Bottom Ash Data

2020 Week 18

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on May 20, 2020. The data represents bottom ash composite results for week 18 of 2020 (April 26, 2020 to May 2, 2020).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for disposal.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5956**	Page	: 1 of 11
Client	: **Covanta Burnaby Renewable Energy, ULC**	Laboratory	: Vancouver - Environmental
Contact	: Steve McKinney	Account Manager	: Brent Mack
Address	: 5150 Riverbend Drive Burnaby BC Canada V3N 4V3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 521 1025	Telephone	: +1 604 253 4188
Project	: Weekly Bottom Ash-Suite	Date Samples Received	: 05-May-2020 11:40
PO	: VANCO 0000049378	Date Analysis Commenced	: 07-May-2020
C-O-C number	: ----	Issue Date	: 19-May-2020 13:02
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-1	BA2018-A-2	BA2018-A-3	BA2018-A-4	BA2018-A-5
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-001	VA20A5956-002	VA20A5956-003	VA20A5956-004	VA20A5956-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		17.8	18.4	17.1	17.3	18.1
pH (1:2 soil:water)	----	E108	0.10	pH units		11.2	11.6	11.4	11.5	11.6
Metals										
aluminum	7429-90-5	E440	50	mg/kg		27800	41600	30800	32200	31200
antimony	7440-36-0	E440	0.10	mg/kg		175	178	238	192	172
arsenic	7440-38-2	E440	0.10	mg/kg		48.1	40.1	48.3	42.1	39.2
barium	7440-39-3	E440	0.50	mg/kg		476	527	473	494	493
beryllium	7440-41-7	E440	0.10	mg/kg		0.35	0.37	0.40	0.42	0.36
bismuth	7440-69-9	E440	0.20	mg/kg		7.70	5.92	11.9	7.63	6.54
boron	7440-42-8	E440	5.0	mg/kg		193	214	180	204	183
cadmium	7440-43-9	E440	0.020	mg/kg		24.8	20.8	29.1	23.2	23.8
calcium	7440-70-2	E440	50	mg/kg		141000	132000	147000	138000	132000
chromium	7440-47-3	E440	0.50	mg/kg		169	158	166	160	263
cobalt	7440-48-4	E440	0.10	mg/kg		42.2	97.4	68.0	22.1	21.9
copper	7440-50-8	E440	0.50	mg/kg		6470	2120	2200	3300	4280
iron	7439-89-6	E440	50	mg/kg		53300	61000	55500	52500	70200
lead	7439-92-1	E440	0.50	mg/kg		4040	525	1660	846	376
lithium	7439-93-2	E440	2.0	mg/kg		19.9	17.5	23.1	17.7	21.2
magnesium	7439-95-4	E440	20	mg/kg		10100	10300	9530	9240	10100
manganese	7439-96-5	E440	1.0	mg/kg		781	794	708	940	746
mercury	7439-97-6	E510	0.0500	mg/kg		0.0996	0.0783	0.153	0.0800	0.0895
molybdenum	7439-98-7	E440	0.10	mg/kg		39.0	33.5	36.8	26.4	22.6
nickel	7440-02-0	E440	0.50	mg/kg		180	113	191	176	206
phosphorus	7723-14-0	E440	50	mg/kg		11100	10200	10900	10100	10300
potassium	7440-09-7	E440	100	mg/kg		5920	5890	6080	6050	6700
selenium	7782-49-2	E440	0.20	mg/kg		0.52	0.50	0.80	0.53	0.56
silver	7440-22-4	E440	0.10	mg/kg		7.14	6.69	7.27	6.87	7.47
sodium	7440-23-5	E440	50	mg/kg		14600	15400	15800	15500	16600
strontium	7440-24-6	E440	0.50	mg/kg		296	289	309	296	314
sulfur	7704-34-9	E440	1000	mg/kg		11800	12200	14000	12200	12600

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-1	BA2018-A-2	BA2018-A-3	BA2018-A-4	BA2018-A-5
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-001	VA20A5956-002	VA20A5956-003	VA20A5956-004	VA20A5956-005
						Result	Result	Result	Result	Result
Metals										
thallium	7440-28-0	E440	0.050	mg/kg		0.066	0.064	0.059	0.060	0.056
tin	7440-31-5	E440	2.0	mg/kg		214	225	184	146	173
titanium	7440-32-6	E440	1.0	mg/kg		261	471	398	660	603
tungsten	7440-33-7	E440	0.50	mg/kg		11.0	14.2	17.6	18.3	14.3
uranium	7440-61-1	E440	0.050	mg/kg		5.85	5.19	6.40	5.53	5.53
vanadium	7440-62-2	E440	0.20	mg/kg		54.4	51.7	53.5	53.9	50.6
zinc	7440-66-6	E440	2.0	mg/kg		5750	7590	5490	6810	4920
zirconium	7440-67-7	E440	1.0	mg/kg		1.5	1.9	1.3	1.2	1.2
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units		11.6	11.7	11.8	11.7	11.8
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units		8.33	7.82	8.96	6.20	8.47
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units		2.89	2.89	2.89	2.89	2.89
pH, TCLP final	----	EPP444	0.010	pH units		6.71	7.37	6.92	6.57	6.78
antimony, TCLP	7440-36-0	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
arsenic, TCLP	7440-38-2	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
barium, TCLP	7440-39-3	E444	2.5	mg/L		<2.5	<2.5	<2.5	<2.5	<2.5
beryllium, TCLP	7440-41-7	E444	0.025	mg/L		<0.025	<0.025	<0.025	<0.025	<0.025
boron, TCLP	7440-42-8	E444	0.50	mg/L		1.89	1.76	1.86	1.91	1.96
cadmium, TCLP	7440-43-9	E444	0.050	mg/L		0.298	0.205	0.258	0.326	0.393
calcium, TCLP	7440-70-2	E444	2	mg/L		2440	2170	2340	2300	2360
chromium, TCLP	7440-47-3	E444	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
cobalt, TCLP	7440-48-4	E444	0.050	mg/L		0.876	0.360	0.392	0.691	0.325
copper, TCLP	7440-50-8	E444	0.050	mg/L		0.607	0.353	0.515	0.986	0.632
iron, TCLP	7439-89-6	E444	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
lead, TCLP	7439-92-1	E444	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
magnesium, TCLP	7439-95-4	E444	0.5	mg/L		141	114	132	147	152
mercury, TCLP	7439-97-6	E512	0.0100	mg/L		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
nickel, TCLP	7440-02-0	E444	0.25	mg/L		0.52	0.28	0.54	0.72	0.42
selenium, TCLP	7782-49-2	E444	1.00	mg/L		<1.00	<1.00	<1.00	<1.00	<1.00
silver, TCLP	7440-22-4	E444	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
thallium, TCLP	7440-28-0	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-1	BA2018-A-2	BA2018-A-3	BA2018-A-4	BA2018-A-5
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-001	VA20A5956-002	VA20A5956-003	VA20A5956-004	VA20A5956-005
						Result	Result	Result	Result	Result
TCLP Metals										
vanadium, TCLP	7440-62-2	E444	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15
zinc, TCLP	7440-66-6	E444	0.50	mg/L		28.9	3.46	33.7	66.4	23.6

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-6	BA2018-A-7	BA2018-A-8	BA2018-A-9	BA2018-A-10
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-006	VA20A5956-007	VA20A5956-008	VA20A5956-009	VA20A5956-010
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		17.5	18.1	17.3	19.3	16.7
pH (1:2 soil:water)	----	E108	0.10	pH units		11.4	11.5	11.7	11.6	11.2
Metals										
aluminum	7429-90-5	E440	50	mg/kg		41600	27700	33500	32300	24800
antimony	7440-36-0	E440	0.10	mg/kg		156	168	174	185	178
arsenic	7440-38-2	E440	0.10	mg/kg		73.1	41.8	52.8	45.2	38.6
barium	7440-39-3	E440	0.50	mg/kg		496	472	560	559	534
beryllium	7440-41-7	E440	0.10	mg/kg		0.34	0.35	0.37	0.36	0.37
bismuth	7440-69-9	E440	0.20	mg/kg		5.90	6.80	8.26	8.74	5.85
boron	7440-42-8	E440	5.0	mg/kg		172	163	179	244	145
cadmium	7440-43-9	E440	0.020	mg/kg		22.6	22.7	23.5	25.2	24.4
calcium	7440-70-2	E440	50	mg/kg		132000	137000	145000	135000	134000
chromium	7440-47-3	E440	0.50	mg/kg		168	148	160	274	197
cobalt	7440-48-4	E440	0.10	mg/kg		54.2	89.0	134	38.4	38.5
copper	7440-50-8	E440	0.50	mg/kg		1870	8480	6230	6360	3760
iron	7439-89-6	E440	50	mg/kg		72600	45000	49500	54000	57600
lead	7439-92-1	E440	0.50	mg/kg		450	405	586	568	381
lithium	7439-93-2	E440	2.0	mg/kg		47.7	16.6	19.0	22.8	13.9
magnesium	7439-95-4	E440	20	mg/kg		10100	12200	9600	9570	11200
manganese	7439-96-5	E440	1.0	mg/kg		926	7980	1130	970	785
mercury	7439-97-6	E510	0.0500	mg/kg		0.0875	0.129	0.0912	0.119	0.0936
molybdenum	7439-98-7	E440	0.10	mg/kg		43.2	28.3	24.9	36.6	30.6
nickel	7440-02-0	E440	0.50	mg/kg		274	102	147	399	219
phosphorus	7723-14-0	E440	50	mg/kg		10700	10200	11100	9910	9490
potassium	7440-09-7	E440	100	mg/kg		5430	5600	5520	5720	5750
selenium	7782-49-2	E440	0.20	mg/kg		0.50	0.58	0.57	0.56	0.47
silver	7440-22-4	E440	0.10	mg/kg		7.04	14.7	8.40	7.95	7.26
sodium	7440-23-5	E440	50	mg/kg		14300	14500	14900	14900	15100
strontium	7440-24-6	E440	0.50	mg/kg		280	292	298	293	306
sulfur	7704-34-9	E440	1000	mg/kg		11800	12000	11600	12900	12400
thallium	7440-28-0	E440	0.050	mg/kg		0.059	0.059	0.057	0.060	<0.050

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-6	BA2018-A-7	BA2018-A-8	BA2018-A-9	BA2018-A-10
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-006	VA20A5956-007	VA20A5956-008	VA20A5956-009	VA20A5956-010
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	2.0	mg/kg		178	150	191	172	164
titanium	7440-32-6	E440	1.0	mg/kg		645	435	896	915	585
tungsten	7440-33-7	E440	0.50	mg/kg		11.8	21.2	21.5	24.9	12.5
uranium	7440-61-1	E440	0.050	mg/kg		5.58	5.50	5.34	5.62	5.39
vanadium	7440-62-2	E440	0.20	mg/kg		50.3	47.5	50.8	54.0	58.0
zinc	7440-66-6	E440	2.0	mg/kg		4950	7030	5730	7530	6180
zirconium	7440-67-7	E440	1.0	mg/kg		1.7	1.2	1.2	1.1	<1.0
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units		11.8	11.8	11.8	11.7	11.7
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units		7.95	8.50	8.91	6.49	6.97
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units		2.89	2.89	2.89	2.89	2.89
pH, TCLP final	----	EPP444	0.010	pH units		6.81	6.77	6.90	6.43	6.61
antimony, TCLP	7440-36-0	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
arsenic, TCLP	7440-38-2	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
barium, TCLP	7440-39-3	E444	2.5	mg/L		<2.5	<2.5	<2.5	<2.5	<2.5
beryllium, TCLP	7440-41-7	E444	0.025	mg/L		<0.025	<0.025	<0.025	<0.025	<0.025
boron, TCLP	7440-42-8	E444	0.50	mg/L		2.01	1.91	2.22	1.98	2.01
cadmium, TCLP	7440-43-9	E444	0.050	mg/L		0.273	1.10	0.608	0.534	0.402
calcium, TCLP	7440-70-2	E444	2	mg/L		2400	2410	2450	2320	2460
chromium, TCLP	7440-47-3	E444	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
cobalt, TCLP	7440-48-4	E444	0.050	mg/L		0.778	1.13	0.399	0.365	0.789
copper, TCLP	7440-50-8	E444	0.050	mg/L		0.625	0.660	0.775	1.08	1.07
iron, TCLP	7439-89-6	E444	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
lead, TCLP	7439-92-1	E444	0.25	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25
magnesium, TCLP	7439-95-4	E444	0.5	mg/L		139	144	151	144	147
mercury, TCLP	7439-97-6	E512	0.0100	mg/L		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
nickel, TCLP	7440-02-0	E444	0.25	mg/L		0.57	0.48	0.81	0.56	0.60
selenium, TCLP	7782-49-2	E444	1.00	mg/L		<1.00	<1.00	<1.00	<1.00	<1.00
silver, TCLP	7440-22-4	E444	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
thallium, TCLP	7440-28-0	E444	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
vanadium, TCLP	7440-62-2	E444	0.15	mg/L		<0.15	<0.15	<0.15	<0.15	<0.15

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-6	BA2018-A-7	BA2018-A-8	BA2018-A-9	BA2018-A-10
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00	29-Apr-2020 09:00
						VA20A5956-006	VA20A5956-007	VA20A5956-008	VA20A5956-009	VA20A5956-010
						Result	Result	Result	Result	Result
TCLP Metals										
zinc, TCLP	7440-66-6	E444	0.50	mg/L		23.2	30.7	26.1	52.5	44.4

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-11	BA2018-A-12	BA2018-A-7 REP1 replicate of sample#7	BA2018-A-7 REP2 replicate of sample#7	BA2018-A-7 REP3 replicate of sample#7
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	13-May-2020	13-May-2020	13-May-2020
						VA20A5956-011	VA20A5956-012	VA20A5956-013	VA20A5956-014	VA20A5956-015
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		17.4	16.3	----	----	----
pH (1:2 soil:water)	----	E108	0.10	pH units		11.0	11.3	----	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		34300	29100	----	----	----
antimony	7440-36-0	E440	0.10	mg/kg		170	174	----	----	----
arsenic	7440-38-2	E440	0.10	mg/kg		45.8	39.6	----	----	----
barium	7440-39-3	E440	0.50	mg/kg		474	538	----	----	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.38	0.38	----	----	----
bismuth	7440-69-9	E440	0.20	mg/kg		5.98	6.86	----	----	----
boron	7440-42-8	E440	5.0	mg/kg		162	146	----	----	----
cadmium	7440-43-9	E440	0.020	mg/kg		42.0	22.4	----	----	----
calcium	7440-70-2	E440	50	mg/kg		136000	132000	----	----	----
chromium	7440-47-3	E440	0.50	mg/kg		153	141	----	----	----
cobalt	7440-48-4	E440	0.10	mg/kg		18.5	24.0	----	----	----
copper	7440-50-8	E440	0.50	mg/kg		3360	5150	----	----	----
iron	7439-89-6	E440	50	mg/kg		66100	67200	----	----	----
lead	7439-92-1	E440	0.50	mg/kg		438	563	----	----	----
lithium	7439-93-2	E440	2.0	mg/kg		16.6	14.8	----	----	----
magnesium	7439-95-4	E440	20	mg/kg		9410	8710	----	----	----
manganese	7439-96-5	E440	1.0	mg/kg		828	860	----	----	----
mercury	7439-97-6	E510	0.0500	mg/kg		0.106	0.0951	----	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg		32.8	24.1	----	----	----
nickel	7440-02-0	E440	0.50	mg/kg		104	272	----	----	----
phosphorus	7723-14-0	E440	50	mg/kg		11000	10900	----	----	----
potassium	7440-09-7	E440	100	mg/kg		6170	5450	----	----	----
selenium	7782-49-2	E440	0.20	mg/kg		0.62	0.48	----	----	----
silver	7440-22-4	E440	0.10	mg/kg		6.21	8.96	----	----	----
sodium	7440-23-5	E440	50	mg/kg		15700	14800	----	----	----
strontium	7440-24-6	E440	0.50	mg/kg		303	295	----	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-11	BA2018-A-12	BA2018-A-7 REP1 replicate of sample#7	BA2018-A-7 REP2 replicate of sample#7	BA2018-A-7 REP3 replicate of sample#7
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	13-May-2020	13-May-2020	13-May-2020
						VA20A5956-011	VA20A5956-012	VA20A5956-013	VA20A5956-014	VA20A5956-015
						Result	Result	Result	Result	Result
Metals										
sulfur	7704-34-9	E440	1000	mg/kg		12800	11200	----	----	----
thallium	7440-28-0	E440	0.050	mg/kg		0.086	0.051	----	----	----
tin	7440-31-5	E440	2.0	mg/kg		177	152	----	----	----
titanium	7440-32-6	E440	1.0	mg/kg		528	407	----	----	----
tungsten	7440-33-7	E440	0.50	mg/kg		14.2	12.9	----	----	----
uranium	7440-61-1	E440	0.050	mg/kg		5.96	5.64	----	----	----
vanadium	7440-62-2	E440	0.20	mg/kg		60.4	51.5	----	----	----
zinc	7440-66-6	E440	2.0	mg/kg		13800	4480	----	----	----
zirconium	7440-67-7	E440	1.0	mg/kg		1.3	1.2	----	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units		11.7	11.7	11.8	11.8	11.8
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units		8.38	8.45	8.50	8.50	8.50
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units		2.89	2.89	2.91	2.91	2.91
pH, TCLP final	----	EPP444	0.010	pH units		6.61	6.93	6.53	6.65	6.40
antimony, TCLP	7440-36-0	E444	1.0	mg/L		<1.0	<1.0	----	----	----
arsenic, TCLP	7440-38-2	E444	1.0	mg/L		<1.0	<1.0	----	----	----
barium, TCLP	7440-39-3	E444	2.5	mg/L		<2.5	<2.5	----	----	----
beryllium, TCLP	7440-41-7	E444	0.025	mg/L		<0.025	<0.025	----	----	----
boron, TCLP	7440-42-8	E444	0.50	mg/L		1.90	1.90	----	----	----
cadmium, TCLP	7440-43-9	E444	0.050	mg/L		0.346	0.261	0.310	0.313	0.373
calcium, TCLP	7440-70-2	E444	2	mg/L		2340	2210	----	----	----
chromium, TCLP	7440-47-3	E444	0.25	mg/L		<0.25	<0.25	----	----	----
cobalt, TCLP	7440-48-4	E444	0.050	mg/L		0.668	0.592	----	----	----
copper, TCLP	7440-50-8	E444	0.050	mg/L		0.835	0.600	----	----	----
iron, TCLP	7439-89-6	E444	5.0	mg/L		<5.0	<5.0	----	----	----
lead, TCLP	7439-92-1	E444	0.25	mg/L		<0.25	<0.25	----	----	----
magnesium, TCLP	7439-95-4	E444	0.5	mg/L		145	125	----	----	----
mercury, TCLP	7439-97-6	E512	0.0100	mg/L		<0.0100	<0.0100	----	----	----
nickel, TCLP	7440-02-0	E444	0.25	mg/L		0.52	0.41	----	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-11	BA2018-A-12	BA2018-A-7 REP1 replicate of sample#7	BA2018-A-7 REP2 replicate of sample#7	BA2018-A-7 REP3 replicate of sample#7
					Client sampling date / time	29-Apr-2020 09:00	29-Apr-2020 09:00	13-May-2020	13-May-2020	13-May-2020
						VA20A5956-011	VA20A5956-012	VA20A5956-013	VA20A5956-014	VA20A5956-015
						Result	Result	Result	Result	Result
TCLP Metals										
selenium, TCLP	7782-49-2	E444	1.00	mg/L		<1.00	<1.00	----	----	----
silver, TCLP	7440-22-4	E444	0.050	mg/L		<0.050	<0.050	----	----	----
thallium, TCLP	7440-28-0	E444	1.0	mg/L		<1.0	<1.0	----	----	----
vanadium, TCLP	7440-62-2	E444	0.15	mg/L		<0.15	<0.15	----	----	----
zinc, TCLP	7440-66-6	E444	0.50	mg/L		36.4	16.6	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	BA2018-A-7 REP4 replicate of sample#7	BA2018-A-8 REP1 Replicate of sample#8	BA2018-A-9 REP1 Replicate of sample#9	----	----
					Client sampling date / time	13-May-2020	13-May-2020	13-May-2020	----	----
						VA20A5956-016	VA20A5956-017	VA20A5956-018	--------	--------
						Result	Result	Result	----	----
TCLP Metals										
pH, TCLP 1st preliminary	----	EPP444	0.010	pH units		11.8	11.8	11.7	----	----
pH, TCLP 2nd preliminary	----	EPP444	0.010	pH units		8.50	8.91	6.49	----	----
pH, TCLP extraction fluid initial	----	EPP444	0.010	pH units		2.91	2.91	2.91	----	----
pH, TCLP final	----	EPP444	0.010	pH units		6.72	6.82	6.44	----	----
cadmium, TCLP	7440-43-9	E444	0.050	mg/L		0.380	0.277	0.393	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.