February 21, 2019

Spruce Partners Inc.
117 George Street
Oakville, Ontario L6J 3B8

E-mail: paul@sprucepartnersinc.com

Attention: Mr. Paul Sustronk

Re: Preliminary Groundwater Summary Results
1157-1171 North Shore Boulevard East, Burlington, Ontario
Pinchin File: 212394.004

INTRODUCTION

Pinchin Ltd. (Pinchin) is pleased to provide the following Groundwater Summary Results Letter to Spruce Partners Inc. (Client) for the property located at 1157-1171 North Shore Boulevard East, Burlington, Ontario (Site). The Site location is illustrated on Figure 1, appended.

FIELD PROGRAM

Pinchin completed a supplemental drilling investigation at the Site between January 9, 2019 and January 11, 2019 by advancing a total of five sampled boreholes (BH101 to BH105) throughout the Site. The boreholes were advanced to depths ranging between 7.6 and 9.1 metres below ground surface (mbgs). The spatial locations of the boreholes advanced at the Site are shown on Figure 2.

The boreholes were advanced with the use of a Diedrich D-50 track-mounted mobile drill rig which was equipped with standard soil sampling equipment. Soil samples were collected at 0.76 and 1.52 m intervals using a 51 mm outside diameter (OD) split spoon barrel in conjunction with Standard Penetration Tests (SPT) “N” values (ASTM D1586). The SPT “N” values were used to assess the compactness condition of the non-cohesive soil.

Bedrock was proven in all five boreholes by core drilling with an HQ-size double tube diamond bit core barrel. The bedrock core specimens were measured in the field to determine Rock Quality Designation (RQD) (ASTM 6032) and returned to our office for further examination.

Monitoring wells were installed in all boreholes to allow measurement of the groundwater levels and to conduct hydraulic conductivity and a storm and sanitary sewer groundwater monitoring program. The monitoring wells were constructed using flush-threaded 50 mm diameter Trilock pipe with 3.0 meter long 10-slot well screens, delivered to the Site in pre-cleaned individually sealed plastic bags. The screen and riser pipes were not allowed to come into contact with the ground or drilling equipment prior to installation. The well installation details are summarized on Table 1 appended.

A completed well record was submitted to the Ontario Ministry of the Environment, Conservation and Parks (MECP) as per Ontario Regulation 903, as amended. A licensed well technician must properly decommission the monitoring wells prior to construction according to Regulation 903 of the Ontario Water Resources Act.

Groundwater observations and measurements were obtained from the open boreholes during and upon completion of drilling. The groundwater observations and measurements recorded are included on the appended borehole logs.

The borehole locations and ground surface elevations were surveyed by Pinchin using a Sokkia Model GRX 2 Global Navigation Satellite System (GNSS) rover. The ground surface elevations are geodetic, based on GNSS and local base station telemetry with a precision static of less than 20 mm.

SUBSURFACE CONDITIONS

In general, the soil stratigraphy at the Site consists of topsoil, fill and glacial till deposits overlying shale bedrock to the maximum borehole termination depth of approximately 9.1 mbgs.

Surficial topsoil was encountered within all of the boreholes and was observed to be approximately 75 mm to approximately 1.5 m thick. The topsoil generally consisted of brown silt with trace sand and organics. Fill material was encountered in Boreholes BH104 and was approximately 1.5 m thick and varied in composition from sand and gravel to silt with some sand.

Glacial till was encountered within all boreholes underlying the topsoil and fill material and extended to a depth of approximately 4.6 mbgs (Elevation 75.5 to 76.9 masl). The glacial till generally consisted of clayey silt with trace to some sand and gravel. The cohesive till has a firm to hard consistency based on SPT ‘N’ values of 7 to greater than 50 blows per 300 mm penetration of a split spoon sampler.

Shale bedrock was encountered within all boreholes underlying the glacial till and extended to the maximum borehole termination depth of 9.1 mbgs (Elevation 70.9 masl). The bedrock was highly weathered from 4.6 to 5.8 mbgs and the quality of the rock increased with depth. RQD values ranged from 35 to 99%.

WATER LEVEL MEASUREMENTS & HYDRAULIC CONDUCTIVITY TESTING

Manual measurements of stabilized groundwater levels in the monitoring wells on site were collected on January 16, 2019 and January 22, 2019. Groundwater was encountered at depths ranging between 2.1 and 4.3 mbgs (Elevation 77.2 to 78.2 masl). Seasonal variations in the water table should be expected, with higher levels occurring during wet weather conditions in the spring and fall and lower levels occurring during dry weather conditions. Groundwater elevation data is summarized on Table 3, and shown on Figure 2.

Hydraulic conductivity estimates were undertaken for the saturated bedrock at depth using rising head conductivity tests for five (5) monitoring wells within the Site (BH101 to BH105).

Each monitoring well was developed prior to rising head testing. Well purging was implemented to remove silt and sand introduced into the well during construction, and to remove fine particles from the coarse sand pack placed around the outside of the well screen during construction.

The rising head test procedure employs the hydrostatic time-lag method for groundwater recovery following the removal of a volume of water from a monitoring well, and makes use of the theory of Hvorslev (1951), as described in Freeze and Cherry (1979). Hvorslev's method is expressed by the following equation:

where:

$$K = \frac{r2\ln\left(\frac{L}{R}\right)}{2LT_0}$$

K	=	hydraulic conductivity of the tested material (m/sec)
r	=	inner radius of the well riser pipe (m)
R	=	outer radius of the well riser pipe (m)
L	=	length of screen and sand pack (m)
To	=	time lag (sec), where (H-h)/(H-Ho) = 0.37
h	=	water level at each time of measurement (m)
Ho	=	initial water level (m, start of test)
H	=	stabilized water level prior to introducing slug (m)

The time lag, T_0, is defined as the time required for the water level to recover to 63% of the stabilized level, if the initial flow rate into the well is maintained. This time lag is determined graphically as the time for which (H-h) divided by (H-Ho) is equal to 0.37.

Rising head test data was analyzed using the Aqtesolv 2007 software. A summary of the hydraulic conductivity estimates is provided below, and graphed results of the slug tests completed for the monitoring wells are appended.

Hydraulic conductivity estimates determined by the various testing methods are summarized in the following table, and graphical analyses of rising head test data are included in Appendix III.

The hydraulic conductivities estimated from the rising head tests are as follows:

Well ID	Depth to well bottom (mbgs)	Screen Length (m)	Screened Unit	Hydraulic Conductivity (K-Value) (m/s)
BH101	9.1	3.05	Bedrock	1.1×10^{-5}
BH102	9.1	3.05	Bedrock	6.5×10^{-6}
BH103	7.6	3.05	Bedrock	3.6×10^{-7}
BH104	9.1	3.05	Bedrock	7.9×10^{-7}
BH105	7.6	3.05	Bedrock	6.1×10^{-6}

The hydraulic conductivity (K-value) results from the rising head tests ranged from 1.1×10^{-5} metres per second (m/s) to 3.6×10^{-7} m/s, with a geometric mean of 2.6×10^{-6} m/s.

GROUNDWATER CHEMISTRY TESTING

Two water quality samples were collected from two of the monitoring wells installed as part of this program, Boreholes BH102 and BH105. The groundwater samples were submitted to ALS Environmental (ALS) in Waterloo, Ontario for analysis for comparison with the Regional Municipality of Halton (RMOH) Sewer By-law Use 2.03 standards and future Sewer By-law Use standards for the City of Burlington. ALS is an independent laboratory accredited by the Standards Council of Canada. Formal chain of custody records of the sample submissions were maintained between Pinchin and the staff at ALS.

The results of the laboratory analyses were evaluated by comparison with the storm and sanitary discharge limits presented in the RMOH Sewer By-Law and the future Sewer By-law Use for the City of Burlington.

A summary of the laboratory analyses along with the RMOH and future standards for the City of Burlington storm and sanitary discharge limits are presented in Tables 4 to 14. As indicated in Tables 4 to 7, the water quality sampling results indicated all analyzed parameter concentrations satisfied the storm and sanitary discharge limits, with the following exceptions:

- The groundwater sample collected from the monitoring well installed in Borehole BH102 exceeded the RMOH Storm and Sanitary Sewer Discharge By-Law No. 2-03 for Total Suspended Solids (580 vs. *RMOH Standard* of 350 mg/L);
- The groundwater sample collected from the monitoring well installed in Borehole BH102 exceeded the future City of Burlington Sewer Use Standards for Total Suspended Solids (127 mg/L vs. *Burlington Standard* of 15 mg/L), Biological Oxygen Demand (BOD) (24.5 vs. *Burlington Standard* of 15 mg/L*)* and Manganese (0.279 mg/L vs. 0.05 mg/L); and
- The groundwater sample collected from the monitoring well installed in Borehole BH105 exceeded the future City of Burlington Sewer Use Standards for Total Suspended Solids (69.6 mg/L vs. *Burlington Standard* of 15 mg/L) and Manganese (1.32 mg/L vs. 0.05 mg/L).

As indicated in Table 11, Pinchin notes that due to elevated concentrations of metals in the groundwater samples collected from monitoring wells installed in Boreholes BH102 and BH105, the laboratory was required to dilute this sample during analysis, which resulted in the laboratory reportable detection limits for metal parameters manganese being raised to levels above the sewer use standards. Pinchin is unable to comment on whether the actual concentrations of this metal parameter in groundwater at monitoring wells BH102 and BH105 meet the sewer use standards.

As such, the groundwater will need to be treated for Total Suspended Solids, Biological Oxygen Demand and Maganese prior to discharge to either the storm or sanitary sewer.

The laboratory Certificate of Analysis is appended.

CALCULATION OF POTENTIAL DEWATERING RATES AND ESTIMATION OF ZONE OF INFLUENCE

Dewatering rates were estimated based on Pinchin's interpretation of the hydrogeological conditions of the Site. The estimates are based on the water levels obtained during the January 2019 monitoring event. This section does not provide a design of dewatering operations, but provides an estimate of the expected steady state dewatering rates from groundwater inflows at the desired drawdown, with a contingency to allow for variation in hydraulic conductivities and the impacts from precipitation events. The most effective dewatering measures and the design of the dewatering operations are the responsibility of the chosen dewatering contractor. Additionally, as the final foundation designs are

unknown, the numbers presented in the following sections are approximations for discussion purposes. Once final foundation design has been completed and the staging for the development has been established, the dewatering estimates can be refined.

For the purposes of the preliminary dewatering calculations, it is has been assumed that the foundations will be approximately 0.5 metre below the basement finished floor elevations provided by The Odan/Detech Group Inc.

Required Drawdown

Typically it is recommended that the dewatering will draw down the water table to 0.5 m below the underside of foundations. Dewatering requirements are summarized below.

Summary of Estimated Dewatering Requirements

Area of Site	Levels of U/G	Basement Finish Floor Elevation (masl)	Bottom Elevation of Excavation (masl)	Width of Excavation (m)	Length of Excavation (m)	Estimated Water Table (masl)	Minimum Required Drawdown (m)
Building	2	75.3	74.8	71	116	78.2	3.9

Estimates of the dewatering rates for excavations in unconfined aquifers for the above Site Area, using a method applicable to unconfined conditions, are summarized below. In these cases, the geometric mean of the overburden hydraulic conductivities has been used. These are steady-state calculations and are considered to be applicable to construction dewatering conditions assuming excavation to full extent conditions.

Summary of Estimated Dewatering Rates

		Building
Size (m x m)		71 x 116
Hydraulic Conductivity (m/s)		2.6×10^{-6}
Dewatering Drawdown (m)		3.9
Rectangular Excavation	Radius of Influence (m)	70.1
	Steady State Flow Rate (m^3/day)	103.6

The dewatering estimates from groundwater inflow, include a 200% contingency amount to take into account variability in K-values throughout the Site, allowances for precipitation and fluctuations in the seasonal water levels.

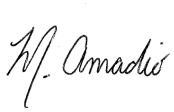
It should be noted that this dewatering estimation has been prepared for discussion purposes only. It is the responsibility of the contractor to propose a suitable dewatering system based on the groundwater elevation at the time of construction. The method used should not adversely impact any nearby structures. It is the responsibility of the contractor to make this application if required. Depending on the groundwater at the time of the excavation works, a more involved dewatering system may be required.

CLOSING REMARKS

We trust that the foregoing information is satisfactory for your present needs. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Pinchin Ltd.

Prepared by:



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Encl.: Figure 1 – Key Map
Figure 2 – Borehole Location Plan
Table 1 – Monitoring Well Construction Details
Table 2 – Samples Submitted for Laboratory Analysis (RMOH)
Table 3 – Groundwater Elevation Data (RMOH)
Table 4 – General Parameters Analysis for Groundwater (RMOH)
Table 5 – Volatile Organic Compound Analysis for Groundwater (RMOH)
Table 6 – Polycyclic Aromatic Hydrocarbon Analysis for Groundwater (RMOH)
Table 7 – Metals Analysis for Groundwater (RMOH)
Table 8 – General Parameters Analysis for Groundwater (Burlington)
Table 9 – Volatile Organic Compound Analysis for Groundwater (Burlington)
Table 10 – Polycyclic Aromatic Hydrocarbon Analysis for Groundwater (Burlington)
Table 11 – Metals Analysis for Groundwater (Burlington)
Table 12 – Semi-Volatile Organic Compound Analysis for Groundwater (Burlington)
Table 13 – Phenolics Analysis for Groundwater (Burlington)
Table 14 – Organic Parameters and PCBs Analysis for Groundwater (Burlington)
Borehole Logs – Boreholes BH101 to BH104
Hydraulic Conductivities
ALS Certificate of Analysis (ALS Work Order No. L2223760)

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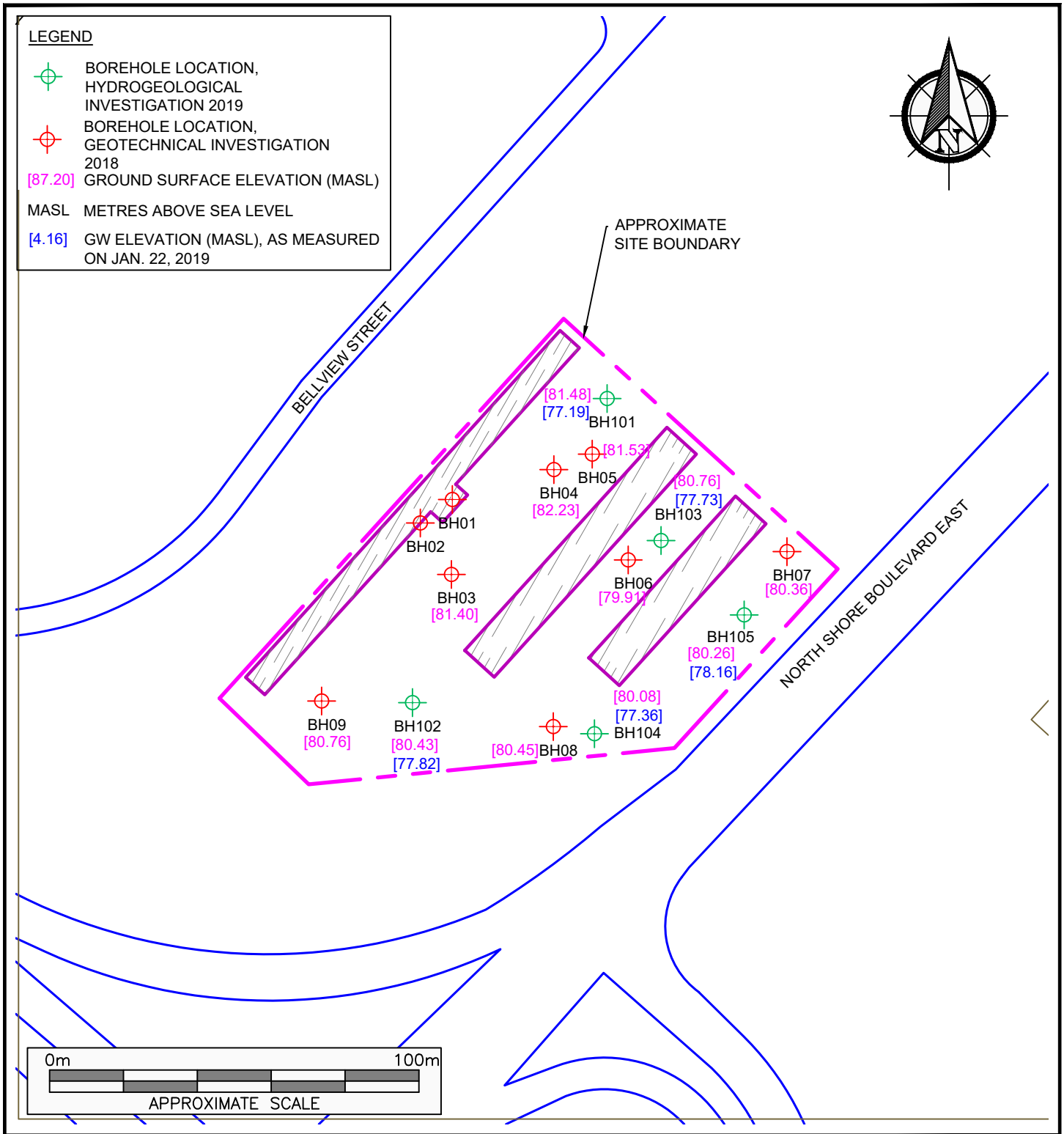
Template: Master Template for Peer Review Letter, EDR, July 9, 2018

FIGURES

PINCHIN	PROJECT NAME: HYDROGEOLOGICAL INVESTIGATION		
	CLIENT NAME: SPRUCE PARTNERS INC.		
	PROJECT LOCATION: 1157-1171 NORTH SHORE BOULEVARD EAST, BURLINGTON, ONTARIO		
	FIGURE NAME: KEY MAP		FIGURE NO.: 1
	APPROXIMATE SCALE: AS SHOWN	PROJECT NO.: 212394.004	DATE: FEB. 2019



PINCHIN

PROJECT NAME: HYDROGEOLOGICAL INVESTIGATION			
CLIENT NAME: SPRUCE PARTNERS INC.			
PROJECT LOCATION: 1157-1171 NORTH SHORE BOULEVARD EAST, BURLINGTON, ONTARIO			
FIGURE NAME: BOREHOLE LOCATION PLAN			FIGURE NO.: 2
APPROXIMATE SCALE: AS SHOWN	PROJECT NO.: 212394.004	DATE: FEB. 2019	

TABLES

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Well Number	*Surveyed TOC Elevation (masl)*	*Surveyed Ground Elevation (masl)*	*Calculated Difference Between Ground and TOC (m)*	*Length of Screen (m)*
BH101	82.43	81.48	0.95	1.50
BH102	81.17	80.43	0.74	1.50
BH103	81.57	80.76	0.81	1.50
BH104	80.92	80.08	0.84	1.50
BH105	81.37	80.26	1.11	1.50

Notes:

masl	metres above sea level (geodetically surveyed)
TOC	Indicates Top of Casing
NM	Not Measured
m	Metres

TABLE 2
SAMPLES SUBMITTED FOR LABORATORY ANALYSIS
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Samples			
Borehole / Monitoring Well ID	GROUNDWATER	RMOH Sewer Use By-Law	Rationale/Notes
BH102		●	Assess groundwater quality parameters against the the Regional Municipality of Halton Storm and Sanitary Sewer Discharge By-Law No. 2-03.
BH105		●	

Notes:

Pinchin File: 212394.004

TABLE 3
GROUNDWATER ELEVATION DATA
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Well Number	*Date (dd/mm/yyyy)*	*NAPL Level Measurement from TOC (m)*	*Water Level Measurement from TOC (m)*	*Water Level Measurement from Ground (mbgs)*	*Calculated Water Level Elevation (masl)*
BH101	22/01/2019	ND	5.24	4.29	77.19
BH102	22/01/2019	ND	3.35	2.61	77.82
BH103	22/01/2019	ND	3.84	3.03	77.73
BH104	22/01/2019	ND	3.56	2.72	77.36
BH105	22/01/2019	ND	3.21	2.10	78.16

Notes:

masl	metres above sea level (geodetically survey)
ND	Not Detected
TOC	Indicates Top of Casing
m	Metres
mbgs	Metres Below Ground Surface

TABLE 4
GENERAL PARAMETERS ANALYSES FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Units*	*RMOH Sewer Use By-Law**	*Well ID*	
			Sample ID	
			Sample Collection Date (dd/mm/yyyy)	
			BH102	*BH105*
			22/01/2019	*22/01/2019*
General Paramaters				
pH	NA	8.5	7.63	7.39
Total Suspended Solids	mg/L	350	**580**	90.2
Anions and Nutrients				
Fluoride (F)	mg/L	10	0.5	<0.20
Total Kjeldahl Nitrogen	mg/L	100	2.5	0.62
Phosphorus, Total	mg/L	10	0.207	0.117
Sulfate (SO4)	mg/L	1500	762	68.9
Cyanides				
Cyanides, Total	mg/L	2	<0.0020	<0.0020
Aggregate Organics				
BOD Carbonaceous	mg/L	44	26.3	<3.0
Oil & Grease, Total	mg/L	44	<2.0	<2.0
Animal/Veg Oil & Grease	mg/L	150	<2.0	<2.0
Mineral Oil and Grease	mg/L	15	<1.0	<1.0
Phenols (4AAP)	mg/L	1	0.0021	0.0019

Notes:

RMOH Sewer Use By-Law*	The Regional Municipality of Halton Storm and Sanitary Sewer Discharge By-Law No. 2-03.
NA	Not Applicable
^{o}C	Degrees Celsius
mS/cm	MilliSiemens Per Centimetre
mg/L	Milligrams Per Litre

TABLE 5
VOLATILE ORGANIC COMPOUND ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*RMOH Sewer Use By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Benzene	10	<0.50	<0.50
Chloroform	40	<1.0	<1.0
1,4-Dichlorobenzene	80	<0.50	<0.50
Ethylbenzene	160	<0.50	<0.50
Tetrachloroethylene	1000	<0.50	<0.50
Toluene	16	<0.50	<0.50
Trichloroethylene	400	<0.50	<0.50

Notes:

RMOH Sewer Use By-Law* — The Regional Municipality of Halton Storm and Sanitary Sewer Discharge By-Law No. 2-03.

BOLD — Exceeds Site Condition Standard

BOLD — Reportable Detection Limit Exceeds Site Condition Standard

Units — All Units in µg/L

Pinchin File: 212394.004

TABLE 6
POLYCYCLIC AROMATIC HYDROCARBON ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*RMOH Sewer Use By-Law**	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Naphthalene	140	<0.020	<0.020

Notes:

RMOH Sewer Use By-Law* The Regional Municipality of Halton Storm and Sanitary Sewer Discharge By-Law No. 2-03.

BOLD Exceeds Site Condition Standard

BOLD Reportable Detection Limit Exceeds Site Condition Standard

Units All Units in µg/L

TABLE 7
METALS ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*RMOH Sewer Use By-Law**	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Aluminum	50	7.49	2.4
Antimony	5	<0.0010	<0.0010
Arsenic	1	0.005	0.0018
Beryllium	5	<0.0010	<0.0010
Cadmium	1	<0.000050	<0.000050
Chromium (Total)	3	0.0101	<0.0050
Cobalt	5	0.0061	0.00200
Copper	3	0.011	<0.010
Iron	50	9.79	3.01
Lead	3	0.00310	0.00123
Manganese	5	0.41	1.34
Mercury	0.05	<0.000010	<0.000010
Molybdenum	5	0.00818	0.00210
Nickel	3	0.0133	<0.0050
Selenium	5	<0.00050	<0.00050
Silver	5	<0.00050	<0.00050
Tin	5	0.0012	<0.0010
Titanium	5	0.0618	<0.040
Zinc	3	0.034	<0.030

Notes:

RMOH Sewer Use By-Law* The Regional Municipality of Halton Storm and Sanitary Sewer Discharge By-Law No. 2-03.

BOLD Exceeds Site Condition Standard

BOLD Reportable Detection Limit Exceeds Site Condition Standard

Units All Units in mg/L

Pinchin File: 212394.004

TABLE 8
GENERAL PARAMETERS ANALYSES FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Units*	*Burlington Storm Sewer By-Law**	*Well ID*	
			Sample ID	
			Sample Collection Date (dd/mm/yyyy)	
			BH102	*BH105*
			22/01/2019	*22/01/2019*
General Paramaters				
pH	NA	<6.5 - >8.5	7.6	7.36
Total Suspended Solids	mg/L	15	**127**	**69.6**
Anions and Nutrients				
Phosphorus, Total	mg/L	0.4	0.162	0.104
Cyanides				
Cyanides, Total	mg/L	0.02	<0.0020	<0.0020
Aggregate Organics				
BOD	mg/L	15	**24.5**	<3.0
Phenols (4AAP)	mg/L	0.008	0.0028	0.0023

Notes:

Burlington Sewer Use By-Law*	The Corporation of the City of Burlington **future** Sewer Use By-Law.
NA	Not Applicable
^{o}C	Degrees Celsius
mS/cm	MilliSiemens Per Centimetre
mg/L	Milligrams Per Litre

TABLE 9
VOLATILE ORGANIC COMPOUND ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Benzene	2	<0.50	<0.50
1,2-Dichlorobenzene	5.6	<0.50	<0.50
1,4-Dichlorobenzene	6.8	<0.50	<0.50
Cis-1,2-Dichloroethylene	5.6	<0.50	<0.50
Trans-1,3-Dichloropropylene	5.6	<0.50	<0.50
Ethylbenzene	2.0	<0.50	<0.50
1,1,2,2-Tetrachloroethane	17.0	<0.50	<0.50
Tetrachloroethylene	4.4	<0.50	<0.50
Trichloroethylene	7.6	<0.50	<0.50
Toluene	2.0	<0.50	<0.50
Xylenes (Total)	4.4	<0.50	<0.50

Notes:

Burlington Sewer Use By-Law* — The Corporation of the City of Burlington **future** Sewer Use By-Law.

BOLD — Exceeds Site Condition Standard

BOLD — Reportable Detection Limit Exceeds Site Condition Standard

Units — All Units in µg/L

Pinchin File: 212394.004

TABLE 10
POLYCYCLIC AROMATIC HYDROCARBON ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Total PAHs	2	0	<1.7

Notes:

Burlington Sewer Use By-Law* — The Corporation of the City of Burlington **future** Sewer Use By-Law.

BOLD	Exceeds Site Condition Standard
BOLD	Reportable Detection Limit Exceeds Site Condition Standard
Units	All Units in µg/L

Pinchin File: 212394.004

TABLE 11
METALS ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Arsenic	0.02	0.0045	0.0017
Cadmium	0.008	<0.000050	<0.000050
Chromium (Total)	0.08	0.0067	<0.0050
Chromium (VI)	0.04	<0.00050	<0.00050
Cobalt	66	0.0038	0.0015
Copper	0.04	<0.010	<0.010
Lead	0.12	0.002	0.00086
Manganese	0.05	**0.279**	**1.32**
Mercury	0.0004	<0.000010	<0.000010
Nickel	0.08	0.0087	<0.0050
Phosphorus	0.4	**<0.50**	**<0.50**
Selenium	0.02	<0.00050	<0.00050
Silver	0.12	<0.00050	<0.00050
Zinc	0.04	<0.030	<0.030

Notes:

Burlington Sewer Use By-Law* The Corporation of the City of Burlington **future** Sewer Use By-Law.

BOLD Exceeds Site Condition Standard

BOLD Reportable Detection Limit Exceeds Site Condition Standard

Units All Units in mg/L

Pinchin File: 212394.004

TABLE 12
SEMI-VOLATILE ORGANIC COMPOUND ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
3,3'-Dichlorobenzidine	0.8	<0.40	<0.40
Di-n-butylphthalate	15.0	<1.0	<1.0

Notes:

Burlington Sewer Use By-Law* — The Corporation of the City of Burlington **future** Sewer Use By-Law.

BOLD — Exceeds Site Condition Standard

BOLD — Reportable Detection Limit Exceeds Site Condition Standard

Units — All Units in µg/L

Pinchin File: 212394.004

TABLE 13
PHENOLICS ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
Pentachlorophenol	2	<0.50	<0.50

Notes:

Burlington Sewer Use By-Law*	The Corporation of the City of Burlington **future** Sewer Use By-Law.
BOLD	Exceeds Site Condition Standard
BOLD	Reportable Detection Limit Exceeds Site Condition Standard
Units	All Units in µg/L

TABLE 14
ORGANIC PARAMETERS & PCBs ANALYSIS FOR GROUNDWATER
Spruce Partners Inc.
1157-1171 North Shore Boulevard East, Burlington, Ontario

Parameter	*Burlington Storm Sewer Use By-Law **	*Sample Designation*	
		Sample Collection Date (dd/mm/yyyy)	
		BH102	*BH105*
		22/01/2019	*22/01/2019*
PCBs			
Total PCBs	0.4	<0.00050	<0.00050
Organic Parameters			
Nonylphenol	1	0.00101	0.00028
Total Nonylphenol Ethoxylates	10	<0.00050	<0.00050

Notes:

Burlington Sewer Use By-Law* — The Corporation of the City of Burlington **future** Sewer Use By-Law.

BOLD — Exceeds Site Condition Standard

BOLD — Reportable Detection Limit Exceeds Site Condition Standard

Units — All Units in µg/L

BOREHOLE LOGS

Log of Borehole: BH101

Project #: 212394.004 **Logged By:** MA

Project: Hydrogeological Investigation

Client: Spruce Partners Inc.

Location: 1157-1171 North Shore Boulevard East, Burlington, ON

Drill Date: January 11, 2019 **Project Manager:** VM

Depth (m)	Description	Elevation (m)
0	Ground Surface	81.48
	Topsoil Brown sandy silt, moist	
1	**Silt Till**	79.96
2	Light brown clayey silt, firm, APL	
	Some grey mottling	78.28
3	Gravel seam	
4	Reddish brown clayey silt, some gravel, trace sand, hard, DTPL	76.91
5	**Bedrock** Highly weathered shale bedrock, some clayey silt seams	75.69
6		74.47
7	Red/Grey shale bedrock, excellent quality	73.86
	Fair quality, multiple fractures	
8	Clay seam	
9	Excellent quality	72.34
	End of Borehole	
10	Auger refusal occured at approximately 5.8 mbgs and rock coring commenced to the borehole termination depth of approximately 9.1 mbgs.	

Monitoring Well Details: Riser, Bentonite, Silica Sand, Screen

GW Elevation = 77.19 masl, as measured on January

Sample Type	Sampler #	Recovery (%)	SPT N-Value	Sample ID	Water Recovery (%)	RQD (%)	Recovery (%)
SS	1	25	4				
SS	2	100	10				
SS	3	67	>50				
				RC 6	90	64	95
				RC 7	80	87	97

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 100, 200

Contractor: Direct Environmental Drilling Inc.

Grade Elevation: 81.48 masl

Drilling Method: Hollow Stem Augers/HQ Rock Core

Top of Casing Elevation: 82.43 masl

Well Casing Size: 5.08 cm

Sheet: 1 of 1

Log of Borehole: BH102

Project #: 212394.004 **Logged By:** MA

Project: Hydrogeological Investigation

Client: Spruce Partners Inc.

Location: 1157-1171 North Shore Boulevard East, Burlington, ON

Drill Date: January 9, 2019 **Project Manager:** VM

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value	Sample ID	Water Recovery (%)	RQD (%)	Recovery (%)
0	Ground Surface	80.43								
0	**Topsoil** Brown silt, trace sand and organics, moist	78.91	SS	1	50	2				
2	**Silt Till** Light brown clayey silt with red and grey mottling, trace sand, some gravel, hard, DTPL	77.38	SS	2	100	14				
3	Dilatant seam			3		>50				
4	Reddish brown clayey silt, trace sand, some gravel, hard, DTPL	75.86								
5	**Bedrock** Highly weathered shale bedrock, some clayey silt seams	74.87					RC 6	95	87	50
6	Red/grey shale bedrock, good quality	72.81					RC 7	90	78	50
8	Some clay seams	71.29					RC 8	50	85	100
9	End of Borehole									
10	Auger refusal occured at approximately 5.6 mbgs and rock coring commenced to the borehole termination depth of approximately 9.1 mbgs.									

Monitoring Well Details: Riser, Bentonite, Silica Sand, Screen

GW Elevation = 77.82 masl, as measured on January 22, 2019.

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 100, 200

Contractor: Direct Environmental Drilling Inc.

Grade Elevation: 80.43 masl

Drilling Method: Hollow Stem Augers/HQ Rock Core

Top of Casing Elevation: 81.17 masl

Well Casing Size: 5.08 cm

Sheet: 1 of 1

Log of Borehole: BH103

Project #: 212394.004 **Logged By:** MA

Project: Hydrogeological Investigation

Client: Spruce Partners Inc.

Location: 1157-1171 North Shore Boulevard East, Burlington, ON

Drill Date: January 10, 2019 **Project Manager:** VM

Depth (m)	Description	Elevation (m)
0	Ground Surface	80.76
1	**Topsoil** Brown sandy silt, moist	79.24
2	**Silt Till** Brown clayey silt with grey mottling, trace gravel, hard, APL	77.56
3	Reddish brown, some gravel, hard, DTPL	76.19
4	**Bedrock** Highly weathered shale bedrock, some clayey silt seams, saturated	74.97
5	Red/grey shale bedrock, fair qulaity, one fracture	73.14
6	Some clay seams	
7	End of Borehole	
8	Auger refusal occured at approximately 5.8 mbgs and rock coring commenced to the borehole termination depth of approximately 7.6 mbgs.	

Monitoring Well Details: Riser, Bentonite, Screen, Silica Sand

GW Elevation = 77.73 masl, as measured on January

Sample Type	Sampler #	Recovery (%)	SPT N-Value	Sample ID	Water Recovery (%)	RQD (%)	Recovery (%)
SS	1	50	5				
SS	2	100	8				
SS	3	100	>50				
				RC 6	95	97	98

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 100, 200

Contractor: Direct Environmental Drilling Inc.

Grade Elevation: 80.76 masl

Drilling Method: Hollow Stem Augers/HQ Rock Core

Top of Casing Elevation: 81.57 masl

Well Casing Size: 5.08 cm

Sheet: 1 of 1

Log of Borehole: BH104

Project #: 212394.004 **Logged By:** MA

Project: Hydrogeological Investigation

Client: Spruce Partners Inc.

Location: 1157-1171 North Shore Boulevard East, Burlington, ON

Drill Date: January 9, 2019 **Project Manager:** VM

SUBSURFACE PROFILE					SAMPLE									
Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value	Standard Penetration N-Value (□ 20 40 60 □)	Shear Strength (△ kPa △ 100 200)	Sample ID	Water Recovery (%)	RQD (%)	Recovery (%)
0		Ground Surface	80.08											
0–1		**Topsoil** Brown silt, trace sand and organics, moist	78.56		SS	1	50	6						
1–3		**Fill** Brown sand and gravel, loose, moist	77.03		SS	2	100	7						
3–5		**Silt Till** Brown clayey silt with red and grey mottling, trace sand and gravel, firm, APL	75.51		SS	3	67	>50						
5–6		Reddish brown, some gravel, hard, DTPL	74.37											
6–7		**Bedrock** Highly weathered shale bedrock	73.98								RC 5	95	68	82
7–8		Red/grey shale bedrock, fair quality, two fractures	72.46								RC 6	60	83	96
8–9		Good quality / Excellent quality, three fractures	70.94								RC 7	70	99	100
9		End of Borehole												

Riser; Bentonite; Silica Sand; Screen

GW Elevation = 77.36 masl, as measured on January 22, 2019.

Auger refusal occured at approximately 5.8 mbgs and rock coring commenced to the borehole termination depth of approximately 9.1 mbgs.

Contractor: Direct Environmental Drilling Inc.

Grade Elevation: 80.08 masl

Drilling Method: Hollow Stem Augers/HQ Rock Core

Top of Casing Elevation: 80.92 masl

Well Casing Size: 5.08 cm

Sheet: 1 of 1

Log of Borehole: BH105

Project #: 212394.004 **Logged By:** MA

Project: Hydrogeological Investigation

Client: Spruce Partners Inc.

Location: 1157-1171 North Shore Boulevard East, Burlington, ON

Drill Date: January 10, 2019 **Project Manager:** VM

SUBSURFACE PROFILE

Depth (m)	Description	Elevation (m)
0	Ground Surface	80.26
0	**Topsoil** Brown sandy silt, trace organics, moist	
1		78.74
2	Brown silt, some sand, trace organics, loose	
3		77.21
3	**Silt Till** Reddish brown clayey silt, some gravel, trace sand, hard, DTPL	
4		75.69
5	**Bedrock** Highly weathered shale bedrock, some clayey silt seams, APL, saturated	
6		74.47
6	Red/grey shale bedrock, poor qulaity, one fracture	
7	Excellent quality	72.64
8	End of Borehole	

Auger refusal occured at approximately 5.8 mbgs and rock coring commenced to the borehole termination depth of approximately 7.6 mbgs.

Monitoring Well Details: Riser, Bentonite, Screen, Silica Sand

GW Elevation = 78.16 masl, as measured on January 22, 2019.

SAMPLE

Sample Type	Sampler #	Recovery (%)	SPT N-Value	Sample ID	Water Recovery (%)	RQD (%)	Recovery (%)
SS	1	50	2				
SS	2	67	3				
SS	3	22	54				
				RC 6	80	87	98

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 100, 200

Contractor: Direct Environmental Drilling Inc.

Grade Elevation: 80.26 masl

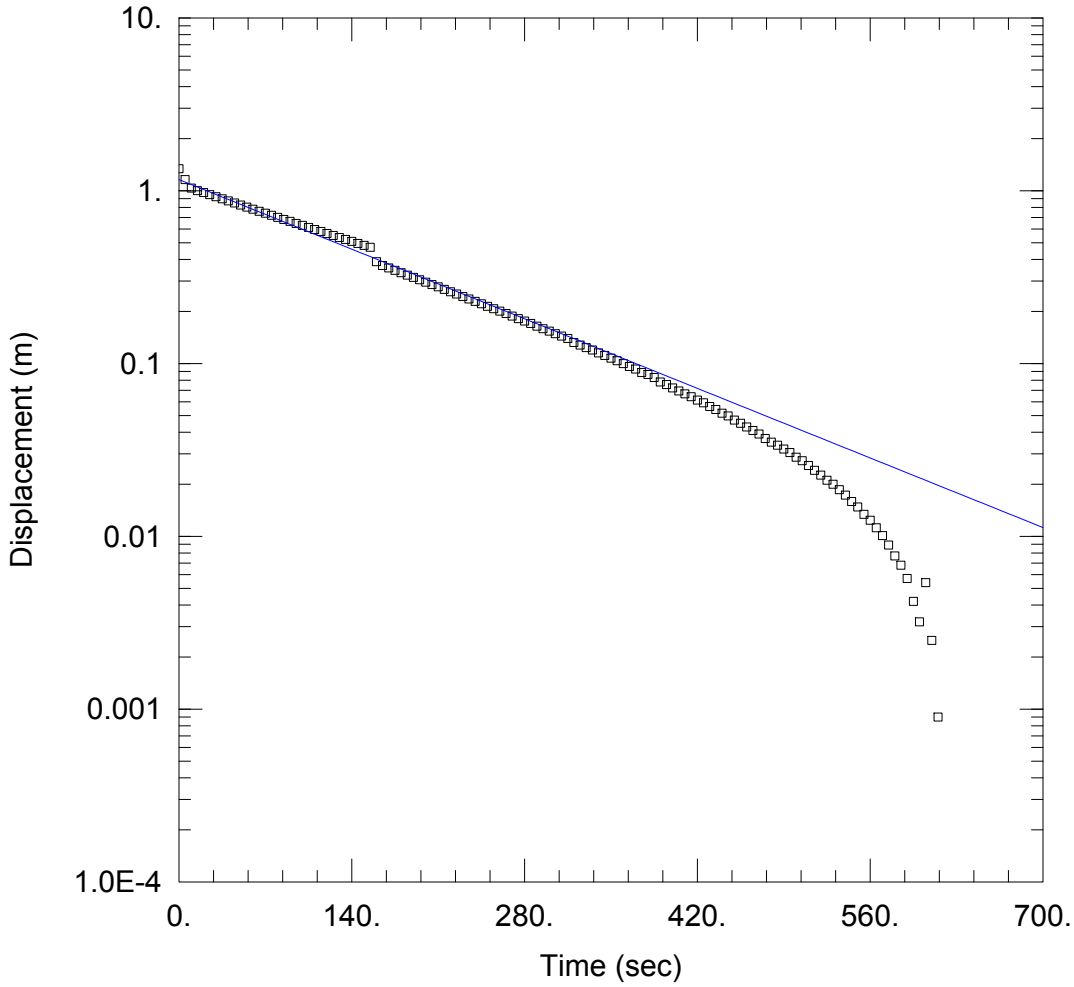
Drilling Method: Hollow Stem Augers/HQ Rock Core

Top of Casing Elevation: 81.37 masl

Well Casing Size: 5.08 cm

Sheet: 1 of 1

HYDRAULIC CONDICTIVES



WELL TEST ANALYSIS

Data Set: J:\...\BH101.aqt
Date: 02/15/19 Time: 09:50:07

PROJECT INFORMATION

Company: Pinchin
Client: Spruce Partners
Project: 212394.004
Location: North Shore Blvd, Hamilton
Test Well: BH101
Test Date: January 22, 2019

AQUIFER DATA

Saturated Thickness: 10. m Anisotropy Ratio (Kz/Kr): 1.

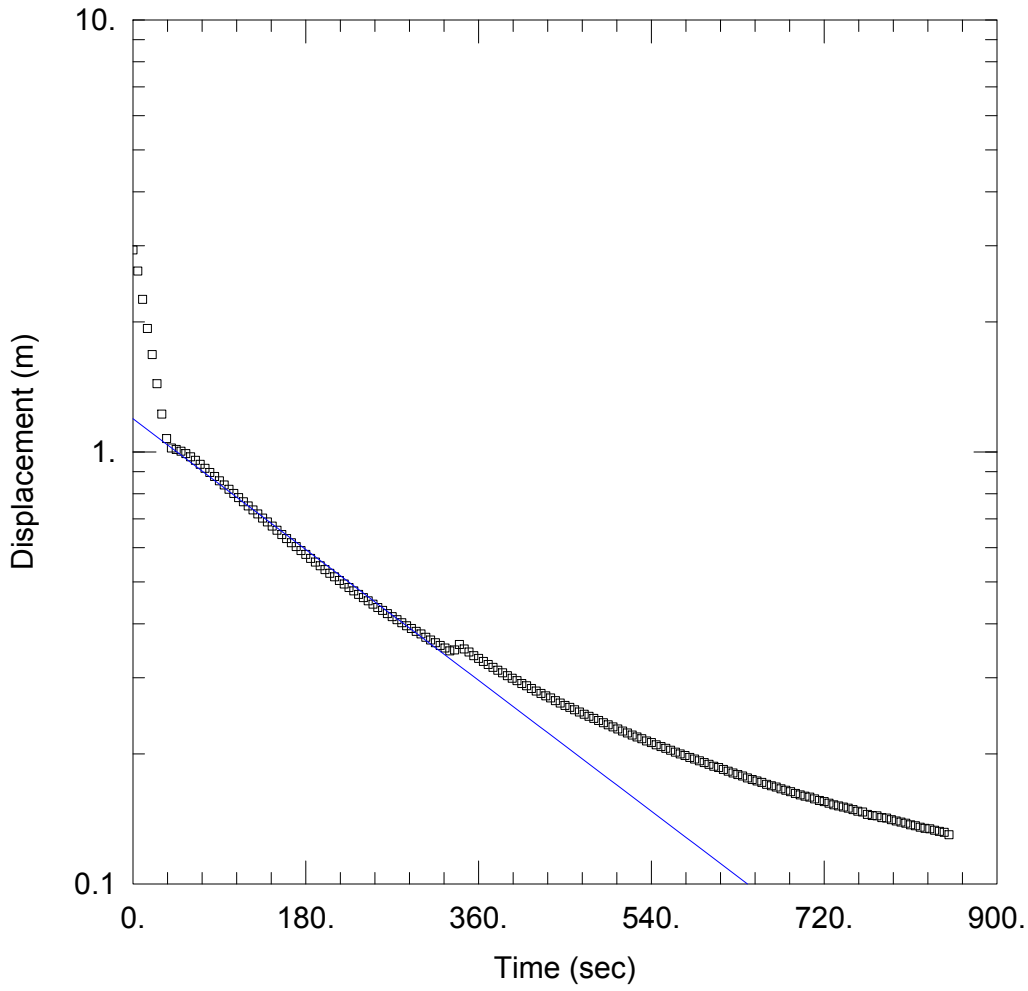
WELL DATA (BH101)

Initial Displacement: 1.341 m Static Water Column Height: 4.76 m
Total Well Penetration Depth: 4.76 m Screen Length: 3.05 m
Casing Radius: 0.05 m Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.116E-5 m/sec y0 = 1.16 m



WELL TEST ANALYSIS

Data Set: J:\...\BH102.aqt
Date: 02/15/19 Time: 09:54:02

PROJECT INFORMATION

Company: Pinchin
Client: Spruce Partners
Project: 212394.004
Location: North Shore Blvd, Hamilton
Test Well: BH102
Test Date: January 22, 2019

AQUIFER DATA

Saturated Thickness: 10. m Anisotropy Ratio (Kz/Kr): 1.

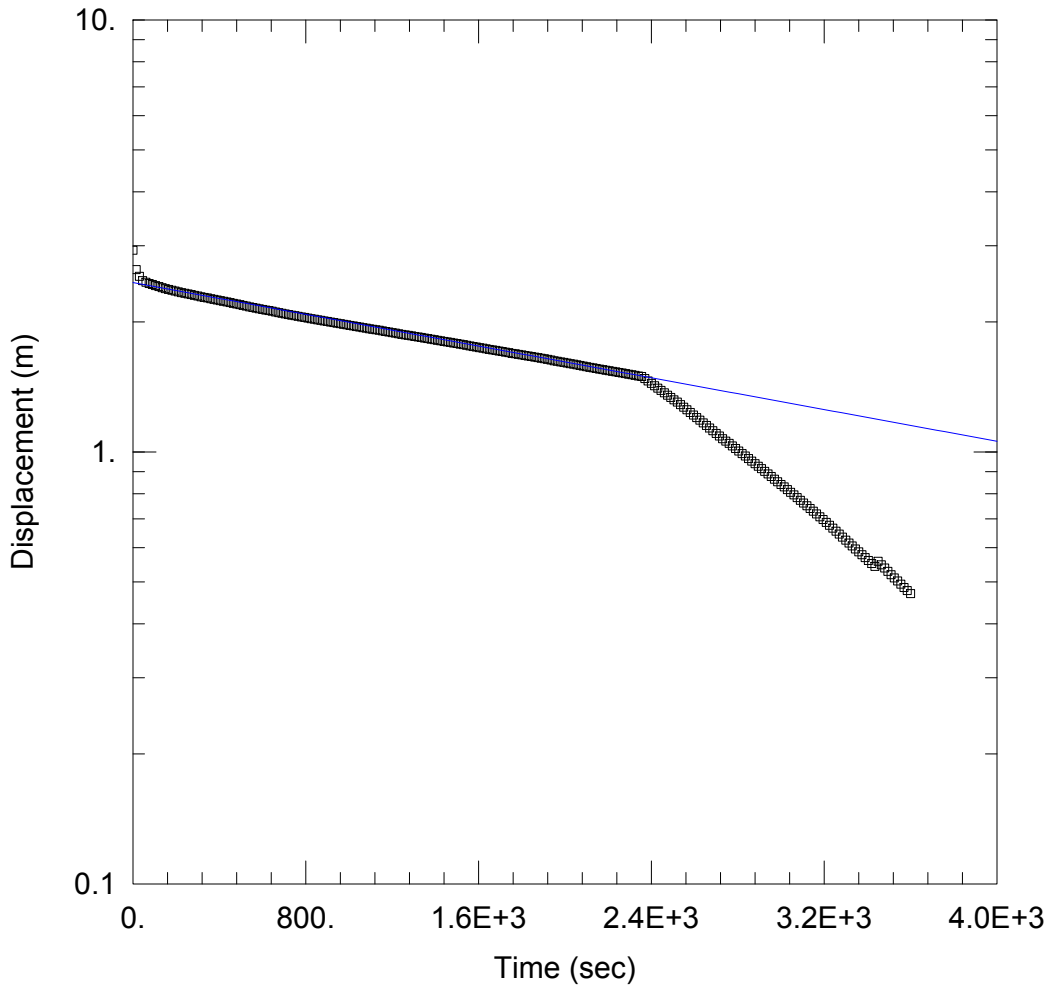
WELL DATA (BH102)

Initial Displacement: 2.936 m
Total Well Penetration Depth: 6.49 m
Casing Radius: 0.05 m
Static Water Column Height: 6.49 m
Screen Length: 3.05 m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 6.527E-6 m/sec
y0 = 1.194 m



WELL TEST ANALYSIS

Data Set: J:\...\BH103.aqt
Date: 02/15/19 Time: 11:07:47

PROJECT INFORMATION

Company: Pinchin
Client: Spruce Partners
Project: 212394.004
Location: North Shore Blvd, Hamilton
Test Well: BH103
Test Date: January 22, 2019

AQUIFER DATA

Saturated Thickness: 10. m Anisotropy Ratio (Kz/Kr): 1.

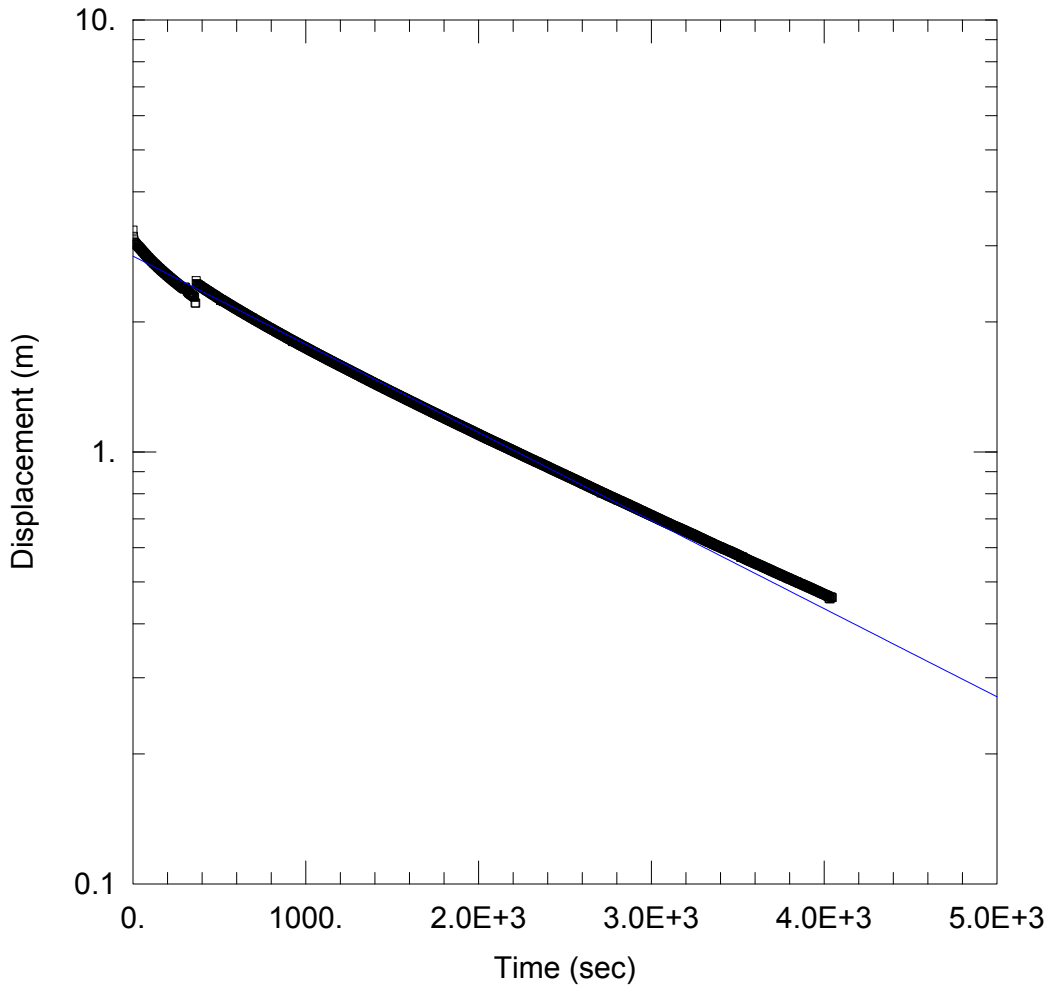
WELL DATA (BH103)

Initial Displacement: 2.929 m
Total Well Penetration Depth: 4.56 m
Casing Radius: 0.05 m
Static Water Column Height: 4.56 m
Screen Length: 3.05 m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 3.562E-7 m/sec
y0 = 2.466 m



WELL TEST ANALYSIS

Data Set: J:\...\BH104.aqt
Date: 02/15/19 Time: 11:10:17

PROJECT INFORMATION

Company: Pinchin
Client: Spruce Partners
Project: 212394.004
Location: North Shore Blvd, Hamilton
Test Well: BH104
Test Date: January 22, 2019

AQUIFER DATA

Saturated Thickness: 10. m Anisotropy Ratio (Kz/Kr): 1.

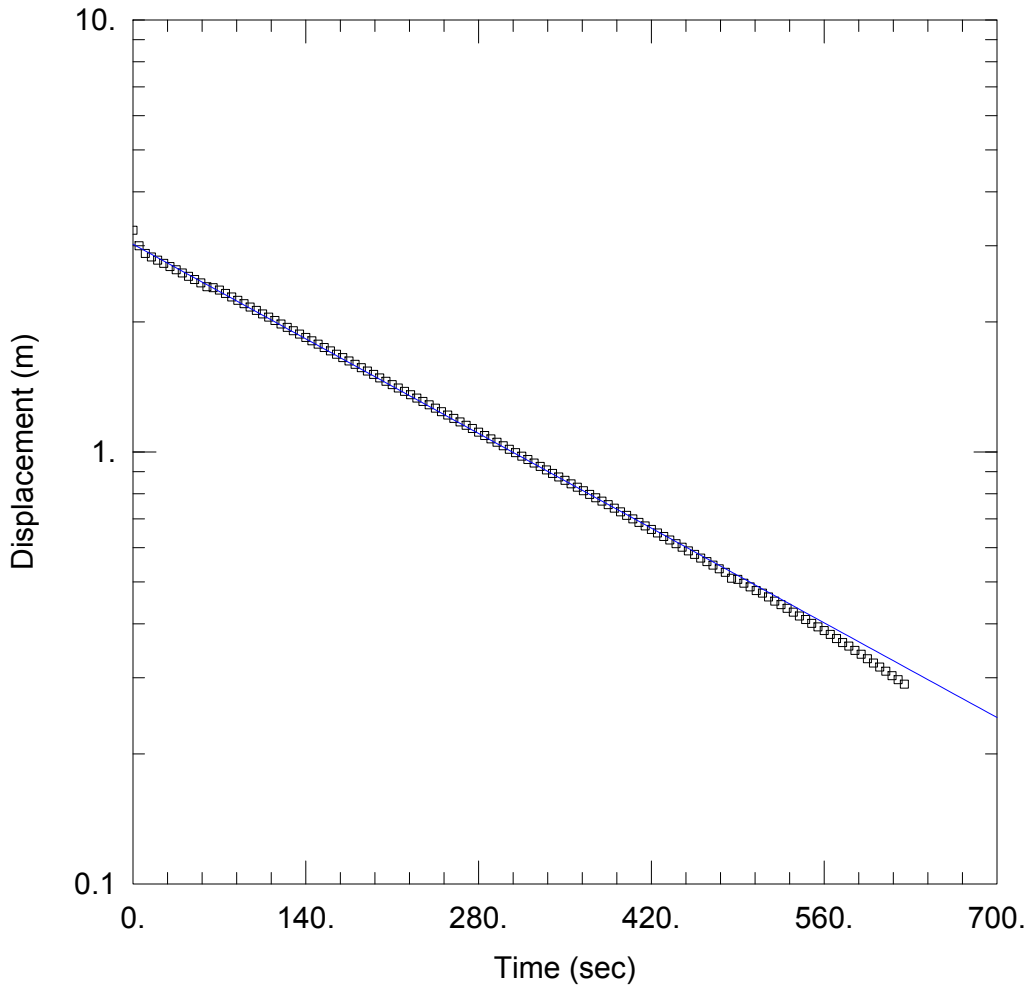
WELL DATA (BH104)

Initial Displacement: 3.263 m
Total Well Penetration Depth: 6.38 m
Casing Radius: 0.05 m
Static Water Column Height: 6.38 m
Screen Length: 3.05 m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.915E-7 m/sec y0 = 2.839 m



WELL TEST ANALYSIS

Data Set: J:\...\BH105.aqt
Date: 02/15/19 Time: 11:12:29

PROJECT INFORMATION

Company: Pinchin
Client: Spruce Partners
Project: 212394.004
Location: North Shore Blvd, Hamilton
Test Well: BH105
Test Date: January 22, 2019

AQUIFER DATA

Saturated Thickness: 10. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH105)

Initial Displacement: 3.26 m
Total Well Penetration Depth: 5.46 m
Casing Radius: 0.05 m
Static Water Column Height: 5.46 m
Screen Length: 3.05 m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 6.073E-6 m/sec
y0 = 3.026 m

ALS CERTIFICATE OF ANALYSIS

[redacted]

Pinchin Ltd. (Waterloo)
ATTN: VANESSA MARSHALL
283 Northfield Drive E
Unit 9
Waterloo ON N2J 4G8

Date Received: 23-JAN-19
Report Date: 30-JAN-19 09:46 (MT)
Version: FINAL

Client Phone: 519-746-4210

Certificate of Analysis

Lab Work Order #: L2223760

Project P.O. #: NOT SUBMITTED
Job Reference: 212394.002
C of C Numbers:
Legal Site Desc:

[redacted]

[redacted]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-1 BH102- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Physical Tests							
pH	7.60		0.10	pH units		24-JAN-19	R4467457
Total Suspended Solids	127	DLHC	20	mg/L	25-JAN-19	26-JAN-19	R4470247
Anions and Nutrients							
Phosphorus, Total	0.162	DLHC	0.030	mg/L	24-JAN-19	25-JAN-19	R4467464
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		24-JAN-19	R4467487
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		24-JAN-19	R4466047
Total Metals							
Aluminum (Al)-Total	4.94	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Arsenic (As)-Total	0.0045	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Barium (Ba)-Total	0.0557	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Boron (B)-Total	2.90	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	24-JAN-19	24-JAN-19	R4466968
Calcium (Ca)-Total	203	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Cesium (Cs)-Total	0.00101	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Chromium (Cr)-Total	0.0067	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Cobalt (Co)-Total	0.0038	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Iron (Fe)-Total	6.33	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Lead (Pb)-Total	0.00200	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Lithium (Li)-Total	0.181	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Magnesium (Mg)-Total	42.4	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Manganese (Mn)-Total	0.279	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		25-JAN-19	R4468346
Molybdenum (Mo)-Total	0.00779	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Nickel (Ni)-Total	0.0087	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Potassium (K)-Total	24.9	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Rubidium (Rb)-Total	0.0212	DLHC	0.0020	mg/L	24-JAN-19	24-JAN-19	R4466968
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Silicon (Si)-Total	13.3	DLHC	1.0	mg/L	24-JAN-19	24-JAN-19	R4466968
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Sodium (Na)-Total	187	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Strontium (Sr)-Total	14.8	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Sulfur (S)-Total	223	DLHC	5.0	mg/L	24-JAN-19	24-JAN-19	R4466968
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	24-JAN-19	24-JAN-19	R4466968
Thallium (Tl)-Total	<0.00010	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Thorium (Th)-Total	0.0018	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-1 BH102- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Total Metals							
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Titanium (Ti)-Total	0.0581	DLHC	0.0030	mg/L	24-JAN-19	24-JAN-19	R4466968
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Uranium (U)-Total	0.00068	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Vanadium (V)-Total	0.0096	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	24-JAN-19	24-JAN-19	R4466968
Zirconium (Zr)-Total	<0.0030	DLHC	0.0030	mg/L	24-JAN-19	24-JAN-19	R4466968
Speciated Metals							
Chromium, Hexavalent	<0.00050		0.00050	mg/L		24-JAN-19	R4467959
Aggregate Organics							
BOD	24.5		2.0	mg/L	23-JAN-19	28-JAN-19	R4472567
Phenols (4AAP)	0.0028		0.0010	mg/L		24-JAN-19	R4466011
Volatile Organic Compounds							
Acetone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Benzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Bromodichloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Bromoform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Bromomethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Carbon Disulfide	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Carbon tetrachloride	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Chlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dibromochloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloroethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloroform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		24-JAN-19	R4464861
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichlorodifluoromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichloromethane	<2.0	OWP	2.0	ug/L		24-JAN-19	R4464861
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
cis-1,3-Dichloropropene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
trans-1,3-Dichloropropene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-19	
Ethylbenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
n-Hexane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-1 BH102- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Volatile Organic Compounds							
2-Hexanone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Methyl Ethyl Ketone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		24-JAN-19	R4464861
MTBE	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Styrene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Toluene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichlorofluoromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Vinyl chloride	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
o-Xylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
m+p-Xylenes	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-19	
Surrogate: 4-Bromofluorobenzene	98.6		70-130	%		24-JAN-19	R4464861
Surrogate: 1,4-Difluorobenzene	103.1		70-130	%		24-JAN-19	R4464861
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(a)anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(a)pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(b)fluoranthene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(e)pyrene	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
Benzo(ghi)perylene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(k)fluoranthene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Chrysene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Dibenz(a,h)acridine	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
Dibenz(a,j)acridine	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
Dibenzo(a,h)anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Dibenzo(a,i)pyrene	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
7H-Dibenzo(c,g)carbazole	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
1,3-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
1,6-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
1,8-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
Total Dinitropyrene	<1.7		1.7	ug/L		24-JAN-19	
Fluoranthene	0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Fluorene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Indeno(1,2,3-cd)pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-1 BH102- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Naphthalene	<0.025	DLB	0.025	ug/L	25-JAN-19	28-JAN-19	R4474140
Perylene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Phenanthrene	0.016		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Surrogate: 2-Fluorobiphenyl	97.4		40-130	%	25-JAN-19	28-JAN-19	R4474140
Surrogate: d14-Terphenyl	70.2		40-130	%	23-JAN-19	24-JAN-19	R4466947
Surrogate: p-Terphenyl d14	95.7		40-130	%	25-JAN-19	28-JAN-19	R4474140
Total PAHs	<1.7		1.7	ug/L		29-JAN-19	
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		24-JAN-19	
Phthalate Esters							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2-fluorobiphenyl	102.1		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	105.4		40-130	%	23-JAN-19	25-JAN-19	R4468769
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-JAN-19	25-JAN-19	R4468769
Di-n-butylphthalate	<1.0		1.0	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2-Fluorobiphenyl	102.1		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	105.4		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	105.4		40-130	%	23-JAN-19	25-JAN-19	R4468769
Phenolics							
Pentachlorophenol	<0.50		0.50	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2,4,6-Tribromophenol	111.5		40-150	%	23-JAN-19	25-JAN-19	R4468769
Polychlorinated Biphenyls							
Aroclor 1242	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1248	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1254	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1260	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Total PCBs	<0.040		0.040	ug/L	24-JAN-19	24-JAN-19	R4468049
Surrogate: 2-Fluorobiphenyl	74.2		50-150	%	24-JAN-19	24-JAN-19	R4468049
Organic Parameters							
Bisphenol A	<0.20		0.20	ug/L		29-JAN-19	R4474770
Nonylphenol	1.3		1.0	ug/L		29-JAN-19	R4474770
Nonylphenol Diethoxylates	<0.10		0.10	ug/L		29-JAN-19	R4474770
Total Nonylphenol Ethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Nonylphenol Monoethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Octylphenol	<1.0		1.0	ug/L		29-JAN-19	R4474770
Octylphenol Diethoxylates	<0.10		0.10	ug/L		29-JAN-19	R4474770
Total Octylphenol Ethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Octylphenol Monoethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
L2223760-2 BH102- HALTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix:							

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-2 BH102- HALTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Physical Tests							
pH	7.63		0.10	pH units		24-JAN-19	R4467457
Total Suspended Solids	580	DLHC	4.0	mg/L	25-JAN-19	26-JAN-19	R4470247
Anions and Nutrients							
Fluoride (F)	0.50	DLM	0.20	mg/L		24-JAN-19	R4468919
Total Kjeldahl Nitrogen	2.5	DLM	1.5	mg/L	24-JAN-19	25-JAN-19	R4471414
Phosphorus, Total	0.207	DLHC	0.030	mg/L	24-JAN-19	25-JAN-19	R4467464
Sulfate (SO4)	762	DLM	3.0	mg/L		24-JAN-19	R4468919
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		24-JAN-19	R4467487
Total Metals							
Aluminum (Al)-Total	7.49	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Arsenic (As)-Total	0.0050	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	24-JAN-19	24-JAN-19	R4466968
Chromium (Cr)-Total	0.0101	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Cobalt (Co)-Total	0.0061	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Copper (Cu)-Total	0.011	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Iron (Fe)-Total	9.79	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Lead (Pb)-Total	0.00310	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Manganese (Mn)-Total	0.410	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		25-JAN-19	R4468346
Molybdenum (Mo)-Total	0.00818	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Nickel (Ni)-Total	0.0133	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Tin (Sn)-Total	0.0012	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Titanium (Ti)-Total	0.0618	DLHC	0.0030	mg/L	24-JAN-19	24-JAN-19	R4466968
Zinc (Zn)-Total	0.034	DLHC	0.030	mg/L	24-JAN-19	24-JAN-19	R4466968
Aggregate Organics							
BOD Carbonaceous	26.3		2.0	mg/L	23-JAN-19	28-JAN-19	R4472588
Oil and Grease, Total	<2.0		2.0	mg/L	23-JAN-19	23-JAN-19	R4464648
Animal/Veg Oil & Grease	<2.0		2.0	mg/L		24-JAN-19	
Mineral Oil and Grease	<1.0		1.0	mg/L	23-JAN-19	23-JAN-19	R4464648
Phenols (4AAP)	0.0021		0.0010	mg/L		24-JAN-19	R4466011
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Chloroform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichloromethane	<2.0	OWP	2.0	ug/L		24-JAN-19	R4464861
Ethylbenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-2 BH102- HALTON Sampled By: CLIENT on 22-JAN-19 @ 13:00 Matrix: WATER							
Volatile Organic Compounds							
Toluene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Surrogate: 4-Bromofluorobenzene	98.3		70-130	%		24-JAN-19	R4464861
Surrogate: 1,4-Difluorobenzene	101.9		70-130	%		24-JAN-19	R4464861
Polycyclic Aromatic Hydrocarbons							
Naphthalene	<0.020		0.020	ug/L	23-JAN-19	29-JAN-19	R4474028
Surrogate: d8-Naphthalene	95.5		60-140	%	23-JAN-19	29-JAN-19	R4474028
L2223760-3 BH105- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Physical Tests							
pH	7.36		0.10	pH units		24-JAN-19	R4467457
Total Suspended Solids	69.6		2.0	mg/L	25-JAN-19	26-JAN-19	R4470247
Anions and Nutrients							
Phosphorus, Total	0.104		0.0030	mg/L	24-JAN-19	25-JAN-19	R4467464
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		24-JAN-19	R4467487
Bacteriological Tests							
E. Coli	0		0	CFU/100mL		24-JAN-19	R4466047
Total Metals							
Aluminum (Al)-Total	1.71	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Arsenic (As)-Total	0.0017	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Barium (Ba)-Total	0.111	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Boron (B)-Total	0.12	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	24-JAN-19	24-JAN-19	R4466968
Calcium (Ca)-Total	123	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Cesium (Cs)-Total	0.00028	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Cobalt (Co)-Total	0.0015	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Iron (Fe)-Total	2.05	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Lead (Pb)-Total	0.00086	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Lithium (Li)-Total	<0.010	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Magnesium (Mg)-Total	15.4	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Manganese (Mn)-Total	1.32	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		25-JAN-19	R4468346
Molybdenum (Mo)-Total	0.00205	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Nickel (Ni)-Total	<0.0050	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-3 BH105- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Total Metals							
Potassium (K)-Total	5.19	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Rubidium (Rb)-Total	0.0062	DLHC	0.0020	mg/L	24-JAN-19	24-JAN-19	R4466968
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Silicon (Si)-Total	9.1	DLHC	1.0	mg/L	24-JAN-19	24-JAN-19	R4466968
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Sodium (Na)-Total	49.0	DLHC	0.50	mg/L	24-JAN-19	24-JAN-19	R4466968
Strontium (Sr)-Total	0.578	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Sulfur (S)-Total	20.2	DLHC	5.0	mg/L	24-JAN-19	24-JAN-19	R4466968
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	24-JAN-19	24-JAN-19	R4466968
Thallium (Tl)-Total	<0.00010	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Titanium (Ti)-Total	<0.040	DLUI	0.040	mg/L	24-JAN-19	24-JAN-19	R4466968
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Uranium (U)-Total	0.00087	DLHC	0.00010	mg/L	24-JAN-19	24-JAN-19	R4466968
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	24-JAN-19	24-JAN-19	R4466968
Zirconium (Zr)-Total	<0.0030	DLHC	0.0030	mg/L	24-JAN-19	24-JAN-19	R4466968
Speciated Metals							
Chromium, Hexavalent	<0.00050		0.00050	mg/L		24-JAN-19	R4467959
Aggregate Organics							
BOD	<3.0	BODL	3.0	mg/L	23-JAN-19	28-JAN-19	R4472567
Phenols (4AAP)	0.0023		0.0010	mg/L		24-JAN-19	R4466011
Volatile Organic Compounds							
Acetone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Benzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Bromodichloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Bromoform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Bromomethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Carbon Disulfide	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Carbon tetrachloride	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Chlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dibromochloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloroethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloroform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Chloromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L		24-JAN-19	R4464861
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichlorodifluoromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-3 BH105- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichloromethane	<2.0	OWP	2.0	ug/L		24-JAN-19	R4464861
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
cis-1,3-Dichloropropene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
trans-1,3-Dichloropropene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L		24-JAN-19	
Ethylbenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
n-Hexane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
2-Hexanone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Methyl Ethyl Ketone	<20	OWP	20	ug/L		24-JAN-19	R4464861
Methyl Isobutyl Ketone	<20	OWP	20	ug/L		24-JAN-19	R4464861
MTBE	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Styrene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Toluene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichlorofluoromethane	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Vinyl chloride	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
o-Xylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
m+p-Xylenes	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
Xylenes (Total)	<0.50		0.50	ug/L		24-JAN-19	
Surrogate: 4-Bromofluorobenzene	97.1		70-130	%		24-JAN-19	R4464861
Surrogate: 1,4-Difluorobenzene	103.2		70-130	%		24-JAN-19	R4464861
Polycyclic Aromatic Hydrocarbons							
Anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(a)anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(a)pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(b)fluoranthene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(e)pyrene	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
Benzo(ghi)perylene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Benzo(k)fluoranthene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Chrysene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Dibenz(a,h)acridine	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
Dibenz(a,j)acridine	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-3 BH105- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(a,h)anthracene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Dibenzo(a,i)pyrene	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
7H-Dibenzo(c,g)carbazole	<0.050		0.050	ug/L	23-JAN-19	24-JAN-19	R4466947
1,3-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
1,6-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
1,8-Dinitropyrene	<1.0		1.0	ug/L	23-JAN-19	24-JAN-19	R4466947
Total Dinitropyrene	<1.7		1.7	ug/L		24-JAN-19	
Fluoranthene	0.014		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Fluorene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Indeno(1,2,3-cd)pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Naphthalene	<0.015	DLB	0.015	ug/L	25-JAN-19	28-JAN-19	R4474140
Perylene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Phenanthrene	0.016		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Pyrene	<0.010		0.010	ug/L	25-JAN-19	28-JAN-19	R4474140
Surrogate: 2-Fluorobiphenyl	99.1		40-130	%	25-JAN-19	28-JAN-19	R4474140
Surrogate: d14-Terphenyl	72.0		40-130	%	23-JAN-19	24-JAN-19	R4466947
Surrogate: p-Terphenyl d14	98.1		40-130	%	25-JAN-19	28-JAN-19	R4474140
Total PAHs	<1.7		1.7	ug/L		29-JAN-19	
Trihalomethanes							
Total THMs	<2.0		2.0	ug/L		24-JAN-19	
Phthalate Esters							
Bis(2-ethylhexyl)phthalate	<2.0		2.0	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2-fluorobiphenyl	89.5		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	95.3		40-130	%	23-JAN-19	25-JAN-19	R4468769
Semi-Volatile Organics							
3,3'-Dichlorobenzidine	<0.40		0.40	ug/L	23-JAN-19	25-JAN-19	R4468769
Di-n-butylphthalate	<1.0		1.0	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2-Fluorobiphenyl	89.5		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	95.3		40-130	%	23-JAN-19	25-JAN-19	R4468769
Surrogate: p-Terphenyl d14	95.3		40-130	%	23-JAN-19	25-JAN-19	R4468769
Phenolics							
Pentachlorophenol	<0.50		0.50	ug/L	23-JAN-19	25-JAN-19	R4468769
Surrogate: 2,4,6-Tribromophenol	100.4		40-150	%	23-JAN-19	25-JAN-19	R4468769
Polychlorinated Biphenyls							
Aroclor 1242	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1248	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1254	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Aroclor 1260	<0.020		0.020	ug/L	24-JAN-19	24-JAN-19	R4468049
Total PCBs	<0.040		0.040	ug/L	24-JAN-19	24-JAN-19	R4468049
Surrogate: 2-Fluorobiphenyl	76.4		50-150	%	24-JAN-19	24-JAN-19	R4468049
Organic Parameters							
Bisphenol A	<0.20		0.20	ug/L		29-JAN-19	R4474770

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-3 BH105- BURLINGTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Organic Parameters							
Nonylphenol	<1.0		1.0	ug/L		29-JAN-19	R4474770
Nonylphenol Diethoxylates	<0.10		0.10	ug/L		29-JAN-19	R4474770
Total Nonylphenol Ethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Nonylphenol Monoethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Octylphenol	<1.0		1.0	ug/L		29-JAN-19	R4474770
Octylphenol Diethoxylates	<0.10		0.10	ug/L		29-JAN-19	R4474770
Total Octylphenol Ethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
Octylphenol Monoethoxylates	<2.0		2.0	ug/L		29-JAN-19	R4474770
L2223760-4 BH105- HALTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Physical Tests							
pH	7.39		0.10	pH units		24-JAN-19	R4467457
Total Suspended Solids	90.2		2.0	mg/L	25-JAN-19	26-JAN-19	R4470247
Anions and Nutrients							
Fluoride (F)	<0.20	DLM	0.20	mg/L		24-JAN-19	R4468919
Total Kjeldahl Nitrogen	0.62		0.15	mg/L	24-JAN-19	25-JAN-19	R4471414
Phosphorus, Total	0.117		0.0030	mg/L	24-JAN-19	25-JAN-19	R4467464
Sulfate (SO4)	68.9	DLM	3.0	mg/L		24-JAN-19	R4468919
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		24-JAN-19	R4467487
Total Metals							
Aluminum (Al)-Total	2.40	DLHC	0.050	mg/L	24-JAN-19	24-JAN-19	R4466968
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Arsenic (As)-Total	0.0018	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	24-JAN-19	24-JAN-19	R4466968
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Cobalt (Co)-Total	0.0020	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	24-JAN-19	24-JAN-19	R4466968
Iron (Fe)-Total	3.01	DLHC	0.10	mg/L	24-JAN-19	24-JAN-19	R4466968
Lead (Pb)-Total	0.00123	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Manganese (Mn)-Total	1.34	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		25-JAN-19	R4468346
Molybdenum (Mo)-Total	0.00210	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Nickel (Ni)-Total	<0.0050	DLHC	0.0050	mg/L	24-JAN-19	24-JAN-19	R4466968
Selenium (Se)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	24-JAN-19	24-JAN-19	R4466968
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	24-JAN-19	24-JAN-19	R4466968
Titanium (Ti)-Total	<0.040	DLUI	0.040	mg/L	24-JAN-19	24-JAN-19	R4466968
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	24-JAN-19	24-JAN-19	R4466968
Aggregate Organics							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223760-4 BH105- HALTON Sampled By: CLIENT on 22-JAN-19 @ 15:00 Matrix: WATER							
Aggregate Organics							
BOD Carbonaceous	<3.0	BODL	3.0	mg/L	23-JAN-19	28-JAN-19	R4472588
Oil and Grease, Total	<2.0		2.0	mg/L	23-JAN-19	23-JAN-19	R4464648
Animal/Veg Oil & Grease	<2.0		2.0	mg/L		24-JAN-19	
Mineral Oil and Grease	<1.0		1.0	mg/L	23-JAN-19	23-JAN-19	R4464648
Phenols (4AAP)	0.0019		0.0010	mg/L		24-JAN-19	R4466011
Volatile Organic Compounds							
Benzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Chloroform	<1.0	OWP	1.0	ug/L		24-JAN-19	R4464861
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Dichloromethane	<2.0	OWP	2.0	ug/L		24-JAN-19	R4464861
Ethylbenzene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Tetrachloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Toluene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Trichloroethylene	<0.50	OWP	0.50	ug/L		24-JAN-19	R4464861
Surrogate: 4-Bromofluorobenzene	98.1		70-130	%		24-JAN-19	R4464861
Surrogate: 1,4-Difluorobenzene	101.9		70-130	%		24-JAN-19	R4464861
Polycyclic Aromatic Hydrocarbons							
Naphthalene	<0.020		0.020	ug/L	23-JAN-19	29-JAN-19	R4474028
Surrogate: d8-Naphthalene	99.7		60-140	%	23-JAN-19	29-JAN-19	R4474028

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Acenaphthene	MB-LOR	L2223760-1, -3
Method Blank	Naphthalene	MB-LOR	L2223760-1, -3
Matrix Spike	Aluminum (Al)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Boron (B)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Iron (Fe)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Potassium (K)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Silicon (Si)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Sulfur (S)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Uranium (U)-Total	MS-B	L2223760-1, -2, -3, -4
Matrix Spike	Nonylphenol	MS-B	L2223760-1, -3

Sample Parameter Qualifier key listed:

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample tested.
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-33DCBENZIDINE-WT	Water	3,3-Dichlorobenzidine	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD.			
625-BIS-2-PHTH-WT	Water	Bis(2-ethylhexyl)phthalate	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD.			
625-DNB-PHTH-WT	Water	Di-n-Butyl Phthalate	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD.			
625-PAH-LOW-WT	Water	EPA 8270 PAH (Low Level)	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.			
625-PCP-WT	Water	Pentachlorophenol	SW846 8270
BOD-C-WT	Water	BOD Carbonaceous	APHA 5210 B (CBOD)
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BOD-WT	Water	BOD	APHA 5210 B
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
CN-TOT-WT	Water	Cyanide, Total	ISO 14403-2
Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex. When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
CR-CR6-IC-WT	Water	Chromium +6	EPA 7199

Reference Information

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DNP-SUM-CALC-WT Water Dinitropyrene (Total) SW846 8270
Total dinitropyrene represents the sum of 1,3-dinitropyrene, 1,6-dinitropyrene and 1,8-dinitropyrene.

EC-MF-WT Water E. coli SM 9222D
A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 °C for 24 – 2 h.
Method ID: WT-TM-1200

F-IC-N-WT Water Fluoride in Water by IC EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HG-T-CVAA-WT Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NP,NPE-LCMS-WT Water Nonylphenols and Ethoxylates by LC/MS-MS J. Chrom A849 (1999) p.467-482
Water samples are filtered and analyzed on LCMS/MS by direct injection.

OGG-SPEC-CALC-WT Water Speciated Oil and Grease A/V Calc CALCULATION
Sample is extracted with hexane, sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

OGG-SPEC-WT Water Speciated Oil and Grease-Gravimetric APHA 5520 B
The procedure involves an extraction of the entire water sample with hexane. Sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then determined gravimetrically.

P-T-COL-WT Water Total P in Water by Colour APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PAH-EXTRA-WT Water Sanitary Sewer Use By-Law Additional PAH SW846 8270

PAH-NAPHTHALENE-WT Water Polyaromatic Hydrocarbons (PAHs) SW846 8270
Sample is extracted at neutral pH using separate aliquots of dichloromethane with a modified separatory funnel technique, extracts are then concentrated and analyzed by GC/MSD.

PAH-SUM-CALC-WT Water TOTAL PAH's CALCULATION
Total PAH represents the sum of all PAH analytes reported for a given sample. Note that regulatory agencies and criteria differ in their definitions of Total PAH in terms of the individual PAH analytes to be included.

PCB-WT Water Polychlorinated Biphenyls EPA 8082
PCBs are extracted from an aqueous sample at neutral pH with aliquots of dichloromethane using a modified separatory funnel technique. The extracts are analyzed by GC/MSD.

PH-WT Water pH APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT Water Phenol (4AAP) EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Suspended solids APHA 2540 D-Gravimetric

Reference Information

SOLIDS-TSS-WT Water

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

THM-SUM-PPB-CALC-WT Water Total Trihalomethanes (THMs) CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

TKN-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

VOC-1,3-DCP-CALC-WT Water Regulation 153 VOCs SW8260B/SW8270C

VOC-ROU-HS-WT Water Volatile Organic Compounds SW846 8260

Aqueous samples are analyzed by headspace-GC/MS.

XYLENES-SUM-CALC-WT Water Sum of Xylene Isomer Concentrations CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2223760 Report Date: 30-JAN-19

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-33DCBENZIDINE-WT	**Water**							
Batch R4468769								
WG2975516-2 LCS								
3,3'-Dichlorobenzidine			76.8		%		50-140	24-JAN-19
WG2975516-3 LCSD		**WG2975516-2**						
3,3'-Dichlorobenzidine		76.8	82.8		%	7.5	50	24-JAN-19
WG2975516-1 MB								
3,3'-Dichlorobenzidine			<0.40		ug/L		0.4	24-JAN-19
Surrogate: p-Terphenyl d14			112.6		%		40-130	24-JAN-19
625-BIS-2-PHTH-WT	**Water**							
Batch R4468769								
WG2975516-2 LCS								
Bis(2-ethylhexyl)phthalate			123.3		%		50-140	24-JAN-19
WG2975516-3 LCSD		**WG2975516-2**						
Bis(2-ethylhexyl)phthalate		123.3	121.4		%	1.5	50	24-JAN-19
WG2975516-1 MB								
Bis(2-ethylhexyl)phthalate			<2.0		ug/L		2	24-JAN-19
Surrogate: 2-fluorobiphenyl			89.5		%		40-130	24-JAN-19
Surrogate: p-Terphenyl d14			112.6		%		40-130	24-JAN-19
625-DNB-PHTH-WT	**Water**							
Batch R4468769								
WG2975516-2 LCS								
Di-n-butylphthalate			116.5		%		50-150	24-JAN-19
WG2975516-3 LCSD		**WG2975516-2**						
Di-n-butylphthalate		116.5	114.6		%	1.7	50	24-JAN-19
WG2975516-1 MB								
Di-n-butylphthalate			<1.0		ug/L		1	24-JAN-19
Surrogate: 2-Fluorobiphenyl			89.5		%		40-130	24-JAN-19
Surrogate: p-Terphenyl d14			112.6		%		40-130	24-JAN-19
625-PAH-LOW-WT	**Water**							
Batch R4474140								
WG2977145-2 LCS								
Acenaphthene			104.4		%		50-140	29-JAN-19
Anthracene			102.8		%		50-140	29-JAN-19
Benzo(a)anthracene			107.7		%		50-140	29-JAN-19
Benzo(a)pyrene			102.5		%		60-130	29-JAN-19
Benzo(b)fluoranthene			107.9		%		50-140	29-JAN-19
Benzo(ghi)perylene			99.5		%		50-140	29-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-PAH-LOW-WT	**Water**							
Batch R4474140								
WG2977145-2 LCS								
Benzo(k)fluoranthene			109.9		%		50-140	29-JAN-19
Chrysene			103.9		%		50-140	29-JAN-19
Dibenzo(a,h)anthracene			92.8		%		50-140	29-JAN-19
Fluoranthene			105.9		%		50-140	29-JAN-19
Fluorene			109.4		%		50-140	29-JAN-19
Indeno(1,2,3-cd)pyrene			93.7		%		50-140	29-JAN-19
Naphthalene			96.4		%		50-130	29-JAN-19
Perylene			91.3		%		50-140	29-JAN-19
Phenanthrene			104.2		%		50-140	29-JAN-19
Pyrene			103.9		%		50-140	29-JAN-19
WG2977145-3 LCSD		**WG2977145-2**						
Acenaphthene		104.4	107.2		%	2.6	50	29-JAN-19
Anthracene		102.8	108.6		%	5.5	50	29-JAN-19
Benzo(a)anthracene		107.7	110.0		%	2.1	50	29-JAN-19
Benzo(a)pyrene		102.5	104.0		%	1.4	50	29-JAN-19
Benzo(b)fluoranthene		107.9	112.4		%	4.1	50	29-JAN-19
Benzo(ghi)perylene		99.5	101.9		%	2.4	50	29-JAN-19
Benzo(k)fluoranthene		109.9	106.3		%	3.4	50	29-JAN-19
Chrysene		103.9	107.1		%	3.0	50	29-JAN-19
Dibenzo(a,h)anthracene		92.8	97.5		%	4.9	50	29-JAN-19
Fluoranthene		105.9	111.1		%	4.8	50	29-JAN-19
Fluorene		109.4	113.3		%	3.5	50	29-JAN-19
Indeno(1,2,3-cd)pyrene		93.7	90.8		%	3.0	50	29-JAN-19
Naphthalene		96.4	95.4		%	1.0	50	29-JAN-19
Perylene		91.3	93.1		%	1.9	50	29-JAN-19
Phenanthrene		104.2	106.8		%	2.4	50	29-JAN-19
Pyrene		103.9	107.1		%	3.1	50	29-JAN-19
WG2977145-1 MB								
Acenaphthene			0.017	MB-LOR	ug/L		0.01	28-JAN-19
Anthracene			<0.010		ug/L		0.01	28-JAN-19
Benzo(a)anthracene			<0.010		ug/L		0.01	28-JAN-19
Benzo(a)pyrene			<0.010		ug/L		0.01	28-JAN-19
Benzo(b)fluoranthene			<0.010		ug/L		0.01	28-JAN-19
							0.01	

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
625-PAH-LOW-WT	**Water**							
Batch R4474140								
WG2977145-1 MB								
Benzo(ghi)perylene			<0.010		ug/L		0.01	28-JAN-19
Benzo(k)fluoranthene			<0.010		ug/L		0.01	28-JAN-19
Chrysene			<0.010		ug/L		0.01	28-JAN-19
Dibenzo(a,h)anthracene			<0.010		ug/L		0.01	28-JAN-19
Fluoranthene			<0.010		ug/L		0.01	28-JAN-19
Fluorene			<0.010		ug/L		0.01	28-JAN-19
Indeno(1,2,3-cd)pyrene			<0.010		ug/L		0.01	28-JAN-19
Naphthalene			0.052	MB-LOR	ug/L		0.01	28-JAN-19
Perylene			<0.010		ug/L		0.01	28-JAN-19
Phenanthrene			<0.010		ug/L		0.01	28-JAN-19
Pyrene			<0.010		ug/L		0.01	28-JAN-19
Surrogate: 2-Fluorobiphenyl			93.8		%		40-130	28-JAN-19
Surrogate: p-Terphenyl d14			95.0		%		40-130	28-JAN-19
625-PCP-WT	**Water**							
Batch R4468769								
WG2975516-2 LCS								
Pentachlorophenol			139.7		%		50-140	24-JAN-19
WG2975516-3 LCSD		**WG2975516-2**						
Pentachlorophenol		139.7	138.2		%	1.1	50	24-JAN-19
WG2975516-1 MB								
Pentachlorophenol			<0.50		ug/L		0.5	24-JAN-19
Surrogate: 2,4,6-Tribromophenol			78.6		%		40-150	24-JAN-19
BOD-C-WT	**Water**							
Batch R4472588								
WG2975783-6 DUP		**L2223450-1**						
BOD Carbonaceous		1990	1990		mg/L	0.0	20	28-JAN-19
WG2975783-7 LCS								
BOD Carbonaceous			97.5		%		85-115	28-JAN-19
WG2975783-5 MB								
BOD Carbonaceous			<2.0		mg/L		2	28-JAN-19
BOD-WT	**Water**							
Batch R4472567								
WG2975778-6 DUP		**L2223209-1**						
BOD		3.6	3.0	J	mg/L	0.7	4	28-JAN-19
WG2975778-7 LCS								

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-WT	**Water**							
Batch R4472567								
WG2975778-7 LCS								
BOD			97.5		%		85-115	28-JAN-19
WG2975778-5 MB								
BOD			<2.0		mg/L		2	28-JAN-19
CN-TOT-WT	**Water**							
Batch R4467487								
WG2976064-3 DUP		**L2224046-1**						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	24-JAN-19
WG2976064-2 LCS								
Cyanide, Total			85.0		%		80-120	24-JAN-19
WG2976064-1 MB								
Cyanide, Total			<0.0020		mg/L		0.002	24-JAN-19
WG2976064-4 MS		**L2224046-1**						
Cyanide, Total			83.5		%		70-130	24-JAN-19
CR-CR6-IC-WT	**Water**							
Batch R4467959								
WG2976251-4 DUP		**WG2976251-3**						
Chromium, Hexavalent		0.00059	0.00058		mg/L	1.9	20	24-JAN-19
WG2976251-2 LCS								
Chromium, Hexavalent			94.2		%		80-120	24-JAN-19
WG2976251-1 MB								
Chromium, Hexavalent			<0.00050		mg/L		0.0005	24-JAN-19
WG2976251-5 MS		**WG2976251-3**						
Chromium, Hexavalent			93.1		%		70-130	24-JAN-19
EC-MF-WT	**Water**							
Batch R4466047								
WG2975509-3 DUP		**L2223760-3**						
E. Coli		0	0		CFU/100mL	0.0	65	24-JAN-19
WG2975509-1 MB								
E. Coli			0		CFU/100mL		1	24-JAN-19
F-IC-N-WT	**Water**							
Batch R4468919								
WG2976184-4 DUP		**WG2976184-3**						
Fluoride (F)		0.185	0.184		mg/L	0.8	20	24-JAN-19
WG2976184-2 LCS								
Fluoride (F)			102.8		%		90-110	24-JAN-19
WG2976184-1 MB								

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	**Water**							
Batch R4468919								
WG2976184-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	24-JAN-19
WG2976184-5 MS		**WG2976184-3**						
Fluoride (F)			103.6		%		75-125	24-JAN-19
HG-T-CVAA-WT	**Water**							
Batch R4468346								
WG2976138-3 DUP		**L2223895-2**						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-JAN-19
WG2976138-2 LCS								
Mercury (Hg)-Total			98.3		%		80-120	25-JAN-19
WG2976138-1 MB								
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	25-JAN-19
WG2976138-4 MS		**L2223895-3**						
Mercury (Hg)-Total			90.0		%		70-130	25-JAN-19
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-4 DUP		**WG2975886-3**						
Aluminum (Al)-Total		0.395	0.398		mg/L	0.7	20	24-JAN-19
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Barium (Ba)-Total		0.131	0.130		mg/L	0.6	20	24-JAN-19
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JAN-19
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	24-JAN-19
Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-JAN-19
Calcium (Ca)-Total		145	152		mg/L	4.6	20	24-JAN-19
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	24-JAN-19
Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-19
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Copper (Cu)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JAN-19
Iron (Fe)-Total		0.43	0.42		mg/L	2.5	20	24-JAN-19
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JAN-19
Lithium (Li)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-JAN-19
Magnesium (Mg)-Total		31.5	31.5		mg/L	0.1	20	24-JAN-19
Manganese (Mn)-Total		0.0163	0.0172		mg/L	5.0	20	24-JAN-19

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8

Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-4 DUP		**WG2975886-3**						
Molybdenum (Mo)-Total		0.00077	0.00076		mg/L	1.2	20	24-JAN-19
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	24-JAN-19
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	24-JAN-19
Potassium (K)-Total		4.97	5.08		mg/L	2.1	20	24-JAN-19
Rubidium (Rb)-Total		0.0043	0.0039		mg/L	10	20	24-JAN-19
Selenium (Se)-Total		0.00150	0.00136		mg/L	9.4	20	24-JAN-19
Silicon (Si)-Total		6.3	6.3		mg/L	0.4	20	24-JAN-19
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-JAN-19
Sodium (Na)-Total		288	289		mg/L	0.4	20	24-JAN-19
Strontium (Sr)-Total		1.05	1.08		mg/L	3.2	20	24-JAN-19
Sulfur (S)-Total		19.9	21.3		mg/L	7.0	25	24-JAN-19
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-JAN-19
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	24-JAN-19
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	24-JAN-19
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Titanium (Ti)-Total		0.0139	0.0126		mg/L	9.3	20	24-JAN-19
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-JAN-19
Uranium (U)-Total		0.00072	0.00072		mg/L	0.2	20	24-JAN-19
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	24-JAN-19
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	24-JAN-19
Zirconium (Zr)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	24-JAN-19
WG2975886-2 LCS								
Aluminum (Al)-Total			101.6		%		80-120	24-JAN-19
Antimony (Sb)-Total			104.0		%		80-120	24-JAN-19
Arsenic (As)-Total			99.3		%		80-120	24-JAN-19
Barium (Ba)-Total			103.7		%		80-120	24-JAN-19
Beryllium (Be)-Total			98.7		%		80-120	24-JAN-19
Bismuth (Bi)-Total			104.7		%		80-120	24-JAN-19
Boron (B)-Total			98.3		%		80-120	24-JAN-19
Cadmium (Cd)-Total			104.2		%		80-120	24-JAN-19
Calcium (Ca)-Total			101.2		%		80-120	24-JAN-19
Chromium (Cr)-Total			101.7		%		80-120	24-JAN-19
Cesium (Cs)-Total			105.5		%		80-120	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-2 LCS								
Cobalt (Co)-Total			99.6		%		80-120	24-JAN-19
Copper (Cu)-Total			97.4		%		80-120	24-JAN-19
Iron (Fe)-Total			101.0		%		80-120	24-JAN-19
Lead (Pb)-Total			102.7		%		80-120	24-JAN-19
Lithium (Li)-Total			99.9		%		80-120	24-JAN-19
Magnesium (Mg)-Total			104.6		%		80-120	24-JAN-19
Manganese (Mn)-Total			101.2		%		80-120	24-JAN-19
Molybdenum (Mo)-Total			98.4		%		80-120	24-JAN-19
Nickel (Ni)-Total			97.9		%		80-120	24-JAN-19
Phosphorus (P)-Total			98.6		%		70-130	24-JAN-19
Potassium (K)-Total			99.8		%		80-120	24-JAN-19
Rubidium (Rb)-Total			100.1		%		80-120	24-JAN-19
Selenium (Se)-Total			98.4		%		80-120	24-JAN-19
Silicon (Si)-Total			102.0		%		60-140	24-JAN-19
Silver (Ag)-Total			103.7		%		80-120	24-JAN-19
Sodium (Na)-Total			100.6		%		80-120	24-JAN-19
Strontium (Sr)-Total			103.9		%		80-120	24-JAN-19
Sulfur (S)-Total			101.5		%		80-120	24-JAN-19
Thallium (Tl)-Total			99.6		%		80-120	24-JAN-19
Tellurium (Te)-Total			96.4		%		80-120	24-JAN-19
Thorium (Th)-Total			106.3		%		70-130	24-JAN-19
Tin (Sn)-Total			103.5		%		80-120	24-JAN-19
Titanium (Ti)-Total			98.6		%		80-120	24-JAN-19
Tungsten (W)-Total			101.8		%		80-120	24-JAN-19
Uranium (U)-Total			106.5		%		80-120	24-JAN-19
Vanadium (V)-Total			102.3		%		80-120	24-JAN-19
Zinc (Zn)-Total			97.8		%		80-120	24-JAN-19
Zirconium (Zr)-Total			102.4		%		80-120	24-JAN-19
WG2975886-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	24-JAN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-1 MB								
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-JAN-19
Boron (B)-Total			<0.010		mg/L		0.01	24-JAN-19
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	24-JAN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-JAN-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	24-JAN-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	24-JAN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	24-JAN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	24-JAN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-JAN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-JAN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-JAN-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	24-JAN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-JAN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-JAN-19
Phosphorus (P)-Total			<0.050		mg/L		0.05	24-JAN-19
Potassium (K)-Total			<0.050		mg/L		0.05	24-JAN-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	24-JAN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-JAN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	24-JAN-19
Silver (Ag)-Total			<0.000050		mg/L		0.00005	24-JAN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	24-JAN-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	24-JAN-19
Sulfur (S)-Total			<0.50		mg/L		0.5	24-JAN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-JAN-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	24-JAN-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-JAN-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	24-JAN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-JAN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-JAN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-1 MB								
Zirconium (Zr)-Total			<0.00030		mg/L		0.0003	24-JAN-19
WG2975886-5 MS		**WG2975886-6**						
Aluminum (Al)-Total			N/A	MS-B	%		-	24-JAN-19
Antimony (Sb)-Total			102.2		%		70-130	24-JAN-19
Arsenic (As)-Total			100.4		%		70-130	24-JAN-19
Barium (Ba)-Total			N/A	MS-B	%		-	24-JAN-19
Beryllium (Be)-Total			102.7		%		70-130	24-JAN-19
Bismuth (Bi)-Total			100.6		%		70-130	24-JAN-19
Boron (B)-Total			N/A	MS-B	%		-	24-JAN-19
Cadmium (Cd)-Total			104.4		%		70-130	24-JAN-19
Calcium (Ca)-Total			N/A	MS-B	%		-	24-JAN-19
Chromium (Cr)-Total			95.1		%		70-130	24-JAN-19
Cesium (Cs)-Total			102.6		%		70-130	24-JAN-19
Cobalt (Co)-Total			95.0		%		70-130	24-JAN-19
Copper (Cu)-Total			98.8		%		70-130	24-JAN-19
Iron (Fe)-Total			N/A	MS-B	%		-	24-JAN-19
Lead (Pb)-Total			99.2		%		70-130	24-JAN-19
Lithium (Li)-Total			104.0		%		70-130	24-JAN-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	24-JAN-19
Manganese (Mn)-Total			98.7		%		70-130	24-JAN-19
Molybdenum (Mo)-Total			100.1		%		70-130	24-JAN-19
Nickel (Ni)-Total			93.7		%		70-130	24-JAN-19
Phosphorus (P)-Total			109.2		%		70-130	24-JAN-19
Potassium (K)-Total			N/A	MS-B	%		-	24-JAN-19
Rubidium (Rb)-Total			87.0		%		70-130	24-JAN-19
Selenium (Se)-Total			95.8		%		70-130	24-JAN-19
Silicon (Si)-Total			N/A	MS-B	%		-	24-JAN-19
Silver (Ag)-Total			98.3		%		70-130	24-JAN-19
Sodium (Na)-Total			N/A	MS-B	%		-	24-JAN-19
Strontium (Sr)-Total			N/A	MS-B	%		-	24-JAN-19
Sulfur (S)-Total			N/A	MS-B	%		-	24-JAN-19
Thallium (Tl)-Total			97.2		%		70-130	24-JAN-19
Tellurium (Te)-Total			95.5		%		70-130	24-JAN-19
Thorium (Th)-Total			95.2		%		70-130	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R4466968								
WG2975886-5 MS		**WG2975886-6**						
Tin (Sn)-Total			102.0		%		70-130	24-JAN-19
Titanium (Ti)-Total			98.4		%		70-130	24-JAN-19
Tungsten (W)-Total			98.7		%		70-130	24-JAN-19
Uranium (U)-Total			N/A	MS-B	%		-	24-JAN-19
Vanadium (V)-Total			99.3		%		70-130	24-JAN-19
Zinc (Zn)-Total			98.4		%		70-130	24-JAN-19
Zirconium (Zr)-Total			95.5		%		70-130	24-JAN-19
NP,NPE-LCMS-WT	**Water**							
Batch R4474770								
WG2976769-3 DUP		**L2223263-1**						
Nonylphenol		49	48		ug/L	1.6	30	29-JAN-19
Nonylphenol Monoethoxylates		<10	<10	RPD-NA	ug/L	N/A	30	29-JAN-19
Nonylphenol Diethoxylates		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-JAN-19
Octylphenol		<1.0	<1.0	RPD-NA	ug/L	N/A	30	29-JAN-19
Octylphenol Monoethoxylates		<10	<10	RPD-NA	ug/L	N/A	30	29-JAN-19
Octylphenol Diethoxylates		<0.50	<0.50	RPD-NA	ug/L	N/A	30	29-JAN-19
Bisphenol A		0.42	0.44		ug/L	4.0	30	29-JAN-19
WG2976769-2 LCS								
Nonylphenol			84.3		%		75-125	29-JAN-19
Nonylphenol Monoethoxylates			103.0		%		75-125	29-JAN-19
Nonylphenol Diethoxylates			81.8		%		75-125	29-JAN-19
Octylphenol			99.2		%		75-125	29-JAN-19
Octylphenol Monoethoxylates			107.5		%		75-125	29-JAN-19
Octylphenol Diethoxylates			112.0		%		75-125	29-JAN-19
Bisphenol A			114.0		%		75-125	29-JAN-19
WG2976769-1 MB								
Nonylphenol			<1.0		ug/L		1	29-JAN-19
Nonylphenol Monoethoxylates			<2.0		ug/L		2	29-JAN-19
Nonylphenol Diethoxylates			<0.10		ug/L		0.1	29-JAN-19
Octylphenol			<1.0		ug/L		1	29-JAN-19
Octylphenol Monoethoxylates			<2.0		ug/L		2	29-JAN-19
Octylphenol Diethoxylates			<0.10		ug/L		0.1	29-JAN-19
Bisphenol A			<0.20		ug/L		0.2	29-JAN-19
WG2976769-4 MS		**L2223263-1**						

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NP,NPE-LCMS-WT	**Water**							
Batch R4474770								
WG2976769-4 MS		**L2223263-1**						
Nonylphenol			N/A	MS-B	%		-	29-JAN-19
Nonylphenol Monoethoxylates			70.5		%		50-150	29-JAN-19
Nonylphenol Diethoxylates			81.6		%		50-150	29-JAN-19
Octylphenol			121.0		%		50-150	29-JAN-19
Octylphenol Monoethoxylates			79.5		%		50-150	29-JAN-19
Octylphenol Diethoxylates			116.2		%		50-150	29-JAN-19
Bisphenol A			93.0		%		50-150	29-JAN-19
OGG-SPEC-WT	**Water**							
Batch R4464648								
WG2975479-2 LCS								
Oil and Grease, Total			93.8		%		70-130	23-JAN-19
Mineral Oil and Grease			89.0		%		70-130	23-JAN-19
WG2975479-3 LCSD		**WG2975479-2**						
Oil and Grease, Total		93.8	92.9		%	1.0	40	23-JAN-19
Mineral Oil and Grease		89.0	88.2		%	0.9	40	23-JAN-19
WG2975479-1 MB								
Oil and Grease, Total			<2.0		mg/L		2	23-JAN-19
Mineral Oil and Grease			<1.0		mg/L		1	23-JAN-19
P-T-COL-WT	**Water**							
Batch R4467464								
WG2976369-3 DUP		**L2223264-2**						
Phosphorus, Total		0.0044	0.0070	J	mg/L	0.0026	0.006	25-JAN-19
WG2976369-2 LCS								
Phosphorus, Total			100.3		%		80-120	25-JAN-19
WG2976369-1 MB								
Phosphorus, Total			<0.0030		mg/L		0.003	25-JAN-19
WG2976369-4 MS		**L2223264-2**						
Phosphorus, Total			94.6		%		70-130	25-JAN-19
PAH-EXTRA-WT	**Water**							
Batch R4466947								
WG2975516-2 LCS								
Benzo(e)pyrene			100.5		%		60-130	24-JAN-19
1,3-Dinitropyrene			114.9		%		60-130	24-JAN-19
1,6-Dinitropyrene			110.9		%		60-130	24-JAN-19
Dibenz(a,h)acridine			107.3		%		60-130	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-EXTRA-WT	**Water**							
Batch R4466947								
WG2975516-2 LCS								
1,8-Dinitropyrene			93.1		%		60-130	24-JAN-19
Dibenz(a,j)acridine			73.5		%		60-130	24-JAN-19
7H-Dibenzo(c,g)carbazole			100.0		%		60-130	24-JAN-19
Dibenzo(a,i)pyrene			107.6		%		60-130	24-JAN-19
WG2975516-3 LCSD		**WG2975516-2**						
Benzo(e)pyrene		100.5	109.0		%	8.1	50	24-JAN-19
1,3-Dinitropyrene		114.9	119.7		%	4.0	50	24-JAN-19
1,6-Dinitropyrene		110.9	115.9		%	4.4	50	24-JAN-19
Dibenz(a,h)acridine		107.3	113.6		%	5.7	50	24-JAN-19
1,8-Dinitropyrene		93.1	99.7		%	6.9	50	24-JAN-19
Dibenz(a,j)acridine		73.5	84.8		%	14	50	24-JAN-19
7H-Dibenzo(c,g)carbazole		100.0	107.6		%	7.3	50	24-JAN-19
Dibenzo(a,i)pyrene		107.6	118.0		%	9.2	50	24-JAN-19
WG2975516-1 MB								
Benzo(e)pyrene			<0.050		ug/L		0.05	24-JAN-19
1,3-Dinitropyrene			<1.0		ug/L		1	24-JAN-19
1,6-Dinitropyrene			<1.0		ug/L		1	24-JAN-19
Dibenz(a,h)acridine			<0.050		ug/L		0.05	24-JAN-19
1,8-Dinitropyrene			<1.0		ug/L		1	24-JAN-19
Dibenz(a,j)acridine			<0.050		ug/L		0.05	24-JAN-19
7H-Dibenzo(c,g)carbazole			<0.050		ug/L		0.05	24-JAN-19
Dibenzo(a,i)pyrene			<0.050		ug/L		0.05	24-JAN-19
Surrogate: d14-Terphenyl			65.0		%		40-130	24-JAN-19
PAH-NAPHTHALENE-WT	**Water**							
Batch R4474028								
WG2975502-2 LCS								
Naphthalene			82.6		%		50-130	29-JAN-19
WG2975502-3 LCSD		**WG2975502-2**						
Naphthalene		82.6	108.3		%	27	50	29-JAN-19
WG2975502-1 MB								
Naphthalene			<0.020		ug/L		0.02	29-JAN-19
Surrogate: d8-Naphthalene			103.0		%		60-140	29-JAN-19
PCB-WT	**Water**							

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-WT	**Water**							
Batch R4468049								
WG2975942-2 LCS								
Aroclor 1242			96.4		%		65-130	24-JAN-19
Aroclor 1248			87.9		%		65-130	24-JAN-19
Aroclor 1254			102.6		%		65-130	24-JAN-19
Aroclor 1260			108.3		%		65-130	24-JAN-19
WG2975942-3 LCSD		**WG2975942-2**						
Aroclor 1242		96.4	98.0		%	1.7	50	24-JAN-19
Aroclor 1248		87.9	87.9		%	0.0	50	24-JAN-19
Aroclor 1254		102.6	95.0		%	7.7	50	24-JAN-19
Aroclor 1260		108.3	108.8		%	0.4	50	24-JAN-19
WG2975942-1 MB								
Aroclor 1242			<0.020		ug/L		0.02	24-JAN-19
Aroclor 1248			<0.020		ug/L		0.02	24-JAN-19
Aroclor 1254			<0.020		ug/L		0.02	24-JAN-19
Aroclor 1260			<0.020		ug/L		0.02	24-JAN-19
Surrogate: 2-Fluorobiphenyl			81.2		%		50-150	24-JAN-19
PH-WT	**Water**							
Batch R4467457								
WG2975962-4 DUP		**WG2975962-3**						
pH		7.91	7.90	J	pH units	0.01	0.2	24-JAN-19
WG2975962-8 DUP		**WG2975962-7**						
pH		7.54	7.53	J	pH units	0.01	0.2	24-JAN-19
WG2975962-2 LCS								
pH			6.99		pH units		6.9-7.1	24-JAN-19
WG2975962-6 LCS								
pH			7.00		pH units		6.9-7.1	24-JAN-19
PHENOLS-4AAP-WT	**Water**							
Batch R4466011								
WG2976337-3 DUP		**L2223760-1**						
Phenols (4AAP)		0.0028	0.0029		mg/L	2.0	20	24-JAN-19
WG2976337-2 LCS								
Phenols (4AAP)			105.2		%		85-115	24-JAN-19
WG2976337-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	24-JAN-19
WG2976337-4 MS		**L2223760-1**						
Phenols (4AAP)			94.3		%		75-125	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	**Water**							
Batch R4468919								
WG2976184-4 DUP		**WG2976184-3**						
Sulfate (SO4)		51.2	51.2		mg/L	0.0	20	24-JAN-19
WG2976184-2 LCS								
Sulfate (SO4)			101.7		%		90-110	24-JAN-19
WG2976184-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	24-JAN-19
WG2976184-5 MS		**WG2976184-3**						
Sulfate (SO4)			103.2		%		75-125	24-JAN-19
SOLIDS-TSS-WT	**Water**							
Batch R4470247								
WG2976781-3 DUP		**L2223535-5**						
Total Suspended Solids		6660	6770		mg/L	1.6	20	26-JAN-19
WG2976781-2 LCS								
Total Suspended Solids			99.5		%		85-115	26-JAN-19
WG2976781-1 MB								
Total Suspended Solids			<2.0		mg/L		2	26-JAN-19
TKN-WT	**Water**							
Batch R4471414								
WG2976240-3 DUP		**L2224333-2**						
Total Kjeldahl Nitrogen		0.76	0.82		mg/L	8.5	20	25-JAN-19
WG2976240-2 LCS								
Total Kjeldahl Nitrogen			95.7		%		75-125	25-JAN-19
WG2976240-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	25-JAN-19
WG2976240-4 MS		**L2224333-2**						
Total Kjeldahl Nitrogen			120.7		%		70-130	25-JAN-19
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-4 DUP		**WG2972260-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	24-JAN-19
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8

Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-4 DUP		**WG2972260-3**						
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
2-Hexanone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-19
Acetone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-19
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Carbon Disulfide		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Carbon tetrachloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Chloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
cis-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
m+p-Xylenes		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-19
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	24-JAN-19
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
o-Xylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
trans-1,2-Dichloroethylene		<0.50	<0.50		ug/L			24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-4 DUP		**WG2972260-3**						
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
trans-1,3-Dichloropropene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	24-JAN-19
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	24-JAN-19
WG2972260-1 LCS								
1,1,1,2-Tetrachloroethane			93.0		%		70-130	24-JAN-19
1,1,2,2-Tetrachloroethane			88.8		%		70-130	24-JAN-19
1,1,1-Trichloroethane			91.0		%		70-130	24-JAN-19
1,1,2-Trichloroethane			94.4		%		70-130	24-JAN-19
1,2-Dibromoethane			99.2		%		70-130	24-JAN-19
1,1-Dichloroethane			95.5		%		70-130	24-JAN-19
1,1-Dichloroethylene			92.6		%		70-130	24-JAN-19
1,2-Dichlorobenzene			93.2		%		70-130	24-JAN-19
1,2-Dichloroethane			97.9		%		70-130	24-JAN-19
1,2-Dichloropropane			94.5		%		70-130	24-JAN-19
1,3-Dichlorobenzene			94.4		%		70-130	24-JAN-19
1,4-Dichlorobenzene			94.5		%		70-130	24-JAN-19
2-Hexanone			82.7		%		60-140	24-JAN-19
Acetone			114.4		%		60-140	24-JAN-19
Benzene			96.1		%		70-130	24-JAN-19
Bromodichloromethane			92.5		%		70-130	24-JAN-19
Bromoform			98.2		%		70-130	24-JAN-19
Bromomethane			121.1		%		60-140	24-JAN-19
Carbon Disulfide			113.1		%		70-130	24-JAN-19
Carbon tetrachloride			90.7		%		70-130	24-JAN-19
Chlorobenzene			95.1		%		70-130	24-JAN-19
Chloroethane			90.0		%		70-130	24-JAN-19
Chloroform			94.9		%		70-130	24-JAN-19
Chloromethane			97.0		%		60-140	24-JAN-19
cis-1,2-Dichloroethylene			93.6		%		70-130	24-JAN-19
cis-1,3-Dichloropropene			90.2		%		70-130	24-JAN-19
Dibromochloromethane			98.1		%		70-130	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-1 LCS								
Dichlorodifluoromethane			94.2		%		50-140	24-JAN-19
Dichloromethane			98.8		%		70-130	24-JAN-19
Ethylbenzene			94.7		%		70-130	24-JAN-19
m+p-Xylenes			95.6		%		70-130	24-JAN-19
Methyl Ethyl Ketone			100.7		%		60-140	24-JAN-19
Methyl Isobutyl Ketone			86.3		%		50-150	24-JAN-19
n-Hexane			89.6		%		70-130	24-JAN-19
MTBE			93.1		%		70-130	24-JAN-19
o-Xylene			93.6		%		70-130	24-JAN-19
Styrene			96.6		%		70-130	24-JAN-19
Tetrachloroethylene			101.6		%		70-130	24-JAN-19
Toluene			90.9		%		70-130	24-JAN-19
trans-1,2-Dichloroethylene			92.8		%		70-130	24-JAN-19
trans-1,3-Dichloropropene			95.0		%		70-130	24-JAN-19
Trichloroethylene			95.2		%		70-130	24-JAN-19
Trichlorofluoromethane			99.3		%		60-140	24-JAN-19
Vinyl chloride			79.4		%		60-140	24-JAN-19
WG2972260-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	24-JAN-19
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	24-JAN-19
1,1,1-Trichloroethane			<0.50		ug/L		0.5	24-JAN-19
1,1,2-Trichloroethane			<0.50		ug/L		0.5	24-JAN-19
1,2-Dibromoethane			<0.20		ug/L		0.2	24-JAN-19
1,1-Dichloroethane			<0.50		ug/L		0.5	24-JAN-19
1,1-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-19
1,2-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-19
1,2-Dichloroethane			<0.50		ug/L		0.5	24-JAN-19
1,2-Dichloropropane			<0.50		ug/L		0.5	24-JAN-19
1,3-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-19
1,4-Dichlorobenzene			<0.50		ug/L		0.5	24-JAN-19
2-Hexanone			<20		ug/L		20	24-JAN-19
Acetone			<20		ug/L		20	24-JAN-19
Benzene			<0.50		ug/L		0.5	24-JAN-19
Bromodichloromethane			<1.0		ug/L		1	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-2 MB								
Bromoform			<1.0		ug/L		1	24-JAN-19
Bromomethane			<0.50		ug/L		0.5	24-JAN-19
Carbon Disulfide			<1.0		ug/L		1	24-JAN-19
Carbon tetrachloride			<0.50		ug/L		0.5	24-JAN-19
Chlorobenzene			<0.50		ug/L		0.5	24-JAN-19
Chloroethane			<1.0		ug/L		1	24-JAN-19
Chloroform			<1.0		ug/L		1	24-JAN-19
Chloromethane			<1.0		ug/L		1	24-JAN-19
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-19
cis-1,3-Dichloropropene			<0.50		ug/L		0.5	24-JAN-19
Dibromochloromethane			<1.0		ug/L		1	24-JAN-19
Dichlorodifluoromethane			<1.0		ug/L		1	24-JAN-19
Dichloromethane			<2.0		ug/L		2	24-JAN-19
Ethylbenzene			<0.50		ug/L		0.5	24-JAN-19
m+p-Xylenes			<1.0		ug/L		1	24-JAN-19
Methyl Ethyl Ketone			<20		ug/L		20	24-JAN-19
Methyl Isobutyl Ketone			<20		ug/L		20	24-JAN-19
n-Hexane			<0.50		ug/L		0.5	24-JAN-19
MTBE			<0.50		ug/L		0.5	24-JAN-19
o-Xylene			<0.50		ug/L		0.5	24-JAN-19
Styrene			<0.50		ug/L		0.5	24-JAN-19
Tetrachloroethylene			<0.50		ug/L		0.5	24-JAN-19
Toluene			<0.50		ug/L		0.5	24-JAN-19
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	24-JAN-19
trans-1,3-Dichloropropene			<0.50		ug/L		0.5	24-JAN-19
Trichloroethylene			<0.50		ug/L		0.5	24-JAN-19
Trichlorofluoromethane			<1.0		ug/L		1	24-JAN-19
Vinyl chloride			<0.50		ug/L		0.5	24-JAN-19
Surrogate: 1,4-Difluorobenzene			103.8		%		70-130	24-JAN-19
Surrogate: 4-Bromofluorobenzene			95.3		%		70-130	24-JAN-19
WG2972260-5 MS		**WG2972260-3**						
1,1,1,2-Tetrachloroethane			92.8		%		50-150	24-JAN-19
1,1,2,2-Tetrachloroethane			94.4		%		50-150	24-JAN-19
1,1,1-Trichloroethane			90.2		%		50-150	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-5 MS		**WG2972260-3**						
1,1,2-Trichloroethane			94.3		%		50-150	24-JAN-19
1,2-Dibromoethane			99.1		%		50-150	24-JAN-19
1,1-Dichloroethane			94.9		%		50-150	24-JAN-19
1,1-Dichloroethylene			91.2		%		50-150	24-JAN-19
1,2-Dichlorobenzene			94.2		%		50-150	24-JAN-19
1,2-Dichloroethane			96.9		%		50-150	24-JAN-19
1,2-Dichloropropane			94.8		%		50-150	24-JAN-19
1,3-Dichlorobenzene			95.2		%		50-150	24-JAN-19
1,4-Dichlorobenzene			95.7		%		50-150	24-JAN-19
2-Hexanone			82.6		%		50-150	24-JAN-19
Acetone			108.8		%		50-150	24-JAN-19
Benzene			96.2		%		50-150	24-JAN-19
Bromodichloromethane			92.5		%		50-150	24-JAN-19
Bromoform			98.5		%		50-150	24-JAN-19
Bromomethane			119.8		%		50-150	24-JAN-19
Carbon Disulfide			112.5		%		50-150	24-JAN-19
Carbon tetrachloride			89.8		%		50-150	24-JAN-19
Chlorobenzene			95.4		%		50-150	24-JAN-19
Chloroethane			87.8		%		50-150	24-JAN-19
Chloroform			94.2		%		50-150	24-JAN-19
Chloromethane			92.6		%		50-150	24-JAN-19
cis-1,2-Dichloroethylene			93.1		%		50-150	24-JAN-19
cis-1,3-Dichloropropene			92.7		%		50-150	24-JAN-19
Dibromochloromethane			98.6		%		50-150	24-JAN-19
Dichlorodifluoromethane			85.8		%		50-150	24-JAN-19
Dichloromethane			98.8		%		50-150	24-JAN-19
Ethylbenzene			95.3		%		50-150	24-JAN-19
m+p-Xylenes			96.3		%		50-150	24-JAN-19
Methyl Ethyl Ketone			100.2		%		50-150	24-JAN-19
Methyl Isobutyl Ketone			86.9		%		50-150	24-JAN-19
n-Hexane			90.4		%		50-150	24-JAN-19
MTBE			94.5		%		50-150	24-JAN-19
o-Xylene			94.2		%		50-150	24-JAN-19

Quality Control Report

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-ROU-HS-WT	**Water**							
Batch R4464861								
WG2972260-5 MS		**WG2972260-3**						
Styrene			97.9		%		50-150	24-JAN-19
Tetrachloroethylene			102.2		%		50-150	24-JAN-19
Toluene			91.1		%		50-150	24-JAN-19
trans-1,2-Dichloroethylene			93.9		%		50-150	24-JAN-19
trans-1,3-Dichloropropene			98.0		%		50-150	24-JAN-19
Trichloroethylene			94.6		%		50-150	24-JAN-19
Trichlorofluoromethane			96.4		%		50-150	24-JAN-19
Vinyl chloride			76.5		%		50-150	24-JAN-19

Quality Control Report

Workorder: L2223760 Report Date: 30-JAN-19

Client: Pinchin Ltd. (Waterloo)
283 Northfield Drive E Unit 9
Waterloo ON N2J 4G8
Contact: VANESSA MARSHALL

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLI	Detection Limit Raised: Dilution required to address Internal Standard response problems caused by matrix interference.
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2223760-COFC

COC Number: 17 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Pinchin Ltd.
Contact:	Vanessa Marshall
Phone:	519-746-4210
	Company address below will appear on the final report
Street:	283 Northfield Drive E, Unit 9
City/Province:	Waterloo ON
Postal Code:	N2J 4G8
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: mamadio@pinchin.com
Email 2: vmarshall@pinchin.com
Email 3:

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Project Information

ALS Account # / Quote #: 26570 / Q70460
Job #: 212394.002
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#:
Major/Minor Code: | Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): L2223760
ALS Contact: | Sampler:

Low - Contact your AM to confirm all E&P TATs (surcharges may apply)
Regular - Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐
EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	MET-T-CCMS-WT / HG-T-CVAA-WT / CN-TOT-WT / CR-CR6-IC-WT	BOD-WT / SOLIDS-TSS-WT / PH-WT	VOC-ROU-HS-WT / XYLENES-SUM-CALC-WT	NP,NPE-LCMS-WT / WT-NP+NPE-SANITAR	PAH-EXTRA-WT / PAH-SUM-CALC-WT	P-T-COL-WT / PHENOLS-4AAP-WT	EC-MF-WT	625-33DCBENZIDINE-WT / 625-PCP-WT	PCB-WT	625-BIS-2-PHTH-WT / 625-DNB-PHTH-WT	625-PAH-LOW-WT / WT-PAH-TORONTO	HALTON SANITARY PACKAGE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BH102	22-01-19	1:00 pm	GW		X	X	X	X	X	X	X	X	X	X	X	X		
	BH105	22-01-19	3:00 pm	GW		X	X	X	X	X	X	X	X	X	X	X	X		

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐
Ice Packs ☒ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				0.6			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Matt Amadio	23-01-19	

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	Jan 23 2019	1000 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NOV 2018 FRONT

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

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