

July 30, 2019

Mr. Henry Wilkie
New York State Department of Environmental Conservation
Department of Environmental Remediation
625 Broadway
Albany, NY 12233-7015

**Re: Former Wood Treaters of Buffalo Co. Site
100 Botsford Place, Buffalo New York
Contained-In Determination Request**

Dear Mr. Wilkie:

On behalf of our client, 5001 Group, LLC, Benchmark Environmental Engineering & Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (referred to herein jointly as Benchmark-TurnKey), has prepared this letter to request a determination from the New York State Department of Environmental Conservation (NYSDEC or Department) that soil and fill generated during the decommissioning of the drip pad at the former Wood Treaters of Buffalo Co. Inc. Site, located at 100 Botsford Place, Buffalo New York (see Figure 1) can be managed as non-hazardous wastes under the “contained-in” criteria established by Technical and Guidance Memorandum (TAGM) 3028. The intent is to enter the Site into the NYS Brownfield Cleanup Program (BCP) and this request is being prepared as a preliminary step to be able to more fully evaluate the remedial options for decommissioning the associated wood treating facility.

Background

Wood Treaters of Buffalo Co. Inc. operated onsite from the 1940’s through 2008. The wood treating facility was constructed in the 1970s and manufactured pressure treated wood using chromated copper arsenate (CCA) wood preservative.

5001 Group, LLC acquired the property in April 2016. 5001 Group, LLC has not operated or managed any wood treating operations on the Site since acquiring the property. In consultation with the NYSDEC, it was learned that the previous owner had not properly closed associated Chemical Bulk Storage (CBS) tanks and equipment. 5001 Group, LLC has worked diligently with the NYSDEC to properly clean, dispose and close the related CBS for the Site.

5001 Group, LLC is currently working with the Department to complete the requested soil investigation and decommissioning of the former drip pad in accordance with 6NYCRR Part 373-2.23.

Benchmark-TurnKey completed a soil investigation in accordance with the Department approved work plan, including twelve (12) soil borings, identified as SB-1 through SB-12 that were advanced surrounding and below the concrete drip pad in March 2019 (see Figure 2). Locations were discussed

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**2558 Hamburg Turnpike, Suite 300 | Buffalo, NY 14218
phone: (716) 856-0599 | fax: (716) 856-0583**

and approved in the field with DEC consultation. Field observations indicate soil-fill ranging in depth from 0-4 feet in the vicinity of the drip pad, with apparent native grey-brown clay underlying. Samples were collected from the upper soil-fill layer from each sample location, and two (2) deeper soil samples were collected from the underlying clay layer and analyzed for arsenic, chromium and copper.

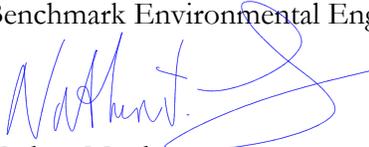
Laboratory analytical results indicate elevated arsenic concentrations exceeding the 6NYCRR Part 375 Commercial Use Soil Cleanup Objectives (SCOs) in the upper soil-fill layer (see Table 1). No elevated results were reported for the underlying clay.

Based on the analytical results, supplemental toxicity characteristic leaching procedure (TCLP) samples were collected for analysis of TCLP metals in June 2019. Two (2) composite TCLP samples were collected from the soil investigation sampling locations. Soil-fill was collected from SB-5, SB-8, SB-9 for WC-1; and, SB-2, SB-3, and SB-11 for WC-2. Analytical results indicate that the soil fill is characteristically non-hazardous for metals. Laboratory analytical data packages are attached for review.

Additional waste characterization sampling will be completed on the soil-fill and concrete prior to remedial activities for disposal facility review and approval.

We are requesting a preliminary determination from the NYSDEC that the soil-fill wastes generated as part of the drip pad closure will not require management as a hazardous waste as stated in Part 373-2.23 and can be managed based on the laboratory analytical characterization (TCLP) results.

Sincerely,
Benchmark Environmental Engineering & Science, PLLC


Nathan Munley
Project Manager


Thomas Forbes, PE
Principal Engineer

cc: B. Paladino (5001 Group)
L. Carbaugh, Esq.
C. Slater, Esq. (Slater Law)
P. Reuben (NYSDEC)
J. Dougherty (NYSDEC)

TABLES



TABLE 1

SUMMARY OF SUBSURFACE SOIL/FILL SAMPLE ANALYTICAL RESULTS
 SOIL ASSESSMENT REPORT
 100 BOTSFORD PLACE
 BUFFALO, NEW YORK

PARAMETER ¹	Commercial Use SCOs ¹	Sample Location (Depth - ft)													
		SB-1 (2-4')	SB-1 (5-7')	SB-2 (2-4')	SB-3 (1-3')	SB-4 (1-3')	SB-5 (3-5')	SB-6 (2-4')	SB-6 (4-6')	SB-7 (2-4')	SB-8 (2-4')	SB-9 (1-3')	SB-10 (2-4')	SB-11 (2-4')	SB-12 (2-4')
3/5/2019															
Metals - mg/Kg															
Arsenic	16	6.34	1.93	117	35.2	6.46	141	21.5	4.42	13.7	230	121	14.2	16.6	13.1
Chromium	1500	27.1	14.9	283	197	20.8	330	14.1	14.5	39.9	257	311	47.6	252	25.1
Copper	270	22.8	15.9	80.8	227	20.4	254	27.5	18.8	18.6	39.7	51.4	52.2	26.8	28.6

Notes:

1. Values per 6NYCRR Part 375 Commercial Use Soil Cleanup Objectives (SCOs).

Bold = Result exceeds Commercial Use SCOs.

FIGURES

LEGEND:

 SITE BOUNDARY

NOTE: BASE MAP GOOGLE EARTH 2017



SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)



2556 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0599

SITE LOCATION (AERIAL)

100 BOTSFORD PLACE
BUFFALO, NEW YORK

PREPARED FOR
5001 GROUP, LLC

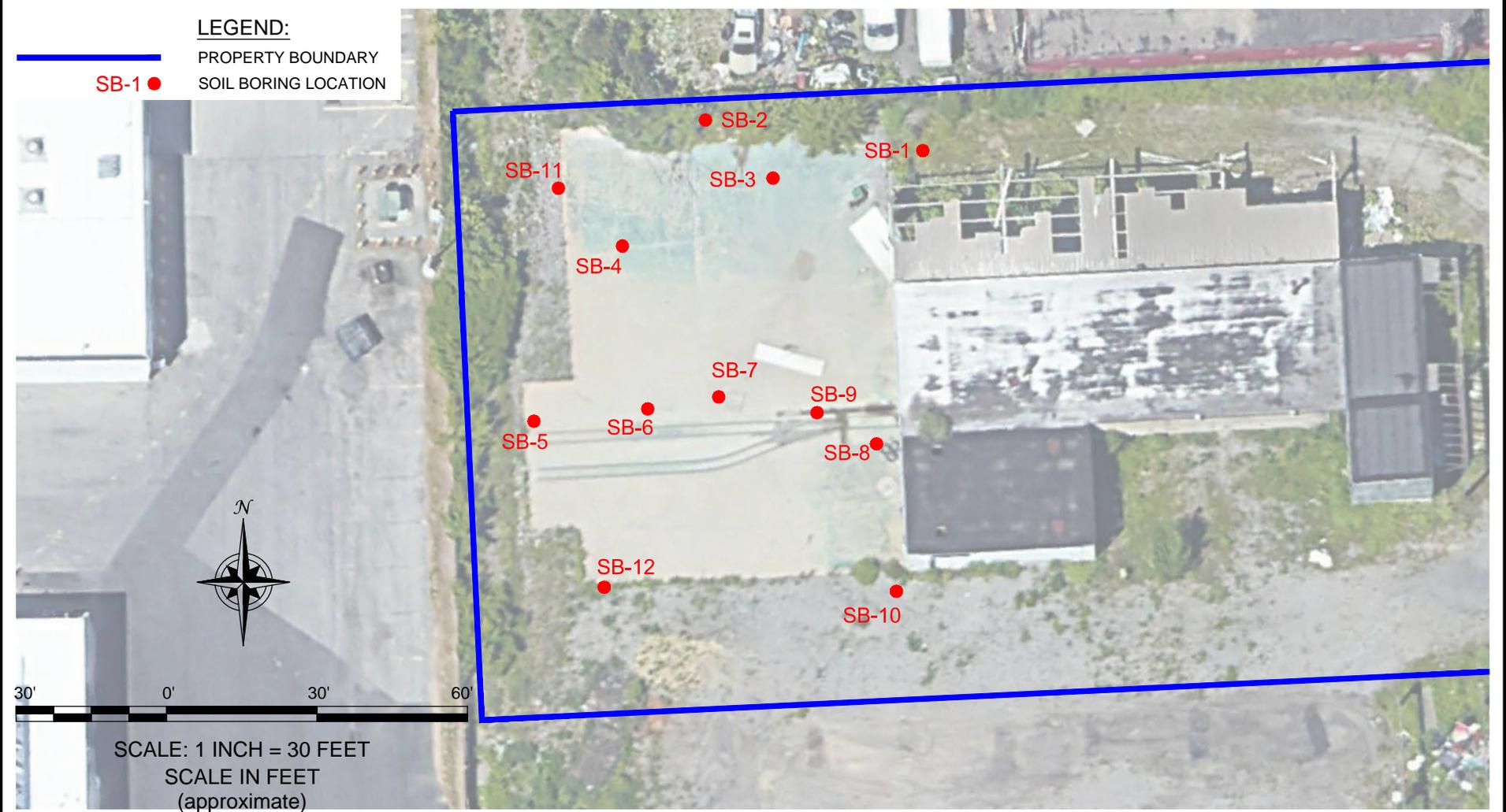
PROJECT NO.: 0136-018-004

DATE: JULY 2019

DRAFTED BY: CMS

FIGURE 1

DISCLAIMER:
PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.



BENCHMARK
 Environmental
 Engineering &
 Science, PLLC

2556 HAMBURG TURNPIKE
 SUITE 300
 BUFFALO, NY 14218
 (716) 856-0599

PROJECT NO.: 0136-018-004

DATE: JULY 2019

DRAFTED BY: CMS

INVESTIGATION LOCATIONS

100 BOTSFORD PLACE
 BUFFALO, NEW YORK

PREPARED FOR
 5001 GROUP, LLC

FIGURE 2

DISCLAIMER:
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ATTACHMENT 1

LABORATORY ANALYTICAL DATA PACKAGES



ANALYTICAL REPORT

Lab Number:	L1909188
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Nate Munley
Phone:	(716) 856-0599
Project Name:	100 BOTSFORD PL
Project Number:	0136-018-004
Report Date:	03/14/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1909188-01	SB-1 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 08:00	03/08/19
L1909188-02	SB-1 (5-7)	SOIL	100 BOTSFORD PL	03/05/19 08:05	03/08/19
L1909188-03	SB-2 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 08:30	03/08/19
L1909188-04	SB-3 (1-3)	SOIL	100 BOTSFORD PL	03/05/19 09:00	03/08/19
L1909188-05	SB-4 (1-3)	SOIL	100 BOTSFORD PL	03/05/19 09:30	03/08/19
L1909188-06	SB-5 (3-5)	SOIL	100 BOTSFORD PL	03/05/19 10:00	03/08/19
L1909188-07	SB-6 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 10:30	03/08/19
L1909188-08	SB-6 (4-6)	SOIL	100 BOTSFORD PL	03/05/19 10:35	03/08/19
L1909188-09	SB-7 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 11:00	03/08/19
L1909188-10	SB-8 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 11:30	03/08/19
L1909188-11	SB-9 (1-3)	SOIL	100 BOTSFORD PL	03/05/19 12:00	03/08/19
L1909188-12	SB-10 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 13:00	03/08/19
L1909188-13	SB-11 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 13:30	03/08/19
L1909188-14	SB-12 (2-4)	SOIL	100 BOTSFORD PL	03/05/19 14:00	03/08/19

Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 03/14/19

METALS

Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-01

Date Collected: 03/05/19 08:00

Client ID: SB-1 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	6.34		mg/kg	0.510	0.106	1	03/12/19 16:58	03/12/19 23:11	EPA 3050B	1,6010D	AB
Chromium, Total	27.1		mg/kg	0.510	0.049	1	03/12/19 16:58	03/12/19 23:11	EPA 3050B	1,6010D	AB
Copper, Total	22.8		mg/kg	0.510	0.131	1	03/12/19 16:58	03/12/19 23:11	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-02

Date Collected: 03/05/19 08:05

Client ID: SB-1 (5-7)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	1.93		mg/kg	0.454	0.094	1	03/12/19 16:58	03/13/19 00:00	EPA 3050B	1,6010D	AB
Chromium, Total	14.9		mg/kg	0.454	0.044	1	03/12/19 16:58	03/13/19 00:00	EPA 3050B	1,6010D	AB
Copper, Total	15.9		mg/kg	0.454	0.117	1	03/12/19 16:58	03/13/19 00:00	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-03

Date Collected: 03/05/19 08:30

Client ID: SB-2 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	117		mg/kg	0.500	0.104	1	03/12/19 16:58	03/13/19 00:05	EPA 3050B	1,6010D	AB
Chromium, Total	283		mg/kg	0.500	0.048	1	03/12/19 16:58	03/13/19 00:05	EPA 3050B	1,6010D	AB
Copper, Total	80.8		mg/kg	0.500	0.129	1	03/12/19 16:58	03/13/19 00:05	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-04

Date Collected: 03/05/19 09:00

Client ID: SB-3 (1-3)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	35.2		mg/kg	0.480	0.100	1	03/12/19 16:58	03/13/19 00:10	EPA 3050B	1,6010D	AB
Chromium, Total	197		mg/kg	0.480	0.046	1	03/12/19 16:58	03/13/19 00:10	EPA 3050B	1,6010D	AB
Copper, Total	227		mg/kg	0.480	0.124	1	03/12/19 16:58	03/13/19 00:10	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-05

Date Collected: 03/05/19 09:30

Client ID: SB-4 (1-3)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	6.46		mg/kg	0.482	0.100	1	03/12/19 16:58	03/13/19 00:15	EPA 3050B	1,6010D	AB
Chromium, Total	20.8		mg/kg	0.482	0.046	1	03/12/19 16:58	03/13/19 00:15	EPA 3050B	1,6010D	AB
Copper, Total	20.4		mg/kg	0.482	0.124	1	03/12/19 16:58	03/13/19 00:15	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-06

Date Collected: 03/05/19 10:00

Client ID: SB-5 (3-5)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	141		mg/kg	0.444	0.092	1	03/12/19 16:58	03/13/19 00:19	EPA 3050B	1,6010D	AB
Chromium, Total	330		mg/kg	0.444	0.043	1	03/12/19 16:58	03/13/19 00:19	EPA 3050B	1,6010D	AB
Copper, Total	254		mg/kg	0.444	0.114	1	03/12/19 16:58	03/13/19 00:19	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-07

Date Collected: 03/05/19 10:30

Client ID: SB-6 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	21.5		mg/kg	0.453	0.094	1	03/12/19 16:58	03/13/19 00:24	EPA 3050B	1,6010D	AB
Chromium, Total	14.1		mg/kg	0.453	0.044	1	03/12/19 16:58	03/13/19 00:24	EPA 3050B	1,6010D	AB
Copper, Total	27.5		mg/kg	0.453	0.117	1	03/12/19 16:58	03/13/19 00:24	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-08

Date Collected: 03/05/19 10:35

Client ID: SB-6 (4-6)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.42		mg/kg	0.472	0.098	1	03/12/19 16:58	03/13/19 00:29	EPA 3050B	1,6010D	AB
Chromium, Total	14.5		mg/kg	0.472	0.045	1	03/12/19 16:58	03/13/19 00:29	EPA 3050B	1,6010D	AB
Copper, Total	18.8		mg/kg	0.472	0.122	1	03/12/19 16:58	03/13/19 00:29	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-09

Date Collected: 03/05/19 11:00

Client ID: SB-7 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	13.7		mg/kg	0.503	0.105	1	03/12/19 16:58	03/13/19 00:33	EPA 3050B	1,6010D	AB
Chromium, Total	39.9		mg/kg	0.503	0.048	1	03/12/19 16:58	03/13/19 00:33	EPA 3050B	1,6010D	AB
Copper, Total	18.6		mg/kg	0.503	0.130	1	03/12/19 16:58	03/13/19 00:33	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-10

Date Collected: 03/05/19 11:30

Client ID: SB-8 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	230		mg/kg	0.461	0.096	1	03/12/19 16:58	03/13/19 01:09	EPA 3050B	1,6010D	AB
Chromium, Total	257		mg/kg	0.461	0.044	1	03/12/19 16:58	03/13/19 01:09	EPA 3050B	1,6010D	AB
Copper, Total	39.7		mg/kg	0.461	0.119	1	03/12/19 16:58	03/13/19 01:09	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-11

Date Collected: 03/05/19 12:00

Client ID: SB-9 (1-3)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	121		mg/kg	0.456	0.095	1	03/12/19 16:58	03/13/19 01:13	EPA 3050B	1,6010D	AB
Chromium, Total	311		mg/kg	0.456	0.044	1	03/12/19 16:58	03/13/19 01:13	EPA 3050B	1,6010D	AB
Copper, Total	51.4		mg/kg	0.456	0.118	1	03/12/19 16:58	03/13/19 01:13	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-12

Date Collected: 03/05/19 13:00

Client ID: SB-10 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	14.2		mg/kg	0.470	0.098	1	03/12/19 19:55	03/13/19 18:16	EPA 3050B	1,6010D	AB
Chromium, Total	47.6		mg/kg	0.470	0.045	1	03/12/19 19:55	03/13/19 18:16	EPA 3050B	1,6010D	AB
Copper, Total	52.2		mg/kg	0.470	0.121	1	03/12/19 19:55	03/13/19 18:16	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-13

Date Collected: 03/05/19 13:30

Client ID: SB-11 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	16.6		mg/kg	0.446	0.093	1	03/12/19 19:55	03/13/19 18:20	EPA 3050B	1,6010D	AB
Chromium, Total	252		mg/kg	0.446	0.043	1	03/12/19 19:55	03/13/19 18:20	EPA 3050B	1,6010D	AB
Copper, Total	26.8		mg/kg	0.446	0.115	1	03/12/19 19:55	03/13/19 18:20	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**SAMPLE RESULTS**

Lab ID: L1909188-14

Date Collected: 03/05/19 14:00

Client ID: SB-12 (2-4)

Date Received: 03/08/19

Sample Location: 100 BOTSFORD PL

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	13.1		mg/kg	0.449	0.093	1	03/12/19 19:55	03/13/19 18:39	EPA 3050B	1,6010D	AB
Chromium, Total	25.1		mg/kg	0.449	0.043	1	03/12/19 19:55	03/13/19 18:39	EPA 3050B	1,6010D	AB
Copper, Total	28.6		mg/kg	0.449	0.116	1	03/12/19 19:55	03/13/19 18:39	EPA 3050B	1,6010D	AB



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1214861-1										
Arsenic, Total	ND		mg/kg	0.400	0.083	1	03/12/19 16:58	03/12/19 22:14	1,6010D	AB
Chromium, Total	0.040	J	mg/kg	0.400	0.038	1	03/12/19 16:58	03/12/19 22:14	1,6010D	AB
Copper, Total	ND		mg/kg	0.400	0.103	1	03/12/19 16:58	03/12/19 22:14	1,6010D	AB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12-14 Batch: WG1214900-1										
Arsenic, Total	ND		mg/kg	0.400	0.083	1	03/12/19 19:55	03/13/19 16:39	1,6010D	AB
Chromium, Total	ND		mg/kg	0.400	0.038	1	03/12/19 19:55	03/13/19 16:39	1,6010D	AB
Copper, Total	ND		mg/kg	0.400	0.103	1	03/12/19 19:55	03/13/19 16:39	1,6010D	AB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1214861-2 SRM Lot Number: D101-540								
Arsenic, Total	96		-		83-117	-		
Chromium, Total	89		-		81-118	-		
Copper, Total	90		-		83-116	-		
Total Metals - Mansfield Lab Associated sample(s): 12-14 Batch: WG1214900-2 SRM Lot Number: D101-540								
Arsenic, Total	96		-		83-117	-		
Chromium, Total	89		-		81-118	-		
Copper, Total	90		-		83-116	-		

Matrix Spike Analysis Batch Quality Control

Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1214861-3 WG1214861-4 QC Sample: L1909166-08 Client ID: MS Sample												
Arsenic, Total	1.49	10.8	11.7	95		11.5	95		75-125	2		20
Chromium, Total	6.18	17.9	22.7	92		22.1	91		75-125	3		20
Copper, Total	5.02	22.4	24.7	88		25.7	94		75-125	4		20
Total Metals - Mansfield Lab Associated sample(s): 12-14 QC Batch ID: WG1214900-3 QC Sample: L1909238-41 Client ID: MS Sample												
Arsenic, Total	2.07	11.3	13.4	100		-	-		75-125	-		20
Chromium, Total	2.37	18.8	20.8	98		-	-		75-125	-		20
Copper, Total	0.403J	23.6	22.4	95		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12-14 QC Batch ID: WG1214900-4 QC Sample: L1909238-41 Client ID: DUP Sample						
Arsenic, Total	2.07	1.37	mg/kg	41	Q	20

INORGANICS & MISCELLANEOUS

Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-01

Client ID: SB-1 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 08:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.8		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-02
Client ID: SB-1 (5-7)
Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 08:05
Date Received: 03/08/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-03

Client ID: SB-2 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 08:30

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.5		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-04

Client ID: SB-3 (1-3)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 09:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-05

Client ID: SB-4 (1-3)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 09:30

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.5		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-06
Client ID: SB-5 (3-5)
Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 10:00
Date Received: 03/08/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-07

Client ID: SB-6 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 10:30

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-08

Client ID: SB-6 (4-6)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 10:35

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-09

Client ID: SB-7 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 11:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.9		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-10

Client ID: SB-8 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 11:30

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-11

Client ID: SB-9 (1-3)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 12:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-12

Client ID: SB-10 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 13:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-13

Client ID: SB-11 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 13:30

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.1		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1909188-14

Client ID: SB-12 (2-4)

Sample Location: 100 BOTSFORD PL

Date Collected: 03/05/19 14:00

Date Received: 03/08/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	03/11/19 12:35	121,2540G	JK



Lab Duplicate Analysis

Batch Quality Control

Project Name: 100 BOTSFORD PL

Project Number: 0136-018-004

Lab Number: L1909188

Report Date: 03/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1214450-1 QC Sample: L1909188-01 Client ID: SB-1 (2-4)						
Solids, Total	77.8	77.8	%	0		20

Project Name: 100 BOTSFORD PL**Lab Number:** L1909188**Project Number:** 0136-018-004**Report Date:** 03/14/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1909188-01A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-02A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-03A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-04A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-05A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-06A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-07A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-08A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-09A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-10A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-11A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-12A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-13A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)
L1909188-14A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		AS-TI(180),CR-TI(180),TS(7),CU-TI(180)

Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the

Report Format: DU Report with 'J' Qualifiers



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: 100 BOTSFORD PL
Project Number: 0136-018-004

Lab Number: L1909188
Report Date: 03/14/19

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L1923571
Client:	Turnkey Environmental Restoration, LLC 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Nate Munley
Phone:	(716) 856-0599
Project Name:	100 BOTSFORD
Project Number:	T0136-018-004
Report Date:	06/13/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1923571-01	WC METALS-1	SOIL	100 BOTSFORD	06/04/19 14:30	06/04/19
L1923571-02	WC METALS-2	SOIL	100 BOTSFORD	06/04/19 14:00	06/04/19

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Amita Naik

Title: Technical Director/Representative

Date: 06/13/19

METALS

Project Name: 100 BOTSFORD

Lab Number: L1923571

Project Number: T0136-018-004

Report Date: 06/13/19

SAMPLE RESULTS

Lab ID: L1923571-01
 Client ID: WC METALS-1
 Sample Location: 100 BOTSFORD

Date Collected: 06/04/19 14:30
 Date Received: 06/04/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 06/05/19 19:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	0.407	J	mg/l	1.00	0.019	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Barium, TCLP	0.193	J	mg/l	0.500	0.021	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Chromium, TCLP	0.032	J	mg/l	0.200	0.021	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/10/19 16:49	06/10/19 21:15	EPA 7470A	1,7470A	EA
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/11/19 18:30	06/12/19 13:07	EPA 3015	1,6010D	LC



Project Name: 100 BOTSFORD

Lab Number: L1923571

Project Number: T0136-018-004

Report Date: 06/13/19

SAMPLE RESULTS

Lab ID: L1923571-02

Date Collected: 06/04/19 14:00

Client ID: WC METALS-2

Date Received: 06/04/19

Sample Location: 100 BOTSFORD

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 06/10/19 12:51

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	0.081	J	mg/l	1.00	0.019	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Barium, TCLP	0.312	J	mg/l	0.500	0.021	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Chromium, TCLP	3.91		mg/l	0.200	0.021	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Lead, TCLP	0.034	J	mg/l	0.500	0.027	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/11/19 13:53	06/11/19 16:13	EPA 7470A	1,7470A	GD
Selenium, TCLP	0.052	J	mg/l	0.500	0.035	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/12/19 08:00	06/12/19 14:13	EPA 3015	1,6010D	LC



Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01 Batch: WG1246586-1									
Mercury, TCLP	ND	mg/l	0.0010	0.0005	1	06/10/19 16:49	06/10/19 21:06	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A
TCLP/SPLP Extraction Date: 06/05/19 05:46

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02 Batch: WG1246971-1									
Mercury, TCLP	ND	mg/l	0.0010	0.0005	1	06/11/19 13:53	06/11/19 16:09	1,7470A	GD

Prep Information

Digestion Method: EPA 7470A
TCLP/SPLP Extraction Date: 06/05/19 15:20

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01 Batch: WG1247061-1									
Arsenic, TCLP	ND	mg/l	1.00	0.019	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Barium, TCLP	ND	mg/l	0.500	0.021	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Cadmium, TCLP	ND	mg/l	0.100	0.010	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Chromium, TCLP	ND	mg/l	0.200	0.021	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Lead, TCLP	ND	mg/l	0.500	0.027	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Selenium, TCLP	ND	mg/l	0.500	0.035	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC
Silver, TCLP	ND	mg/l	0.100	0.028	1	06/11/19 18:30	06/12/19 12:10	1,6010D	LC

Prep Information

Digestion Method: EPA 3015
TCLP/SPLP Extraction Date: 06/05/19 05:46



Project Name: 100 BOTSFORD

Lab Number: L1923571

Project Number: T0136-018-004

Report Date: 06/13/19

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02 Batch: WG1247123-1									
Arsenic, TCLP	ND	mg/l	1.00	0.019	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Barium, TCLP	ND	mg/l	0.500	0.021	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Cadmium, TCLP	ND	mg/l	0.100	0.010	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Chromium, TCLP	ND	mg/l	0.200	0.021	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Lead, TCLP	ND	mg/l	0.500	0.027	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Selenium, TCLP	ND	mg/l	0.500	0.035	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB
Silver, TCLP	ND	mg/l	0.100	0.028	1	06/12/19 08:00	06/12/19 20:24	1,6010D	AB

Prep Information

Digestion Method: EPA 3015

TCLP/SPLP Extraction Date: 06/10/19 12:51

Lab Control Sample Analysis

Batch Quality Control

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 Batch: WG1246586-2								
Mercury, TCLP	96		-		80-120	-		
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 Batch: WG1246971-2								
Mercury, TCLP	88		-		80-120	-		
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 Batch: WG1247061-2								
Arsenic, TCLP	109		-		75-125	-		20
Barium, TCLP	100		-		75-125	-		20
Cadmium, TCLP	99		-		75-125	-		20
Chromium, TCLP	94		-		75-125	-		20
Lead, TCLP	95		-		75-125	-		20
Selenium, TCLP	108		-		75-125	-		20
Silver, TCLP	96		-		75-125	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 100 BOTSFORD

Project Number: T0136-018-004

Lab Number: L1923571

Report Date: 06/13/19

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 Batch: WG1247123-2					
Arsenic, TCLP	110	-	75-125	-	20
Barium, TCLP	100	-	75-125	-	20
Cadmium, TCLP	104	-	75-125	-	20
Chromium, TCLP	95	-	75-125	-	20
Lead, TCLP	100	-	75-125	-	20
Selenium, TCLP	112	-	75-125	-	20
Silver, TCLP	92	-	75-125	-	20

Matrix Spike Analysis Batch Quality Control

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1246586-3 QC Sample: L1923491-01 Client ID: MS Sample												
Mercury, TCLP	ND	0.025	0.0232	93	-	-	-	-	80-120	-	-	20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1246971-3 QC Sample: L1923571-02 Client ID: WC METALS-2												
Mercury, TCLP	ND	0.025	0.0230	92	-	-	-	-	80-120	-	-	20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1247061-3 QC Sample: L1923491-01 Client ID: MS Sample												
Arsenic, TCLP	ND	1.2	1.26	105	-	-	-	-	75-125	-	-	20
Barium, TCLP	0.210J	20	19.6	98	-	-	-	-	75-125	-	-	20
Cadmium, TCLP	ND	0.51	0.479	94	-	-	-	-	75-125	-	-	20
Chromium, TCLP	ND	2	1.78	89	-	-	-	-	75-125	-	-	20
Lead, TCLP	ND	5.1	4.62	90	-	-	-	-	75-125	-	-	20
Selenium, TCLP	ND	1.2	1.22	102	-	-	-	-	75-125	-	-	20
Silver, TCLP	ND	0.5	0.466	93	-	-	-	-	75-125	-	-	20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1247123-3 QC Sample: L1923571-02 Client ID: WC METALS-2												
Arsenic, TCLP	0.081J	1.2	1.46	122	-	-	-	-	75-125	-	-	20
Barium, TCLP	0.312J	20	19.0	95	-	-	-	-	75-125	-	-	20
Cadmium, TCLP	ND	0.51	0.498	98	-	-	-	-	75-125	-	-	20
Chromium, TCLP	3.91	2	5.95	102	-	-	-	-	75-125	-	-	20
Lead, TCLP	0.034J	5.1	5.17	101	-	-	-	-	75-125	-	-	20
Selenium, TCLP	0.052J	1.2	1.38	115	-	-	-	-	75-125	-	-	20
Silver, TCLP	ND	0.5	0.492	98	-	-	-	-	75-125	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1246586-4 QC Sample: L1923491-01 Client ID: DUP Sample						
Mercury, TCLP	ND	ND	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1246971-4 QC Sample: L1923571-02 Client ID: WC METALS-2						
Mercury, TCLP	ND	ND	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1247061-4 QC Sample: L1923491-01 Client ID: DUP Sample						
Arsenic, TCLP	ND	ND	mg/l	NC		20
Barium, TCLP	0.210J	0.221J	mg/l	NC		20
Cadmium, TCLP	ND	ND	mg/l	NC		20
Chromium, TCLP	ND	ND	mg/l	NC		20
Lead, TCLP	ND	ND	mg/l	NC		20
Selenium, TCLP	ND	ND	mg/l	NC		20
Silver, TCLP	ND	ND	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1247123-4 QC Sample: L1923571-02 Client ID: WC METALS-2						
Arsenic, TCLP	0.081J	0.082J	mg/l	NC		20
Barium, TCLP	0.312J	0.303J	mg/l	NC		20
Cadmium, TCLP	ND	ND	mg/l	NC		20
Chromium, TCLP	3.91	3.93	mg/l	1		20
Lead, TCLP	0.034J	ND	mg/l	NC		20
Selenium, TCLP	0.052J	0.039J	mg/l	NC		20
Silver, TCLP	ND	ND	mg/l	NC		20

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Serial_No:06131914:21
Lab Number: L1923571
Report Date: 06/13/19

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1923571-01A	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		-
L1923571-01X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.1	Y	Absent		CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1923571-01X9	Tumble Vessel	A	NA		4.1	Y	Absent		-
L1923571-02A	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		-
L1923571-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.1	Y	Absent		CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1923571-02X9	Tumble Vessel	A	NA		4.1	Y	Absent		-

Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: 100 BOTSFORD
Project Number: T0136-018-004

Lab Number: L1923571
Report Date: 06/13/19

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

