

Bottom Ash Data

2019 Week 26

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on July 10, 2019. The data represents bottom ash composite results for week 26 of 2019 (June 23, 2019 to June 29, 2019).

The bottom ash meets the requirements of Metro Vancouver's Bottom Ash Management Plan and is suitable for beneficial use during Coquitlam Landfill closure works.



Covanta Burnaby R.E., ULC
ATTN: Steve McKinney
5150 Riverbend Drive
Burnaby BC V3N 4V3

Date Received: 02-JUL-19
Report Date: 08-JUL-19 16:14 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2302215
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2302215-1 Soil 26-JUN-19 09:00 BA1926-A-1	L2302215-2 Soil 26-JUN-19 09:00 BA1926-A-2	L2302215-3 Soil 26-JUN-19 09:00 BA1926-A-3	L2302215-4 Soil 26-JUN-19 09:00 BA1926-A-4	L2302215-5 Soil 26-JUN-19 09:00 BA1926-A-5
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	21.2	21.2	20.3	20.3	19.3
	pH (1:2 soil:water) (pH)	10.52	10.56	10.57	10.30	10.61
Metals	Aluminum (Al) (mg/kg)	35200	55800	30300	30000	28300
	Antimony (Sb) (mg/kg)	114	141	97.1	101	102
	Arsenic (As) (mg/kg)	35.3	31.3	30.5	34.0	31.9
	Barium (Ba) (mg/kg)	564	611	593	556	563
	Beryllium (Be) (mg/kg)	0.42	0.39	0.39	0.71	0.41
	Bismuth (Bi) (mg/kg)	5.86	6.17	6.36	6.59	5.88
	Boron (B) (mg/kg)	383	387	167	273	274
	Cadmium (Cd) (mg/kg)	11.3	10.2	12.6	11.0	11.9
	Calcium (Ca) (mg/kg)	120000	119000	102000	118000	120000
	Chromium (Cr) (mg/kg)	161	207	305	155	181
	Cobalt (Co) (mg/kg)	467	32.5	72.2	28.5	35.4
	Copper (Cu) (mg/kg)	3900	4640	1810	1800	2050
	Iron (Fe) (mg/kg)	69800	59200	67700	57600	74100
	Lead (Pb) (mg/kg)	1390	5500	416	414	657
	Lithium (Li) (mg/kg)	31.8	23.6	18.4	19.5	18.6
	Magnesium (Mg) (mg/kg)	9940	10400	8970	10800	10600
	Manganese (Mn) (mg/kg)	1080	890	710	711	877
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	29.8	44.2	45.9	33.0	36.1
	Nickel (Ni) (mg/kg)	374	140	127	140	113
	Phosphorus (P) (mg/kg)	11800	10600	9600	10400	12500
	Potassium (K) (mg/kg)	5490	5520	5380	5640	5610
	Selenium (Se) (mg/kg)	0.37	0.46	0.27	0.31	0.40
	Silver (Ag) (mg/kg)	3.14	4.36	4.49	3.86	3.71
	Sodium (Na) (mg/kg)	14900	14600	13500	14600	14200
	Strontium (Sr) (mg/kg)	266	277	250	271	286
	Sulfur (S) (mg/kg)	12200	12700	11300	12500	12300
Thallium (Tl) (mg/kg)	0.053	0.074	0.059	0.054	0.060	
Tin (Sn) (mg/kg)	109	139	233	116	1460	
Titanium (Ti) (mg/kg)	874	1720	884	746	650	
Tungsten (W) (mg/kg)	14.9	13.8	13.8	9.82	10.1	
Uranium (U) (mg/kg)	5.58	5.42	5.14	5.89	5.51	
Vanadium (V) (mg/kg)	51.7	59.8	47.9	49.9	57.9	
Zinc (Zn) (mg/kg)	5540	3680	5140	3720	3330	
Zirconium (Zr) (mg/kg)	1.4	3.0	1.1	1.2	1.4	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2302215-6 Soil 26-JUN-19 09:00 BA1926-A-6	L2302215-7 Soil 26-JUN-19 09:00 BA1926-A-7	L2302215-8 Soil 26-JUN-19 09:00 BA1926-A-8	L2302215-9 Soil 26-JUN-19 09:00 BA1926-A-9	L2302215-10 Soil 26-JUN-19 09:00 BA1926-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	20.8	22.0	21.3	18.6	21.6
	pH (1:2 soil:water) (pH)	10.58	10.59	10.51	10.70	10.66
Metals	Aluminum (Al) (mg/kg)	29500	33500	36500	35500	30200
	Antimony (Sb) (mg/kg)	133	108	112	102	101
	Arsenic (As) (mg/kg)	31.2	28.1	34.9	34.3	35.0
	Barium (Ba) (mg/kg)	579	516	555	586	612
	Beryllium (Be) (mg/kg)	0.39	0.48	0.39	0.38	0.39
	Bismuth (Bi) (mg/kg)	6.24	5.18	6.17	5.85	6.62
	Boron (B) (mg/kg)	296	220	378	245	228
	Cadmium (Cd) (mg/kg)	10.8	18.4	11.3	14.4	17.0
	Calcium (Ca) (mg/kg)	114000	119000	109000	111000	116000
	Chromium (Cr) (mg/kg)	161	138	143	363	151
	Cobalt (Co) (mg/kg)	28.0	73.9	35.7	29.0	56.4
	Copper (Cu) (mg/kg)	23000	1880	5510	17500	5180
	Iron (Fe) (mg/kg)	56400	45600	60400	51300	54200
	Lead (Pb) (mg/kg)	1770	455	679	340	707
	Lithium (Li) (mg/kg)	16.9	19.1	19.7	19.3	18.2
	Magnesium (Mg) (mg/kg)	10400	10200	10500	9850	9910
	Manganese (Mn) (mg/kg)	684	929	861	901	661
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	28.8	26.3	49.4	38.0	25.1
	Nickel (Ni) (mg/kg)	91.6	379	126	271	229
	Phosphorus (P) (mg/kg)	9550	10400	10600	10900	11000
	Potassium (K) (mg/kg)	5620	5240	5850	5500	5340
	Selenium (Se) (mg/kg)	0.28	0.34	0.32	0.38	0.32
	Silver (Ag) (mg/kg)	4.46	4.59	4.70	4.54	4.10
	Sodium (Na) (mg/kg)	14800	14200	15500	15300	14600
	Strontium (Sr) (mg/kg)	275	294	474	278	278
	Sulfur (S) (mg/kg)	11400	11600	11700	12200	11600
	Thallium (Tl) (mg/kg)	0.077	<0.050	0.073	0.067	0.094
	Tin (Sn) (mg/kg)	109	107	124	89.4	111
	Titanium (Ti) (mg/kg)	1050	595	1100	1190	827
	Tungsten (W) (mg/kg)	6.62	16.5	7.69	7.10	7.01
	Uranium (U) (mg/kg)	5.40	5.45	5.67	5.56	5.57
	Vanadium (V) (mg/kg)	46.2	46.8	52.4	52.1	47.4
	Zinc (Zn) (mg/kg)	15800	3210	4020	19400	9880
	Zirconium (Zr) (mg/kg)	2.1	1.4	1.5	2.6	1.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2302215-11	L2302215-12			
		Description	Soil	Soil			
		Sampled Date	26-JUN-19	26-JUN-19			
		Sampled Time	09:00	09:00			
		Client ID	BA1926-A-11	BA1926-A-12			
Grouping	Analyte						
SOIL							
Physical Tests	Moisture (%)	21.5	21.2				
	pH (1:2 soil:water) (pH)	10.57	10.51				
Metals	Aluminum (Al) (mg/kg)	39200	33400				
	Antimony (Sb) (mg/kg)	114	123				
	Arsenic (As) (mg/kg)	33.1	29.5				
	Barium (Ba) (mg/kg)	620	613				
	Beryllium (Be) (mg/kg)	0.44	0.42				
	Bismuth (Bi) (mg/kg)	6.69	232				
	Boron (B) (mg/kg)	253	247				
	Cadmium (Cd) (mg/kg)	10.9	10.9				
	Calcium (Ca) (mg/kg)	115000	116000				
	Chromium (Cr) (mg/kg)	275	182				
	Cobalt (Co) (mg/kg)	27.4	92.5				
	Copper (Cu) (mg/kg)	3810	3620				
	Iron (Fe) (mg/kg)	58700	63500				
	Lead (Pb) (mg/kg)	878	622				
	Lithium (Li) (mg/kg)	19.8	21.0				
	Magnesium (Mg) (mg/kg)	11400	9920				
	Manganese (Mn) (mg/kg)	899	904				
	Mercury (Hg) (mg/kg)	<0.050	<0.050				
	Molybdenum (Mo) (mg/kg)	74.2	27.7				
	Nickel (Ni) (mg/kg)	238	289				
	Phosphorus (P) (mg/kg)	11200	11200				
	Potassium (K) (mg/kg)	5870	5640				
	Selenium (Se) (mg/kg)	0.34	0.34				
	Silver (Ag) (mg/kg)	4.71	6.47				
	Sodium (Na) (mg/kg)	15200	15000				
	Strontium (Sr) (mg/kg)	286	288				
	Sulfur (S) (mg/kg)	11700	11700				
	Thallium (Tl) (mg/kg)	0.064	0.060				
	Tin (Sn) (mg/kg)	153	117				
	Titanium (Ti) (mg/kg)	1120	749				
	Tungsten (W) (mg/kg)	9.69	11.7				
	Uranium (U) (mg/kg)	5.66	5.78				
Vanadium (V) (mg/kg)	50.4	67.7					
Zinc (Zn) (mg/kg)	4220	3470					
Zirconium (Zr) (mg/kg)	2.5	1.3					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2302215-1	L2302215-2	L2302215-3	L2302215-4	L2302215-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	26-JUN-19	26-JUN-19	26-JUN-19	26-JUN-19	26-JUN-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1926-A-1	BA1926-A-2	BA1926-A-3	BA1926-A-4	BA1926-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.25	11.31	11.34	11.36	11.35
	2nd Preliminary pH (pH)		8.32	8.47	8.57	8.75	8.53
	Final pH (pH)		5.96	6.31	6.04	6.09	5.86
	Extraction Solution Initial pH (pH)		2.90	2.90	2.90	2.90	2.90
	Antimony (Sb)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Barium (Ba)-Leachable (mg/L)		<2.5	<2.5	<2.5	<2.5	<2.5
	Beryllium (Be)-Leachable (mg/L)		<0.025	<0.025	<0.025	<0.025	<0.025
	Boron (B)-Leachable (mg/L)		3.08	3.03	3.16	3.49	3.39
	Cadmium (Cd)-Leachable (mg/L)		0.286	0.200	0.212	0.809 ^{RRV}	0.302
	Calcium (Ca)-Leachable (mg/L)		1820	1840	1900	1840	1780
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.565	0.636	0.654	0.499	0.472
	Copper (Cu)-Leachable (mg/L)		1.03	0.692	0.453	0.741	0.810
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		1.12	<0.25	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		124	130	128	122	117
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.41	0.43	0.51	0.51	0.44
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)-Leachable (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Thallium (Tl)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)-Leachable (mg/L)		<0.15	<0.15	<0.15	<0.15	<0.15
	Zinc (Zn)-Leachable (mg/L)		51.0	48.1	66.3	51.8	49.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2302215-6	L2302215-7	L2302215-8	L2302215-9	L2302215-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	26-JUN-19	26-JUN-19	26-JUN-19	26-JUN-19	26-JUN-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1926-A-6	BA1926-A-7	BA1926-A-8	BA1926-A-9	BA1926-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.42	11.41	11.39	11.46	11.44
	2nd Preliminary pH (pH)		8.56	8.43	8.30	8.62	8.68
	Final pH (pH)		6.09	6.21	6.06	5.81	6.16
	Extraction Solution Initial pH (pH)		2.90	2.90	2.90	2.90	2.90
	Antimony (Sb)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic (As)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Barium (Ba)-Leachable (mg/L)		<2.5	<2.5	<2.5	<2.5	<2.5
	Beryllium (Be)-Leachable (mg/L)		<0.025	<0.025	<0.025	<0.025	<0.025
	Boron (B)-Leachable (mg/L)		4.03	3.29	2.99	2.85	3.30
	Cadmium (Cd)-Leachable (mg/L)		0.164	0.217	0.190	0.206	0.520 ^{RRV}
	Calcium (Ca)-Leachable (mg/L)		2100	1940	1920	1790	1960
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.509	1.09	0.420	2.08	0.612
	Copper (Cu)-Leachable (mg/L)		0.503	0.746	0.882	0.577	0.857
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		125	132	127	120	126
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.47	0.45	0.40	0.53	0.58
	Selenium (Se)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Silver (Ag)-Leachable (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Thallium (Tl)-Leachable (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Vanadium (V)-Leachable (mg/L)		<0.15	<0.15	<0.15	<0.15	<0.15
	Zinc (Zn)-Leachable (mg/L)		38.4	34.4	45.1	48.3	37.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2302215-11	L2302215-12			
		Description	Soil	Soil			
		Sampled Date	26-JUN-19	26-JUN-19			
		Sampled Time	09:00	09:00			
		Client ID	BA1926-A-11	BA1926-A-12			
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)	11.40	11.42				
	2nd Preliminary pH (pH)	8.50	8.58				
	Final pH (pH)	6.18	6.04				
	Extraction Solution Initial pH (pH)	2.90	2.90				
	Antimony (Sb)-Leachable (mg/L)	<1.0	<1.0				
	Arsenic (As)-Leachable (mg/L)	<1.0	<1.0				
	Barium (Ba)-Leachable (mg/L)	<2.5	<2.5				
	Beryllium (Be)-Leachable (mg/L)	<0.025	<0.025				
	Boron (B)-Leachable (mg/L)	3.22	3.08				
	Cadmium (Cd)-Leachable (mg/L)	0.237	0.247				
	Calcium (Ca)-Leachable (mg/L)	1910	1870				
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25				
	Cobalt (Co)-Leachable (mg/L)	0.788	0.680				
	Copper (Cu)-Leachable (mg/L)	0.928	0.659				
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0				
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25				
	Magnesium (Mg)-Leachable (mg/L)	128	128				
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010				
	Nickel (Ni)-Leachable (mg/L)	0.48	0.42				
	Selenium (Se)-Leachable (mg/L)	<1.0	<1.0				
	Silver (Ag)-Leachable (mg/L)	<0.050	<0.050				
	Thallium (Tl)-Leachable (mg/L)	<1.0	<1.0				
	Vanadium (V)-Leachable (mg/L)	<0.15	<0.15				
	Zinc (Zn)-Leachable (mg/L)	42.4	41.2				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Antimony (Sb)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Molybdenum (Mo)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tungsten (W)	DUP-H	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Leachable	MS-B	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2302215-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
Soil samples are digested with hot nitric and hydrochloric acids, followed by CVAAS analysis. This method is fully compliant with the BC SALM strong acid leachable metals digestion method.			
HG-TCLP-CVAFS-VA	Soil	Mercury by CVAAS (TCLP)	EPA 1311/245.7
This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 245.7).			
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.			
Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H ₂ S) may be excluded if lost during sampling, storage, or digestion.			
MET-TCLP-CCMS-VA	Soil	Metals by ICPMS (TCLP)	EPA 1311/6020A
This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).			
MOISTURE-VA	Soil	Moisture content	CCME PHC in Soil - Tier 1 (mod)
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two hours.			
PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL
This analysis is carried out in accordance with procedures described in "pH, Electrometric in Soil and Sediment - Prescriptive Method", Rev. 2005, Section B Physical, Inorganic and Misc. Constituents, BC Environmental Laboratory Manual. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.			

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

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

Reference Information

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
----	---

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

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

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Report To		Rep	Service Requested (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Sta	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)	
Contact:	Steve McKinney / Dan Skrypnik	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Digital <input type="checkbox"/> Fax	
Address:	5150 Riverbend Drive	Email 1:	<input type="checkbox"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
	Burnaby BC	Email 2:	<input type="checkbox"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 3:	<input type="checkbox"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	

Analysis Request	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
Email 1: smckinney@covanta.com Email 2: rjohnson4@covanta.com Email 3: dskrypnik@covanta.com brent.kirkpatrick@metrovancover.org Sarah.Wellman@metrovancover.org	

Invoice To	Same as Report ?	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)					
Hardcopy of Invoice with Report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:							
Company:		PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite						
Contact:		LSD:	(includes 2:1 pH)						
Address:		Quote #:							
Phone:									

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)	Number of Containers
BA1926-A-1		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-2		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-3		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-4		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-5		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-6		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-7		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-8		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-9		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-10		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-11		26-Jun-19	9:00	Soil	X	X		X	1
BA1926-A-12		26-Jun-19	9:00	Soil	X	X		X	1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
 By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
<i>[Signature]</i>	2-Jun-19	0800	HA	7/2	1022	22 °C				