3459 and 3479 St. Joseph Boulevard
Ottawa, Ontario

DATUM BM - Top of grate of catch basin located near the southwest corner of subject site. Geodetic elevation = 61.30m.

FILE NO. PE4737

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** 2019 November 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	57.33
TOPSOIL 0.41		AU	1				
Brown **SILTY CLAY**		SS	2	100	3	1	56.33
- reddish brown by 1.7m depth		SS	3	100	3	2	55.33
		SS	4	100	2	3	54.33
- grey by 3.4m depth		SS	5	100	1		
		SS	6	100	W	4	53.33
4.57							
End of Borehole							
(GWL @ 0.11m - Nov. 20, 2019)							

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

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
3459 and 3479 St. Joseph Boulevard
Ottawa, Ontario

DATUM BM - Top of grate of catch basin located near the southwest corner of subject site. Geodetic elevation = 61.30m.

FILE NO. PE4737

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 2019 November 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	58.23
TOPSOIL							
0.23		AU	1				
		SS	2	100	5	1	57.23
		SS	3	100	5	2	56.23
Brown **SILTY CLAY**		SS	4	100	1	3	55.23
		SS	5	100	1		
- grey by 3.8m depth		SS	6	100	W	4	54.23
		SS	7	100	W	5	53.23
5.33							
End of Borehole							
(GWL @ 0.15m - Nov. 20, 2019)							

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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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 33244
Project: PE4737
Custody: 131541

Report Date: 12-Oct-2021
Order Date: 6-Oct-2021

Order #: 2141398

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

Paracel ID	Client ID
2141398-01	TP1-G1
2141398-02	DUP A

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 33244

Report Date: 12-Oct-2021

Order Date: 6-Oct-2021

Project Description: PE4737

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	7-Oct-21	8-Oct-21
PHC F1	CWS Tier 1 - P&T GC-FID	7-Oct-21	8-Oct-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Oct-21	8-Oct-21
Solids, %	Gravimetric, calculation	7-Oct-21	7-Oct-21

Certificate of Analysis

Report Date: 12-Oct-2021

Client: Paterson Group Consulting Engineers

Order Date: 6-Oct-2021

Client PO: 33244

Project Description: PE4737

	Client ID:	TP1-G1	DUP A	-	-
	Sample Date:	05-Oct-21 10:30	05-Oct-21 10:30	-	-
	Sample ID:	2141398-01	2141398-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	62.0	60.4	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	118%	118%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

Certificate of Analysis

Report Date: 12-Oct-2021

Client: Paterson Group Consulting Engineers

Order Date: 6-Oct-2021

Client PO: 33244

Project Description: PE4737

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*9.61*		*ug/g*		*120*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g wet	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	80	8	ug/g dry	109			30.0	30	
F4 PHCs (C34-C50)	115	6	ug/g dry	165			35.6	30	QR-04
Physical Characteristics									
% Solids	92.5	0.1	% by Wt.	92.1			0.4	25	
Volatiles									
Benzene	ND	0.02	ug/g wet	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g wet	ND			NC	50	
Toluene	ND	0.05	ug/g wet	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g wet	ND			NC	50	
o-Xylene	ND	0.05	ug/g wet	ND			NC	50	
Surrogate: Toluene-d8	*9.58*		*ug/g wet*		*120*	*50-140*			

Certificate of Analysis

Report Date: 12-Oct-2021

Client: Paterson Group Consulting Engineers

Order Date: 6-Oct-2021

Client PO: 33244

Project Description: PE4737

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	191	7	ug/g	ND	95.6	80-120			
F2 PHCs (C10-C16)	121	4	ug/g	ND	112	60-140			
F3 PHCs (C16-C34)	412	8	ug/g	109	114	60-140			
F4 PHCs (C34-C50)	362	6	ug/g	165	117	60-140			
Volatiles									
Benzene	4.14	0.02	ug/g	ND	103	60-130			
Ethylbenzene	4.80	0.05	ug/g	ND	120	60-130			
Toluene	4.79	0.05	ug/g	ND	120	60-130			
m,p-Xylenes	8.49	0.05	ug/g	ND	106	60-130			
o-Xylene	3.94	0.05	ug/g	ND	98.4	60-130			
Surrogate: Toluene-d8	*8.29*		*ug/g*		*104*	*50-140*			

Certificate of Analysis

Report Date: 12-Oct-2021

Client: Paterson Group Consulting Engineers

Order Date: 6-Oct-2021

Client PO: 33244

Project Description: PE4737

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

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: 2141398

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2141398	№ 131541

Client Name: Paterson	Project Ref: PE4737		Page 1 of 1
Contact Name: Mark D'Arcy	Quote #: 33244		Turnaround Time
Address: 154 Colonnade RD South Ottawa ON	PO #:		☐ 1 day ☐ 3 day
	E-mail: Mdarcy@Patersongroup.ca BdrieSchner@PatersonGroup.ca		☐ 2 day ☒ Regular
Telephone: 613 219-1760			Date Required:

Regulation 153/04	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	TP1-G1	S		2	Oct 5, 2021	1030	X			~~X~~									
2	Dup A	S		2	Oct 5, 2021	1030	X			~~X~~									
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: No Metal Analysis Required

Method of Delivery: Paracel Courier

Relinquished By (Sign): B Drieschner	Received By Driver/Depot: [signature]	Received at Lab: [signature]	Verified By: [signature]
Relinquished By (Print): Beau Drieschner	Date/Time: 06/10/21 3:02	Date/Time: Oct 6 2021 5:00	Date/Time: Oct 6, 2021 17:51
Date/Time: Oct 5, 2021 (1135 AM)	Temperature: °C PM	Temperature: 6.4 °C	pH Verified ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 29137
Project: PE4737
Custody: 51698

Report Date: 21-Nov-2019
Order Date: 15-Nov-2019

Order #: 1946585

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

Paracel ID	Client ID
1946585-01	BH1-SS5
1946585-02	BH2-SS4
1946585-03	BH3-SS5

Approved By: Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 29137

Report Date: 21-Nov-2019
Order Date: 15-Nov-2019
Project Description: PE4737

Analysis Summary Table

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

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 29137

Report Date: 21-Nov-2019

Order Date: 15-Nov-2019

Project Description: PE4737

	Client ID:	BH1-SS5	BH2-SS4	BH3-SS5	-
	Sample Date:	14-Nov-19 09:00	14-Nov-19 09:00	14-Nov-19 09:00	-
	Sample ID:	1946585-01	1946585-02	1946585-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	61.0	99.6	93.1	-
Metals					
Antimony	1.0 ug/g dry	-	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	-	3.0	2.9	-
Barium	1.0 ug/g dry	-	254	291	-
Beryllium	0.5 ug/g dry	-	0.8	0.7	-
Boron	5.0 ug/g dry	-	7.4	<5.0	-
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	-
Chromium	5.0 ug/g dry	-	108	108	-
Cobalt	1.0 ug/g dry	-	20.7	20.0	-
Copper	5.0 ug/g dry	-	43.4	49.7	-
Lead	1.0 ug/g dry	-	8.1	5.8	-
Molybdenum	1.0 ug/g dry	-	<1.0	<1.0	-
Nickel	5.0 ug/g dry	-	56.4	58.4	-
Selenium	1.0 ug/g dry	-	<1.0	<1.0	-
Silver	0.3 ug/g dry	-	<0.3	<0.3	-
Thallium	1.0 ug/g dry	-	<1.0	<1.0	-
Uranium	1.0 ug/g dry	-	<1.0	<1.0	-
Vanadium	10.0 ug/g dry	-	88.5	101	-
Zinc	20.0 ug/g dry	-	108	108	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	103%	110%	103%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 29137

Report Date: 21-Nov-2019
Order Date: 15-Nov-2019
Project Description: PE4737

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.07*		*ug/g*		*101*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	34			0.0	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	43			0.0	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	6.4	1.0	ug/g dry	6.4			0.7	30	
Barium	71.0	1.0	ug/g dry	65.3			8.3	30	
Beryllium	ND	0.5	ug/g dry	ND			0.0	30	
Boron	11.2	5.0	ug/g dry	10.3			7.9	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium	17.5	5.0	ug/g dry	17.3			0.9	30	
Cobalt	6.9	1.0	ug/g dry	6.9			1.1	30	
Copper	14.1	5.0	ug/g dry	14.6			3.6	30	
Lead	8.4	1.0	ug/g dry	8.8			5.3	30	
Molybdenum	2.7	1.0	ug/g dry	2.6			3.9	30	
Nickel	18.1	5.0	ug/g dry	19.7			8.4	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.3	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND			0.0	30	
Vanadium	25.4	10.0	ug/g dry	25.3			0.5	30	
Zinc	276	20.0	ug/g dry	288			4.2	30	
Physical Characteristics									
% Solids	89.6	0.1	% by Wt.	89.1			0.6	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*9.11*		*ug/g dry*		*104*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	172	7	ug/g		85.9	80-120			
F2 PHCs (C10-C16)	96	4	ug/g	ND	95.0	60-140			
F3 PHCs (C16-C34)	295	8	ug/g	34	105	60-140			
F4 PHCs (C34-C50)	223	6	ug/g	43	115	60-140			
Metals									
Antimony	39.5		ug/L	ND	78.8	70-130			
Arsenic	50.4		ug/L	2.6	95.6	70-130			
Barium	70.2		ug/L	26.1	88.0	70-130			
Beryllium	45.8		ug/L	ND	91.3	70-130			
Boron	43.1		ug/L	ND	77.9	70-130			
Cadmium	45.0		ug/L	ND	90.0	70-130			
Chromium	55.7		ug/L	6.9	97.6	70-130			
Cobalt	49.5		ug/L	2.8	93.5	70-130			
Copper	51.8		ug/L	5.9	91.8	70-130			
Lead	45.8		ug/L	3.5	84.4	70-130			
Molybdenum	47.1		ug/L	1.0	92.2	70-130			
Nickel	53.6		ug/L	7.9	91.5	70-130			
Selenium	46.2		ug/L	ND	92.1	70-130			
Silver	42.8		ug/L	ND	85.6	70-130			
Thallium	44.5		ug/L	ND	88.9	70-130			
Uranium	47.7		ug/L	ND	94.6	70-130			
Vanadium	57.4		ug/L	10.1	94.6	70-130			
Zinc	151		ug/L	115	70.9	70-130			
Volatiles									
Benzene	3.73	0.02	ug/g		93.2	60-130			
Ethylbenzene	4.54	0.05	ug/g		113	60-130			
Toluene	4.43	0.05	ug/g		111	60-130			
m,p-Xylenes	8.58	0.05	ug/g		107	60-130			
o-Xylene	4.49	0.05	ug/g		112	60-130			
Surrogate: Toluene-d8	*8.31*		*ug/g*		*104*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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: 1946585

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
1946585	№ 51698

Client Name: Paterson Group	Project Ref: PE4737	Page 1 of 1
Contact Name: Mark D'Arcy	Quote #:	Turnaround Time
Address: 154 Colonnade Rd, Ottawa, ON	PO #: 29137	☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca	☐ 2 day ☑ Regular
Telephone: 613-226-7381		Date Required:

Regulation 153/04	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	BTEX/MTBE	PHCs (F1 - F4)	VOCs								Required Analysis
1	BH1-SS5	S		2	Nov 14/19		✓	✓									250mL Jar
2	BH2-SS4	S		3	Nov 14/19		✓	✓	✓								2x125mL Jar
3	BH3-SS5	S		3	Nov 14/19		✓	✓	✓								↓
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments:

Method of Delivery: Paracel

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: Sumee Nam Pokman	Verified By:
Relinquished By (Print): Nicholas Donatti	Date/Time: 15/11/19 11:00 AM	Date/Time: Nov 15, 2019 04:16	Date/Time: 11-15-19 11:45
Date/Time:	Temperature: °C	Temperature: 11.1 °C	pH Verified: ☑ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 33244
Project: PE4737
Custody: 131541

Report Date: 12-Oct-2021
Order Date: 6-Oct-2021

Order #: 2141399

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

Paracel ID	Client ID
2141399-01	BH1-GW2
2141399-02	DUP A

Approved By:

Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 33244

Report Date: 12-Oct-2021

Order Date: 6-Oct-2021

Project Description: PE4737

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	8-Oct-21	8-Oct-21
PHC F1	CWS Tier 1 - P&T GC-FID	8-Oct-21	8-Oct-21
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	8-Oct-21	10-Oct-21

Certificate of Analysis

Report Date: 12-Oct-2021

Client: **Paterson Group Consulting Engineers**

Order Date: 6-Oct-2021

Client PO: **33244**

Project Description: PE4737

	Client ID:	BH1-GW2	DUP A	-	-
	Sample Date:	05-Oct-21 10:00	05-Oct-21 10:00	-	-
	Sample ID:	2141399-01	2141399-02	-	-
	MDL/Units	Water	Water	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	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	-	-
Toluene-d8	Surrogate	81.5%	81.1%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-

Certificate of Analysis

Report Date: 12-Oct-2021

Client: Paterson Group Consulting Engineers

Order Date: 6-Oct-2021

Client PO: 33244

Project Description: PE4737

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									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	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: Toluene-d8	*66.5*		*ug/L*		*83.1*	*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									
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	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: Toluene-d8	*65.2*		*ug/L*		*81.6*	*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)	2090	25	ug/L	ND	104	68-117			
F2 PHCs (C10-C16)	1500	100	ug/L	ND	94.0	60-140			
F3 PHCs (C16-C34)	4440	100	ug/L	ND	113	60-140			
F4 PHCs (C34-C50)	2900	100	ug/L	ND	117	60-140			
Volatiles									
Benzene	30.8	0.5	ug/L	ND	77.0	60-130			
Ethylbenzene	32.3	0.5	ug/L	ND	80.7	60-130			
Toluene	37.2	0.5	ug/L	ND	92.9	60-130			
m,p-Xylenes	57.4	0.5	ug/L	ND	71.8	60-130			
o-Xylene	36.0	0.5	ug/L	ND	90.0	60-130			
Surrogate: Toluene-d8	*58.5*		*ug/L*		*73.1*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container and COC sample IDs don't match - Id on voc vials read: "BH1-GW"

Applies to samples: BH1-GW2

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: 2141399

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2141399	Nº 131541

Client Name: Paterson	Project Ref: PE4737	Page 1 of 1
Contact Name: Mark D'Arcy	Quote #: 33244	Turnaround Time
Address: 154 Colonnade RD South Ottawa ON	PO #:	☐ 1 day ☐ 3 day ☐ 2 day ☒ Regular
Telephone: 613 219-1760	E-mail: mdarcy@paterSongroup.ca Mdarcy BDrieschner@PaterSongroup.Ca	Date Required:

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

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

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

	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)	Required Analysis
1	BH1-GW2	GW		3	Oct 5, 2021	1000	X							
2	DUP A	GW		3	Oct 5, 2021	10 00	X							
3														
4														
5														
6														
7														
8														
9														
10														

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): B Drieschner	Received By Driver/Depot: A. LOUISE	Received at Lab:	Verified By: BGM
Relinquished By (Print): Beau Drieschner	Date/Time: 06/10/21 3:02	Date/Time: Oct 6 2021 5:09	Date/Time: Oct 6, 2021 17:56
Date/Time: Oct 5, 2021 (1130 AM)	Temperature: °C PH	Temperature: 6.9 °C	pH Verified: ☐ By:

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 28467
Project: PE4737
Custody: 51715

Report Date: 29-Nov-2019
Order Date: 25-Nov-2019

Order #: 1948052

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

Paracel ID	Client ID
1948052-01	BH1-GW1
1948052-02	BH3-GW1

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 28467

Report Date: 29-Nov-2019
Order Date: 25-Nov-2019
Project Description: PE4737

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	26-Nov-19	26-Nov-19
Metals, ICP-MS	EPA 200.8 - ICP-MS	28-Nov-19	29-Nov-19
PHC F1	CWS Tier 1 - P&T GC-FID	25-Nov-19	26-Nov-19
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	27-Nov-19	28-Nov-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 28467

Report Date: 29-Nov-2019

Order Date: 25-Nov-2019

Project Description: PE4737

	Client ID:	BH1-GW1	BH3-GW1	-	-
	Sample Date:	20-Nov-19 13:00	20-Nov-19 13:30	-	-
	Sample ID:	1948052-01	1948052-02	-	-
	MDL/Units	Water	Water	-	-
Metals					
Antimony	0.5 ug/L	-	<0.5	-	-
Arsenic	1 ug/L	-	1	-	-
Barium	1 ug/L	-	128	-	-
Beryllium	0.5 ug/L	-	<0.5	-	-
Boron	10 ug/L	-	71	-	-
Cadmium	0.1 ug/L	-	<0.1	-	-
Chromium	1 ug/L	-	<1	-	-
Cobalt	0.5 ug/L	-	<0.5	-	-
Copper	0.5 ug/L	-	2.7	-	-
Lead	0.1 ug/L	-	0.2	-	-
Molybdenum	0.5 ug/L	-	7.3	-	-
Nickel	1 ug/L	-	1	-	-
Selenium	1 ug/L	-	<1	-	-
Silver	0.1 ug/L	-	<0.1	-	-
Sodium	200 ug/L	-	66600	-	-
Thallium	0.1 ug/L	-	<0.1	-	-
Uranium	0.1 ug/L	-	1.6	-	-
Vanadium	0.5 ug/L	-	2.5	-	-
Zinc	5 ug/L	-	6	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	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	-	-
Toluene-d8	Surrogate	103%	106%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Metals									
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	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						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	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: Toluene-d8	*92.4*		*ug/L*		*116*	*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				30	
Metals									
Antimony	1.20	0.5	ug/L	ND			0.0	20	
Arsenic	1.4	1	ug/L	1.4			2.4	20	
Barium	13.7	1	ug/L	13.9			1.6	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	70	10	ug/L	69			1.8	20	
Cadmium	ND	0.1	ug/L	ND				20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	4.23	0.5	ug/L	4.27			0.8	20	
Copper	1.62	0.5	ug/L	1.57			2.9	20	
Lead	0.19	0.1	ug/L	0.16			17.7	20	
Molybdenum	1.12	0.5	ug/L	1.03			8.8	20	
Nickel	3.9	1	ug/L	3.8			2.3	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	23600	200	ug/L	23900			1.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	0.9	0.1	ug/L	0.9			6.2	20	
Vanadium	1.33	0.5	ug/L	1.31			1.3	20	
Zinc	12	5	ug/L	14			16.6	20	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*81.5*		*ug/L*		*102*	*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)	2000	25	ug/L		100	68-117			
F2 PHCs (C10-C16)	1550	100	ug/L		96.9	60-140			
F3 PHCs (C16-C34)	4260	100	ug/L		109	60-140			
F4 PHCs (C34-C50)	3040	100	ug/L		122	60-140			
Metals									
Antimony	49.1		ug/L	ND	97.4	80-120			
Arsenic	60.4		ug/L	1.4	118	80-120			
Barium	67.5		ug/L	13.9	107	80-120			
Beryllium	54.2		ug/L	ND	108	80-120			
Boron	109		ug/L	69	81.2	80-120			
Cadmium	52.3		ug/L	ND	105	80-120			
Chromium	59.0		ug/L		118	80-120			
Cobalt	53.4		ug/L	4.27	98.3	80-120			
Copper	54.2		ug/L	1.57	105	80-120			
Lead	45.5		ug/L	0.16	90.6	80-120			
Molybdenum	53.6		ug/L	1.03	105	80-120			
Nickel	57.4		ug/L	3.8	107	80-120			
Selenium	49.6		ug/L	ND	98.7	80-120			
Silver	43.0		ug/L	ND	86.1	80-120			
Sodium	32500		ug/L	23900	86.2	80-120			
Thallium	45.1		ug/L	ND	90.2	80-120			
Uranium	45.2		ug/L	0.9	88.6	80-120			
Vanadium	58.1		ug/L		116	80-120			
Zinc	59		ug/L	14	88.5	80-120			
Volatiles									
Benzene	33.6	0.5	ug/L		83.9	60-130			
Ethylbenzene	38.4	0.5	ug/L		95.9	60-130			
Toluene	36.1	0.5	ug/L		90.2	60-130			
m,p-Xylenes	75.7	0.5	ug/L		94.7	60-130			
o-Xylene	36.9	0.5	ug/L		92.3	60-130			
Surrogate: Toluene-d8	*69.4*		*ug/L*		*86.7*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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

Paracel ID: 1948052

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com
www.paracellabs.com

Paracel Order Number (Lab Use Only): 1948052

Chain Of Custody (Lab Use Only) № 51715

Client Name: Paterson Group	Project Ref: PE4737		Page 1 of 1
Contact Name: Mark D'Arcy	Quote #:		**Turnaround Time**
Address: 154 Colonnade Road	PO #: 28467		☐ 1 day ☐ 3 day
	E-mail: mdarcy@patersongroup.ca		☐ 2 day ☑ Regular
Telephone: 613-226-7381			Date Required:

Regulation 153/04	Other Regulation	Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)
☐ 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:	

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	BTEX	PHCs	Metals ICP
1	BH1 - GW1	GW		3	Nov 20/2019	1:00 PM	✓	✓	
2	BH3 - GW1	GW		4	↓	1:30 PM	✓	✓	✓
3									
4									
5									
6									
7									
8									
9									
10									

Comments:

Method of Delivery: Paracel

Relinquished By (Sign): N. Doucette	Received By Driver/Depot: T. Scouse	Received at Lab: Sumeera Dharma	Verified By: Mak
Relinquished By (Print): Nic Doucette	Date/Time: 25/11/19 10 45	Date/Time: Nov 25, 2019 11.35	Date/Time: 11-25-19 12:12
Date/Time:	Temperature: °C AH	Temperature: 8.9 °C	pH Verified: ☒ By: MA

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Certificate of Analysis

Paterson Group Consulting Engineers

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

Client PO: 29196
Project: PE4737
Custody: 51719

Report Date: 29-Nov-2019
Order Date: 25-Nov-2019

Order #: 1948127

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

Paracel ID	Client ID
1948127-01	BH2-GW1

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: Paterson Group Consulting Engineers
Client PO: 29196

Report Date: 29-Nov-2019
Order Date: 25-Nov-2019
Project Description: PE4737

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	27-Nov-19	27-Nov-19
Metals, ICP-MS	EPA 200.8 - ICP-MS	28-Nov-19	29-Nov-19
PHC F1	CWS Tier 1 - P&T GC-FID	26-Nov-19	27-Nov-19
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	27-Nov-19	28-Nov-19

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 29196

Report Date: 29-Nov-2019

Order Date: 25-Nov-2019

Project Description: PE4737

	Client ID:	BH2-GW1	-	-	-
	Sample Date:	25-Nov-19 11:30	-	-	-
	Sample ID:	1948127-01	-	-	-
	MDL/Units	Water	-	-	-
Metals					
Antimony	0.5 ug/L	<0.5	-	-	-
Arsenic	1 ug/L	1	-	-	-
Barium	1 ug/L	177	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	56	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Cobalt	0.5 ug/L	<0.5	-	-	-
Copper	0.5 ug/L	1.6	-	-	-
Lead	0.1 ug/L	<0.1	-	-	-
Molybdenum	0.5 ug/L	4.9	-	-	-
Nickel	1 ug/L	2	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	51200	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	0.6	-	-	-
Vanadium	0.5 ug/L	1.5	-	-	-
Zinc	5 ug/L	7	-	-	-
Volatiles					
Benzene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Toluene	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	-	-	-
Toluene-d8	Surrogate	95.2%	-	-	-
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	-	-	-

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						
Metals									
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	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						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	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: Toluene-d8	*77.0*		*ug/L*		*96.2*	*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				30	
Metals									
Antimony	1.20	0.5	ug/L	ND			0.0	20	
Arsenic	1.4	1	ug/L	1.4			2.4	20	
Barium	13.7	1	ug/L	13.9			1.6	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	70	10	ug/L	69			1.8	20	
Cadmium	ND	0.1	ug/L	ND				20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	4.23	0.5	ug/L	4.27			0.8	20	
Copper	1.62	0.5	ug/L	1.57			2.9	20	
Lead	0.19	0.1	ug/L	0.16			17.7	20	
Molybdenum	1.12	0.5	ug/L	1.03			8.8	20	
Nickel	3.9	1	ug/L	3.8			2.3	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	23600	200	ug/L	23900			1.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	0.9	0.1	ug/L	0.9			6.2	20	
Vanadium	1.33	0.5	ug/L	1.31			1.3	20	
Zinc	12	5	ug/L	14			16.6	20	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*76.6*		*ug/L*		*95.7*	*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)	1900	25	ug/L		95.2	68-117			
F2 PHCs (C10-C16)	1550	100	ug/L		96.9	60-140			
F3 PHCs (C16-C34)	4260	100	ug/L		109	60-140			
F4 PHCs (C34-C50)	3040	100	ug/L		122	60-140			
Metals									
Antimony	49.1		ug/L	ND	97.4	80-120			
Arsenic	60.4		ug/L	1.4	118	80-120			
Barium	67.5		ug/L	13.9	107	80-120			
Beryllium	54.2		ug/L	ND	108	80-120			
Boron	109		ug/L	69	81.2	80-120			
Cadmium	52.3		ug/L	ND	105	80-120			
Chromium	59.0		ug/L		118	80-120			
Cobalt	53.4		ug/L	4.27	98.3	80-120			
Copper	54.2		ug/L	1.57	105	80-120			
Lead	45.5		ug/L	0.16	90.6	80-120			
Molybdenum	53.6		ug/L	1.03	105	80-120			
Nickel	57.4		ug/L	3.8	107	80-120			
Selenium	49.6		ug/L	ND	98.7	80-120			
Silver	43.0		ug/L	ND	86.1	80-120			
Sodium	32500		ug/L	23900	86.2	80-120			
Thallium	45.1		ug/L	ND	90.2	80-120			
Uranium	45.2		ug/L	0.9	88.6	80-120			
Vanadium	58.1		ug/L		116	80-120			
Zinc	59		ug/L	14	88.5	80-120			
Volatiles									
Benzene	46.3	0.5	ug/L		116	60-130			
Ethylbenzene	40.9	0.5	ug/L		102	60-130			
Toluene	41.7	0.5	ug/L		104	60-130			
m,p-Xylenes	83.1	0.5	ug/L		104	60-130			
o-Xylene	41.3	0.5	ug/L		103	60-130			
Surrogate: Toluene-d8	*73.4*		*ug/L*		*91.7*	*50-140*			

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

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

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.

PARA
LABORATORII

Paracel ID: 1948127

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Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
1948127	Nº 51719

Client Name: Paterson Group	Project Ref: PE4737	Page 1 of 1
Contact Name: Mark D'Arcy	Quote #:	Turnaround Time
Address: 154 Colonnade Road	PO #: 29196	☐ 1 day ☐ 3 day ☐ 2 day ☑ Regular
Telephone: 613-226-7381	E-mail: mdarcy@patersongroup.ca	Date Required:

Regulation 153/04	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	Required Analysis: BTEX	PHCs	ICP Metals
1	BH2 - GW1	GW		4	Nov 25/19	11:30	✓	✓	✓
2									
3									
4									
5									
6									
7									
8									
9									
10									

Comments:

Method of Delivery: Paracel

Relinquished By (Sign): N. Sullivan	Received By Driver/Depot: T. Teare	Received at Lab:	Verified By:
Relinquished By (Print): Nick Sullivan	Date/Time: 25/11/19 4:00 PM	Date/Time: 11-25-19 17:15	Date/Time: 11-26-19 09:38
Date/Time: Nov. 25.19 @ 4:00PM	Temperature: °C	Temperature: 15.4 °C	pH Verified: ☐ By: