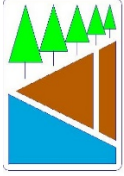




June 12, 2019

Soil Sampling at Top of Bank Report
36 to 46 Main Street,
City of Mississauga

Project 18*4458 BRUCE A. BROWN ASSOCIATES LIMITED
Consultants in the Environmental and Applied Earth Sciences



BRUCE A. BROWN ASSOCIATES LIMITED

Consultants in the Environmental and Applied Earth Sciences

101-102 Aerodrome Crescent

Toronto, Ontario, Canada M4G 4J4

Tel: (416) 424-3355 Email bruce@brownassociates.ca

Project 18*4458

June 12, 2019

Mr. Chris Zeppa
2576955 Ontario Inc.,
c/o City Park Homes Inc.
950 Nashville Road
Kleinburg, ON L0J 1C0

Email: mmonass@cityparkhomes.ca

Dear Mr. Zeppa,

Re: Soil Sampling at Top of Bank
36 to 46 Main Street, Mississauga

Introduction

The Main Street property has been in residential use for many decades, and detached single family residences have been demolished in preparation for construction of a townhome redevelopment. The early use of the land was industrial, as a 19th century mill. The mill race remains along the base of slope to the rear. Earlier slope stability analyses by Terraprobe, in February 2015, identified a variable depth of fill in the supporting boreholes developed as wells, which remain on site. No Phase 2 investigation including soil quality information was associated with that effort.

The 2015 geotechnical investigation identified a variable depth of heterogeneous fill from 0.8m (boreholes 2 to 5) to 2.3m (boreholes 6 to 9) and noted occasional fragments of concrete in fill but no other deleterious materials. The complete Terraprobe report was appended to Brown Associates' Phase 1 report dated November, 2017.

The proposed development plan provides for a standard 15m setback from the surveyed top of bank as approved by the City together with Credit Conservation Authority, and for which survey bars have been planted to delineate top of bank. The proposed setback zone is flat table lands and is tree-covered. Number tags on trees suggest an arborist report has been completed, however Brown Associates is not privy to the findings of a report. Generally, one would anticipate retention of all overstory vegetation in good condition and retention of grades within the dedication zone, all of which is reflected in the site plan and engineering designs for the towns.

The City has requested chemical characterization of soil in the dedication lands. Because of the proximity within 30 from the mill race, which has seasonal water flow in peak periods, since bedrock is generally deeper than 1.5m depth below table land, and because there is no reliance on groundwater for potable purposes, the appropriate generic criteria for soil are set out in Table 9 of O.Reg. 153/04.

Field Investigation

On the morning of May 14, 2019, our senior technologist attended to the subject site for the purposes of obtaining four soil samples plus one duplicate QA/QC sample representative of the soils at the top of bank. A tractor-mounted backhoe was available onsite and intended for this investigation; however because of the presence of mature trees which could potentially be damaged, soil samples directly at the top of bank were obtained using hand equipment, excavating to depths of 900 mm below present grades in four locations as indicated on attached **Figure 2-E**. A composite sample of heterogeneous fill materials was taken at each location from between 300 and 900mm depth, and then blended and quartered to fill the laboratory-supplied sample container. Soils were predominantly silt-sized with some sand and trace gravel sizes. No concrete or other deleterious materials were visually noted. No odour or staining of soils was noted. Soils are considered medium to fine-textured, notwithstanding Terraprobe descriptions from borehole logs as having significant sand and gravel-size content. Grain-size is not critical to Table 9 criteria.

Four representative samples of the fill soils from 0.3 to 0.9 meters below grade, plus one duplicate blind sample split from Test Pit 04 materials and labeled as sample 05-005, were direct driven to Maxxam Laboratories, now with a name change to BV Analytics. Soil samples were submitted for comparison to medium and fine-textured soils criteria for Table 9 Residential and Parkland uses for analyses of metals and inorganics. Further QA-QC efforts included a laboratory duplicate analysis of sample 02-002.

The attached results returned on May 24, 2019 found two of the four test locations for which the soils failed to meet Table 9 standards for all parameters. The soil from Test Pit 01 had an arsenic content of 19 µg/gm in comparison to a Table 9 standard of 18 µg/gm. The same sample had a copper value of 140 µg/gm in comparison to a Table 9 standard of 92 µg/gm. Soil from test pit 04 met Table 9 standards for all parameters, except copper with two analyses of 95 and 100 µg/gm. No other exceedances for any other parameters were identified in any test location.

Discussion

When exceedances relative to generic standards are encountered, there are several means for dealing with these. The soil materials in question can be excavated and removed from the site, replacing and fine grading with clean materials and topsoil, as may be required. This would have the result of removal of all topsoil, natural ground cover and all trees, and a need to replace vegetation to permit long-term naturalization. The mature tree canopy would be lost for at least a generation.

The Regulation permits taking of additional soil samples within a 1m radius and averaging findings.

It is also possible to apply a modified generic risk assessment approach to assess pathways for contaminant migration and receptors, and to establish less stringent risk-based standards applicable to the site if some pathways and receptors can be removed from the model. When these site-specific standards are applied, the Ministry of the Environment, Conservation and Parks requires a Certificate of Property Use (CPU) to be registered against the property. This process is time-consuming and costly, requiring several iterations of submissions and review. It is also abundantly clear that the most critical issues impacting on transition metals and arsenic in soils at depth would be direct ingestion of soil, and possibly eating raw vegetables grown in the soil. The proposed dedication would be fenced from the residential rear yards and allowed to naturalize, resulting in an effective protection by presence of existing well-established mature trees and ground cover, which should continue to mature and naturalize.

We note that the Regulation has no provision to accommodate laboratory margins of error, which would provide for plus-or-minus ranges on reported concentrations. In this case, all but one copper finding in Test Pit 01 would fall well within these very real margins. Taking additional samples would most likely produce a similar scattering of marginal numbers for some transition metals, since they are most likely related to traces of cinders and ash from 19th century activities. Random minor exceedances in copper, arsenic and other transition metals, especially lead and zinc, would be expected in a larger suite of additional samples if there are any traces of coal ash mixed with fill materials.

If the City of Mississauga will accept land dedications only with strict conformity to policy generic standards, it would either be at the expense of the mature trees on the rear of the Main Street properties, or with registration of a Certificate of Property Use against title. A CPU on title, which would result from a modified generic risk assessment process, would include such prohibitions as not ingesting soil, not growing root vegetables for food, not disturbing grades and providing criteria for management of surplus soil generated from excavations – none of which are likely to occur within an addition to the Credit River corridor where the contiguous historic mill race should be preserved.

Under these circumstances there is a reasonable case for the City to accept the lands in present form and condition, with provisions for protection of trees, understory vegetation and grades, by establishing and maintaining a silt fence at the drip-line of trees to be preserved during redevelopment, provision of an engineering design which does not concentrate overland stormwater flows to any locations within the dedication block, decommissioning of the Terraprobe wells by a licensed well technician in accordance with provisions of O.Reg. 903, and provision of a permanent fence along the rear yards of the towns backing on the open space block.

Qualification

Brown Associates Limited is a full-services environmental consulting firm which has carried out more than 4,400 environmental evaluations over the past 48 years. The firm is qualified to manage asbestos, PCBs, pre-demolition surveys, designated substances inventories, geotechnical site evaluation, and soil and groundwater characterization and abatement programs. Brown Associates Limited carries \$2 million in environmental liability insurance and \$2 million in errors and omissions insurance, and enjoys a claims-free status.

Dr. Brown is a Professional Engineer and a Qualified Person, recognized by the Ontario Ministry of the Environment, Conservation and Parks, and has a B.Sc. in Geology and Chemistry, Queen's University (1968) and a Doctorate in Geochemistry, Oxford University (1970).

Closure

We trust that this information is sufficient for your present requirements. Should any questions arise, please do not hesitate to call. Thank you for this opportunity to be of service.

Yours very truly,

BRUCE A. BROWN ASSOCIATES LIMITED



Bruce A. Brown, Ph. D., RPP, MCIP, P. Eng., QP_(ESA)
Principal Engineer



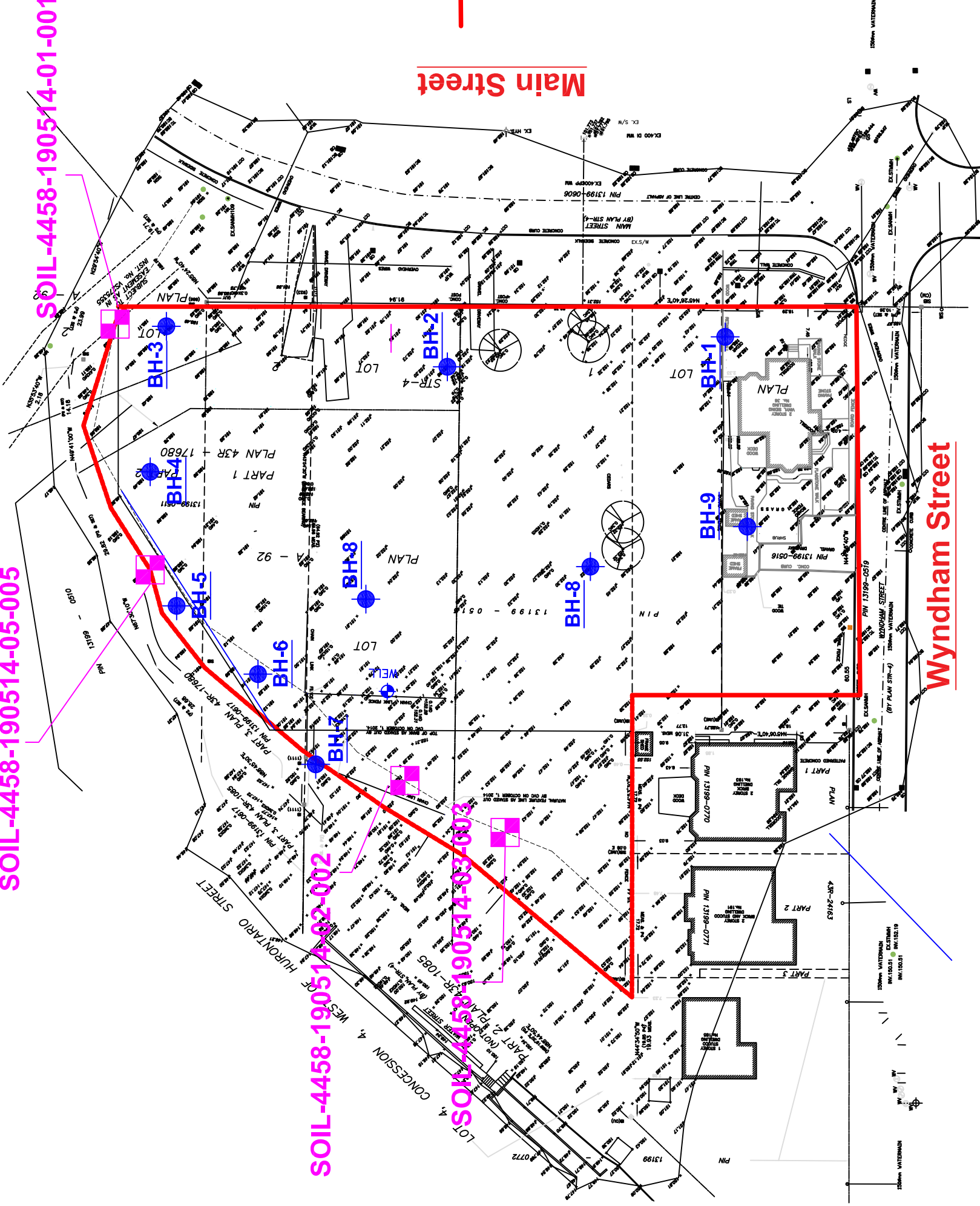
Enclosures: Figure 2-E – Borehole & Soil Sample Location Plan
Soil Summary Table
Maxxam Environmental Analytical Report

cc: Mr. Evan Perlman, GSAI, evanp@gsai.ca



**SOIL-4458-190514-04-004 and
SOIL-4458-190514-05-005**

SOIL-4458-190514-01-001



Notes:

- (1) Site Drawing based on drawings supplied by Condeland Engineering.
 - (2) Results compiled from boreholes advanced by Terraprobe and Test Pits by Bruce A. Brown Associates Limited, as indicated.
- Soil sample by Bruce A. Brown Associates Limited
May 14, 2019
- Borehole by Terraprobe, September 2014.
- Well by unknown
- Approximate property line. Please consult site survey for actual boundary.



Figure:

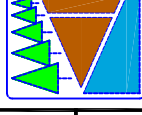
2-E

Title:
Borehole and Soil Sample Location Plan
36 to 46 Main Street & 190 Wyndham Street, City of Mississauga

Client:
2576955 Ontario Inc.,
c/o City Park Homes Inc.,
950 Nashville Road
Kleinburg, ON L0J 1C0

Drawn By:
C. Colbourne, A.Sc.T.
Project No.:
18*4458

Date:
May 29, 2019
Drawing No.:
4458190529-002E



BRUCE A. BROWN ASSOCIATES LIMITED
Consultants in the Environmental and Applied Earth Sciences
101-102 Aerodrome Crescent Toronto, Ontario
M4G 4J4 Tel [416] 424-3355

Soil Summary
INORGANIC PARAMETERS

Parameters	Standard, Table 9, Fine Textured Soils, Park Land, Residential	Reporting Limit	Units
Antimony	1.3	0.2	ug/g
Arsenic	18	1	ug/g
Barium	220	0.5	ug/g
Beryllium	2.5	0.2	ug/g
Boron (Hot Water Soluble)	1.5	0.05	ug/g
Cadmium	1.2	0.1	ug/g
Chromium	70	1	ug/g
Chromium VI	0.66	0.2	ug/g
Cobalt	22	0.1	ug/g
Copper	92	0.5	ug/g
Lead	120	1	ug/g
Mercury	0.27	0.05	ug/g
Molybdenum	2	0.5	ug/g
Nickel	82	0.5	ug/g
Selenium	1.5	0.5	ug/g
Silver	0.5	0.2	ug/g
Thallium	1	0.05	ug/g
Vanadium	86	5	ug/g
Zinc	290	5	ug/g
pH (pH Units)	NV		%
Conductivity (ms/cm)	0.7	0.002	mS/cm
Sodium Adsorption Ratio	5		N/A
Cyanide, Free	0.051	0.01	ug/g
Chloride	NV	-	-
Boron (Total)	36	5	ug/g
Uranium	2.5	0.05	ug/g

Field Sample ID No.:	SOIL-4458-190514-01-001	SOIL-4458-190514-02-002	SOIL-4458-190514-03-003	SOIL-4458-190514-04-004	SOIL-4458-190514-05-005
Sample Interval (mbgs)	Grade to 0.9	Grade to 0.9	Grade to 0.9	Grade to 0.9	Duplicate of 004
Date of Sample:	14-May-2019	14-May-2019	14-May-2019	14-May-2019	14-May-2019
	0.52	0.38	<0.20	0.8	0.6
	19	11	5	12	13
	66	62	74	81	86
	0.94	0.71	0.64	0.69	0.73
	0.4	0.61	0.35	0.9	0.86
	0.21	0.21	0.12	0.26	0.22
	26	21	20	19	21
	<0.2	<0.2	<0.2	<0.2	<0.2
	20	15	11	13	15
	140	81	33	95	100
	27	28	18	49	52
	0.08	0.05	<0.050	0.1	0.11
	1.9	0.99	<0.50	1	1.4
	31	26	22	23	25
	<0.50	<0.50	<0.50	<0.50	<0.50
	0.4	0.26	<0.20	0.23	0.27
	0.22	0.17	0.14	0.15	0.17
	33	28	30	29	30
	100	93	66	91	90
	7.51	7.6	7.6	7.34	7.44
	0.18	0.19	0.17	0.15	0.18
	0.24	0.24	0.23	0.25	0.23
	<0.01	<0.01	<0.01	<0.01	<0.01
	-	-	-	-	-
	13	12	8.4	11	12
	0.61	0.64	0.61	0.41	0.42

NOTES:

NV = No value

XX.XX Denotes exceedance of the standard

1. Criteria refers to Ministry of Environment "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" March 9, 2004, amended as of July 1, 2011

2. This table represents a summary of the data presented in the Laboratory Certificate of Analysis for convenience purposes only

3. This summary is to be used in conjunction with, not as a replacement of, the Laboratory Certificate of Analysis which contains all QA/QC information

Your Project #: 4458
Site Location: MAIN ST.
Your C.O.C. #: 125650

Attention: Craig Colbourne

Bruce A. Brown Associates Limited
101-102 Aerodrome Cr
Toronto, ON
CANADA M4G 4J4

Report Date: 2019/05/24
Report #: R5723438
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C8365
Received: 2019/05/14, 14:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Hot Water Extractable Boron	5	2019/05/15	2019/05/15	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	5	2019/05/16	2019/05/17	CAM SOP-00457	OMOE E3015 m
Conductivity	5	2019/05/17	2019/05/17	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	5	2019/05/16	2019/05/16	CAM SOP-00436	EPA 3060/7199 m
Strong Acid Leachable Metals by ICPMS	4	2019/05/15	2019/05/15	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS	1	2019/05/15	2019/05/16	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2019/05/15	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl ₂ EXTRACT	5	2019/05/15	2019/05/15	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	5	N/A	2019/05/17	CAM SOP-00102	EPA 6010C

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Your Project #: 4458
Site Location: MAIN ST.
Your C.O.C. #: 125650

Attention: Craig Colbourne

Bruce A. Brown Associates Limited
101-102 Aerodrome Cr
Toronto, ON
CANADA M4G 4J4

Report Date: 2019/05/24
Report #: R5723438
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C8365
Received: 2019/05/14, 14:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ronklin Gracian, Project Manager
Email: RGracian@maxxam.ca
Phone# (905)817-5752

=====
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF SOIL

Maxxam ID			JSB219			JSB219		
Sampling Date			2019/05/14			2019/05/14		
COC Number			125650			125650		
	UNITS	Criteria	SOIL-4458-190514-01-001	RDL	QC Batch	SOIL-4458-190514-01-001 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	5.0	0.24		6120086			
Inorganics								
Conductivity	mS/cm	0.7	0.18	0.002	6127145	0.18	0.002	6127145
Moisture	%	-	18	1.0	6123240			
Available (CaCl2) pH	pH	-	7.51		6122353			
WAD Cyanide (Free)	ug/g	0.051	ND	0.01	6125159			
No Fill	No Exceedance							
Grey	Exceeds 1 criteria policy/level							
Black	Exceeds both criteria/levels							
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)								
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition								
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use								
ND = Not detected								

Maxxam ID			JSB220			JSB220		
Sampling Date			2019/05/14			2019/05/14		
COC Number			125650			125650		
	UNITS	Criteria	SOIL-4458-190514-02-002	RDL	QC Batch	SOIL-4458-190514-02-002 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	5.0	0.24		6120086			
Inorganics								
Conductivity	mS/cm	0.7	0.19	0.002	6127145			
Moisture	%	-	17	1.0	6123240			
Available (CaCl2) pH	pH	-	7.60		6122353			
WAD Cyanide (Free)	ug/g	0.051	ND	0.01	6125159	ND	0.01	6125159
No Fill	No Exceedance							
Grey	Exceeds 1 criteria policy/level							
Black	Exceeds both criteria/levels							
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)								
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition								
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use								
ND = Not detected								

RESULTS OF ANALYSES OF SOIL

Maxxam ID			JSB221	JSB222	JSB223		
Sampling Date			2019/05/14	2019/05/14	2019/05/14		
COC Number			125650	125650	125650		
	UNITS	Criteria	SOIL-4458-190514-03-003	SOIL-4458-190514-04-004	SOIL-4458-190514-05-005	RDL	QC Batch

Calculated Parameters							
Sodium Adsorption Ratio	N/A	5.0	0.23	0.25	0.23		6120086

Inorganics							
Conductivity	mS/cm	0.7	0.17	0.15	0.18	0.002	6127145
Moisture	%	-	16	18	19	1.0	6123240
Available (CaCl2) pH	pH	-	7.60	7.34	7.44		6122455
WAD Cyanide (Free)	ug/g	0.051	ND	ND	ND	0.01	6125159

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
ND = Not detected

Maxxam ID			JSB223		
Sampling Date			2019/05/14		
COC Number			125650		
	UNITS	Criteria	SOIL-4458-190514-05-005	RDL	QC Batch
			Lab-Dup		

Inorganics					
Moisture	%	-	20	1.0	6123240

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			JSB219		JSB220		
Sampling Date			2019/05/14		2019/05/14		
COC Number			125650		125650		
	UNITS	Criteria	SOIL-4458-190514-01-001	QC Batch	SOIL-4458-190514-02-002	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	0.66	ND	6124625	ND	0.2	6124625
Metals							
Hot Water Ext. Boron (B)	ug/g	1.5	0.40	6122962	0.61	0.050	6122962
Acid Extractable Antimony (Sb)	ug/g	1.3	0.52	6122628	0.38	0.20	6123049
Acid Extractable Arsenic (As)	ug/g	18	19	6122628	11	1.0	6123049
Acid Extractable Barium (Ba)	ug/g	220	66	6122628	62	0.50	6123049
Acid Extractable Beryllium (Be)	ug/g	2.5	0.94	6122628	0.71	0.20	6123049
Acid Extractable Boron (B)	ug/g	36	13	6122628	12	5.0	6123049
Acid Extractable Cadmium (Cd)	ug/g	1.2	0.21	6122628	0.21	0.10	6123049
Acid Extractable Chromium (Cr)	ug/g	70	26	6122628	21	1.0	6123049
Acid Extractable Cobalt (Co)	ug/g	22	20	6122628	15	0.10	6123049
Acid Extractable Copper (Cu)	ug/g	92	140	6122628	81	0.50	6123049
Acid Extractable Lead (Pb)	ug/g	120	27	6122628	28	1.0	6123049
Acid Extractable Molybdenum (Mo)	ug/g	2	1.9	6122628	0.99	0.50	6123049
Acid Extractable Nickel (Ni)	ug/g	82	31	6122628	26	0.50	6123049
Acid Extractable Selenium (Se)	ug/g	1.5	ND	6122628	ND	0.50	6123049
Acid Extractable Silver (Ag)	ug/g	0.5	0.40	6122628	0.26	0.20	6123049
Acid Extractable Thallium (Tl)	ug/g	1	0.22	6122628	0.17	0.050	6123049
Acid Extractable Uranium (U)	ug/g	2.5	0.61	6122628	0.64	0.050	6123049
Acid Extractable Vanadium (V)	ug/g	86	33	6122628	28	5.0	6123049
Acid Extractable Zinc (Zn)	ug/g	290	100	6122628	93	5.0	6123049
Acid Extractable Mercury (Hg)	ug/g	0.27	0.080	6122628	0.050	0.050	6123049
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition							
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use							
ND = Not detected							

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			JSB220			JSB221		
Sampling Date			2019/05/14			2019/05/14		
COC Number			125650			125650		
	UNITS	Criteria	SOIL-4458-190514-02-002 Lab-Dup	RDL	QC Batch	SOIL-4458-190514-03-003	RDL	QC Batch

Inorganics								
Chromium (VI)	ug/g	0.66	ND	0.2	6124625	ND	0.2	6124625
Metals								
Hot Water Ext. Boron (B)	ug/g	1.5				0.35	0.050	6122962
Acid Extractable Antimony (Sb)	ug/g	1.3	0.38	0.20	6123049	ND	0.20	6123049
Acid Extractable Arsenic (As)	ug/g	18	12	1.0	6123049	5.0	1.0	6123049
Acid Extractable Barium (Ba)	ug/g	220	66	0.50	6123049	74	0.50	6123049
Acid Extractable Beryllium (Be)	ug/g	2.5	0.76	0.20	6123049	0.64	0.20	6123049
Acid Extractable Boron (B)	ug/g	36	12	5.0	6123049	8.4	5.0	6123049
Acid Extractable Cadmium (Cd)	ug/g	1.2	0.27	0.10	6123049	0.12	0.10	6123049
Acid Extractable Chromium (Cr)	ug/g	70	21	1.0	6123049	20	1.0	6123049
Acid Extractable Cobalt (Co)	ug/g	22	15	0.10	6123049	11	0.10	6123049
Acid Extractable Copper (Cu)	ug/g	92	84	0.50	6123049	33	0.50	6123049
Acid Extractable Lead (Pb)	ug/g	120	29	1.0	6123049	18	1.0	6123049
Acid Extractable Molybdenum (Mo)	ug/g	2	1.1	0.50	6123049	ND	0.50	6123049
Acid Extractable Nickel (Ni)	ug/g	82	27	0.50	6123049	22	0.50	6123049
Acid Extractable Selenium (Se)	ug/g	1.5	ND	0.50	6123049	ND	0.50	6123049
Acid Extractable Silver (Ag)	ug/g	0.5	0.25	0.20	6123049	ND	0.20	6123049
Acid Extractable Thallium (Tl)	ug/g	1	0.18	0.050	6123049	0.14	0.050	6123049
Acid Extractable Uranium (U)	ug/g	2.5	0.67	0.050	6123049	0.61	0.050	6123049
Acid Extractable Vanadium (V)	ug/g	86	29	5.0	6123049	30	5.0	6123049
Acid Extractable Zinc (Zn)	ug/g	290	95	5.0	6123049	66	5.0	6123049
Acid Extractable Mercury (Hg)	ug/g	0.27	ND	0.050	6123049	ND	0.050	6123049

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 Lab-Dup = Laboratory Initiated Duplicate
 Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
 Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition
 Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
 ND = Not detected

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID			JSB222		JSB223		
Sampling Date			2019/05/14		2019/05/14		
COC Number			125650		125650		
	UNITS	Criteria	SOIL-4458-190514-04-004	QC Batch	SOIL-4458-190514-05-005	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	0.66	ND	6124625	ND	0.2	6124625
Metals							
Hot Water Ext. Boron (B)	ug/g	1.5	0.90	6122962	0.86	0.050	6122962
Acid Extractable Antimony (Sb)	ug/g	1.3	0.80	6122628	0.60	0.20	6123049
Acid Extractable Arsenic (As)	ug/g	18	12	6122628	13	1.0	6123049
Acid Extractable Barium (Ba)	ug/g	220	81	6122628	86	0.50	6123049
Acid Extractable Beryllium (Be)	ug/g	2.5	0.69	6122628	0.73	0.20	6123049
Acid Extractable Boron (B)	ug/g	36	11	6122628	12	5.0	6123049
Acid Extractable Cadmium (Cd)	ug/g	1.2	0.26	6122628	0.22	0.10	6123049
Acid Extractable Chromium (Cr)	ug/g	70	19	6122628	21	1.0	6123049
Acid Extractable Cobalt (Co)	ug/g	22	13	6122628	15	0.10	6123049
Acid Extractable Copper (Cu)	ug/g	92	95	6122628	100	0.50	6123049
Acid Extractable Lead (Pb)	ug/g	120	49	6122628	52	1.0	6123049
Acid Extractable Molybdenum (Mo)	ug/g	2	1.0	6122628	1.4	0.50	6123049
Acid Extractable Nickel (Ni)	ug/g	82	23	6122628	25	0.50	6123049
Acid Extractable Selenium (Se)	ug/g	1.5	ND	6122628	ND	0.50	6123049
Acid Extractable Silver (Ag)	ug/g	0.5	0.23	6122628	0.27	0.20	6123049
Acid Extractable Thallium (Tl)	ug/g	1	0.15	6122628	0.17	0.050	6123049
Acid Extractable Uranium (U)	ug/g	2.5	0.41	6122628	0.42	0.050	6123049
Acid Extractable Vanadium (V)	ug/g	86	29	6122628	30	5.0	6123049
Acid Extractable Zinc (Zn)	ug/g	290	91	6122628	90	5.0	6123049
Acid Extractable Mercury (Hg)	ug/g	0.27	0.10	6122628	0.11	0.050	6123049
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition							
Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use							
ND = Not detected							

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.7°C
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Sample JSB219 [SOIL-4458-190514-01-001] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample JSB220 [SOIL-4458-190514-02-002] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample JSB221 [SOIL-4458-190514-03-003] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample JSB222 [SOIL-4458-190514-04-004] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample JSB223 [SOIL-4458-190514-05-005] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6122353	GTO	Spiked Blank	Available (CaCl2) pH	2019/05/15		100	%	97 - 103
6122353	GTO	RPD	Available (CaCl2) pH	2019/05/15	0.68		%	N/A
6122455	GTO	Spiked Blank	Available (CaCl2) pH	2019/05/15		100	%	97 - 103
6122455	GTO	RPD	Available (CaCl2) pH	2019/05/15	1.3		%	N/A
6122628	DT1	Matrix Spike	Acid Extractable Antimony (Sb)	2019/05/15		83	%	75 - 125
			Acid Extractable Arsenic (As)	2019/05/15		99	%	75 - 125
			Acid Extractable Barium (Ba)	2019/05/15		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/05/15		101	%	75 - 125
			Acid Extractable Boron (B)	2019/05/15		82	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/05/15		103	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/05/15		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/05/15		102	%	75 - 125
			Acid Extractable Copper (Cu)	2019/05/15		98	%	75 - 125
			Acid Extractable Lead (Pb)	2019/05/15		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/05/15		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/05/15		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2019/05/15		103	%	75 - 125
			Acid Extractable Silver (Ag)	2019/05/15		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/05/15		97	%	75 - 125
			Acid Extractable Uranium (U)	2019/05/15		99	%	75 - 125
			Acid Extractable Vanadium (V)	2019/05/15		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/05/15		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/05/15		100	%	75 - 125
6122628	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2019/05/15		100	%	80 - 120
			Acid Extractable Arsenic (As)	2019/05/15		99	%	80 - 120
			Acid Extractable Barium (Ba)	2019/05/15		96	%	80 - 120
			Acid Extractable Beryllium (Be)	2019/05/15		95	%	80 - 120
			Acid Extractable Boron (B)	2019/05/15		99	%	80 - 120
			Acid Extractable Cadmium (Cd)	2019/05/15		98	%	80 - 120
			Acid Extractable Chromium (Cr)	2019/05/15		103	%	80 - 120
			Acid Extractable Cobalt (Co)	2019/05/15		102	%	80 - 120
			Acid Extractable Copper (Cu)	2019/05/15		98	%	80 - 120
			Acid Extractable Lead (Pb)	2019/05/15		99	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2019/05/15		97	%	80 - 120
			Acid Extractable Nickel (Ni)	2019/05/15		99	%	80 - 120
			Acid Extractable Selenium (Se)	2019/05/15		104	%	80 - 120
			Acid Extractable Silver (Ag)	2019/05/15		98	%	80 - 120
			Acid Extractable Thallium (Tl)	2019/05/15		96	%	80 - 120
			Acid Extractable Uranium (U)	2019/05/15		99	%	80 - 120
			Acid Extractable Vanadium (V)	2019/05/15		103	%	80 - 120
			Acid Extractable Zinc (Zn)	2019/05/15		107	%	80 - 120
			Acid Extractable Mercury (Hg)	2019/05/15		98	%	80 - 120
6122628	DT1	Method Blank	Acid Extractable Antimony (Sb)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Arsenic (As)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Barium (Ba)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Beryllium (Be)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Boron (B)	2019/05/15	ND, RDL=5.0		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2019/05/15	ND, RDL=0.10		ug/g	
			Acid Extractable Chromium (Cr)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Cobalt (Co)	2019/05/15	ND, RDL=0.10		ug/g	
			Acid Extractable Copper (Cu)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Lead (Pb)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Nickel (Ni)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Selenium (Se)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Silver (Ag)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Thallium (Tl)	2019/05/15	ND, RDL=0.050		ug/g	
			Acid Extractable Uranium (U)	2019/05/15	ND, RDL=0.050		ug/g	
			Acid Extractable Vanadium (V)	2019/05/15	ND, RDL=5.0		ug/g	
			Acid Extractable Zinc (Zn)	2019/05/15	ND, RDL=5.0		ug/g	
			Acid Extractable Mercury (Hg)	2019/05/15	ND, RDL=0.050		ug/g	
6122962	APT	Matrix Spike	Hot Water Ext. Boron (B)	2019/05/15		94	%	75 - 125
6122962	APT	Spiked Blank	Hot Water Ext. Boron (B)	2019/05/15		92	%	75 - 125
6122962	APT	Method Blank	Hot Water Ext. Boron (B)	2019/05/15	ND, RDL=0.050		ug/g	
6122962	APT	RPD	Hot Water Ext. Boron (B)	2019/05/15	12		%	40
6123049	DT1	Matrix Spike [JSB220-01]	Acid Extractable Antimony (Sb)	2019/05/15		95	%	75 - 125
			Acid Extractable Arsenic (As)	2019/05/15		111	%	75 - 125
			Acid Extractable Barium (Ba)	2019/05/15		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/05/15		110	%	75 - 125
			Acid Extractable Boron (B)	2019/05/15		107	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/05/15		107	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/05/15		113	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/05/15		109	%	75 - 125
			Acid Extractable Copper (Cu)	2019/05/15		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2019/05/15		NC	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/05/15		106	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/05/15		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2019/05/15		110	%	75 - 125
			Acid Extractable Silver (Ag)	2019/05/15		107	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/05/15		107	%	75 - 125
			Acid Extractable Uranium (U)	2019/05/15		108	%	75 - 125
			Acid Extractable Vanadium (V)	2019/05/15		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/05/15		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/05/15		101	%	75 - 125
6123049	DT1	Spiked Blank	Acid Extractable Antimony (Sb)	2019/05/15		102	%	80 - 120
			Acid Extractable Arsenic (As)	2019/05/15		104	%	80 - 120

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Barium (Ba)	2019/05/15		102	%	80 - 120
			Acid Extractable Beryllium (Be)	2019/05/15		101	%	80 - 120
			Acid Extractable Boron (B)	2019/05/15		99	%	80 - 120
			Acid Extractable Cadmium (Cd)	2019/05/15		101	%	80 - 120
			Acid Extractable Chromium (Cr)	2019/05/15		102	%	80 - 120
			Acid Extractable Cobalt (Co)	2019/05/15		105	%	80 - 120
			Acid Extractable Copper (Cu)	2019/05/15		103	%	80 - 120
			Acid Extractable Lead (Pb)	2019/05/15		102	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2019/05/15		102	%	80 - 120
			Acid Extractable Nickel (Ni)	2019/05/15		104	%	80 - 120
			Acid Extractable Selenium (Se)	2019/05/15		106	%	80 - 120
			Acid Extractable Silver (Ag)	2019/05/15		103	%	80 - 120
			Acid Extractable Thallium (Tl)	2019/05/15		101	%	80 - 120
			Acid Extractable Uranium (U)	2019/05/15		100	%	80 - 120
			Acid Extractable Vanadium (V)	2019/05/15		103	%	80 - 120
			Acid Extractable Zinc (Zn)	2019/05/15		104	%	80 - 120
			Acid Extractable Mercury (Hg)	2019/05/15		98	%	80 - 120
6123049	DT1	Method Blank	Acid Extractable Antimony (Sb)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Arsenic (As)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Barium (Ba)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Beryllium (Be)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Boron (B)	2019/05/15	ND, RDL=5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2019/05/15	ND, RDL=0.10		ug/g	
			Acid Extractable Chromium (Cr)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Cobalt (Co)	2019/05/15	ND, RDL=0.10		ug/g	
			Acid Extractable Copper (Cu)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Lead (Pb)	2019/05/15	ND, RDL=1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Nickel (Ni)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Selenium (Se)	2019/05/15	ND, RDL=0.50		ug/g	
			Acid Extractable Silver (Ag)	2019/05/15	ND, RDL=0.20		ug/g	
			Acid Extractable Thallium (Tl)	2019/05/15	ND, RDL=0.050		ug/g	
			Acid Extractable Uranium (U)	2019/05/15	ND, RDL=0.050		ug/g	
			Acid Extractable Vanadium (V)	2019/05/15	ND, RDL=5.0		ug/g	
			Acid Extractable Zinc (Zn)	2019/05/15	ND, RDL=5.0		ug/g	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Mercury (Hg)	2019/05/15	ND, RDL=0.050		ug/g	
6123049	DT1	RPD [JSB220-01]	Acid Extractable Antimony (Sb)	2019/05/15	1.3		%	30
			Acid Extractable Arsenic (As)	2019/05/15	5.1		%	30
			Acid Extractable Barium (Ba)	2019/05/15	6.3		%	30
			Acid Extractable Beryllium (Be)	2019/05/15	5.7		%	30
			Acid Extractable Boron (B)	2019/05/15	6.5		%	30
			Acid Extractable Cadmium (Cd)	2019/05/15	26		%	30
			Acid Extractable Chromium (Cr)	2019/05/15	0.046		%	30
			Acid Extractable Cobalt (Co)	2019/05/15	2.2		%	30
			Acid Extractable Copper (Cu)	2019/05/15	4.2		%	30
			Acid Extractable Lead (Pb)	2019/05/15	5.9		%	30
			Acid Extractable Molybdenum (Mo)	2019/05/15	6.2		%	30
			Acid Extractable Nickel (Ni)	2019/05/15	2.3		%	30
			Acid Extractable Selenium (Se)	2019/05/15	NC		%	30
			Acid Extractable Silver (Ag)	2019/05/15	4.4		%	30
			Acid Extractable Thallium (Tl)	2019/05/15	6.9		%	30
			Acid Extractable Uranium (U)	2019/05/15	4.6		%	30
			Acid Extractable Vanadium (V)	2019/05/15	4.5		%	30
			Acid Extractable Zinc (Zn)	2019/05/15	1.2		%	30
			Acid Extractable Mercury (Hg)	2019/05/15	0.84		%	30
6123240	JMP	RPD [JSB223-01]	Moisture	2019/05/15	5.7		%	20
6124625	SAC	Matrix Spike [JSB220-01]	Chromium (VI)	2019/05/16		57 (1)	%	70 - 130
6124625	SAC	Spiked Blank	Chromium (VI)	2019/05/16		90	%	80 - 120
6124625	SAC	Method Blank	Chromium (VI)	2019/05/16	ND, RDL=0.2		ug/g	
6124625	SAC	RPD [JSB220-01]	Chromium (VI)	2019/05/16	NC		%	35
6125159	BKE	Matrix Spike [JSB220-01]	WAD Cyanide (Free)	2019/05/17		91	%	75 - 125
6125159	BKE	Spiked Blank	WAD Cyanide (Free)	2019/05/17		98	%	80 - 120
6125159	BKE	Method Blank	WAD Cyanide (Free)	2019/05/17	ND, RDL=0.01		ug/g	
6125159	BKE	RPD [JSB220-01]	WAD Cyanide (Free)	2019/05/17	NC		%	35
6127145	KAD	Spiked Blank	Conductivity	2019/05/17		104	%	90 - 110
6127145	KAD	Method Blank	Conductivity	2019/05/17	ND, RDL=0.002		mS/cm	
6127145	KAD	RPD [JSB219-01]	Conductivity	2019/05/17	0.73		%	10

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Exceedence Summary Table – Reg153/04 T9-Soil/Res
Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
SOIL-4458-190514-01-001	JSB219-01	Acid Extractable Arsenic (As)	18	19	1.0	ug/g
SOIL-4458-190514-01-001	JSB219-01	Acid Extractable Copper (Cu)	92	140	0.50	ug/g
SOIL-4458-190514-04-004	JSB222-01	Acid Extractable Copper (Cu)	92	95	0.50	ug/g
SOIL-4458-190514-05-005	JSB223-01	Acid Extractable Copper (Cu)	92	100	0.50	ug/g

The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.