

Bottom Ash Data

2019 Week 7

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on February 27, 2019. The data represents bottom ash composite results for week 7 of 2019 (February 10, 2019 to February 16, 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: 19-FEB-19
Report Date: 26-FEB-19 16:47 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2234115
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc: 46693 Weekly Bottom Ash -Sulte

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	L2234115-1 soil 13-FEB-19 09:00 BA1907-A1	L2234115-2 soil 13-FEB-19 09:00 BA1907-A-2	L2234115-3 soil 13-FEB-19 09:00 BA1907-A-3	L2234115-4 soil 13-FEB-19 09:00 BA1907-A-4	L2234115-5 soil 13-FEB-19 09:00 BA1907-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	23.4	23.9	23.0	23.0	22.0
	pH (1:2 soil:water) (pH)	11.51	11.57	11.63	11.51	11.41
Metals	Aluminum (Al) (mg/kg)	32700	34000	41700	43400	50100
	Antimony (Sb) (mg/kg)	129	139	132	121	129
	Arsenic (As) (mg/kg)	17.0	17.9	16.9	19.9	18.0
	Barium (Ba) (mg/kg)	553	523	461	443	468
	Beryllium (Be) (mg/kg)	0.39	0.36	0.34	0.41	0.38
	Bismuth (Bi) (mg/kg)	6.83	5.63	14.0	7.28	6.32
	Boron (B) (mg/kg)	583	608	400	308	319
	Cadmium (Cd) (mg/kg)	8.50	9.01	8.50	9.28	9.36
	Calcium (Ca) (mg/kg)	135000	128000	134000	131000	141000
	Chromium (Cr) (mg/kg)	154	137	148	132	153
	Cobalt (Co) (mg/kg)	17.5	37.2	22.3	19.0	31.7
	Copper (Cu) (mg/kg)	12000	17500	2250	1920	2470
	Iron (Fe) (mg/kg)	62600	80200	63900	65400	64000
	Lead (Pb) (mg/kg)	853	428	398	458	418
	Lithium (Li) (mg/kg)	18.2	14.6	33.4	16.8	17.3
	Magnesium (Mg) (mg/kg)	12600	12500	13000	12100	12400
	Manganese (Mn) (mg/kg)	767	832	860	723	994
	Mercury (Hg) (mg/kg)	<0.050	0.051	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	27.2	23.6	24.7	36.9	114
	Nickel (Ni) (mg/kg)	108	142	121	342	241
	Phosphorus (P) (mg/kg)	10700	10200	11700	9540	13200
	Potassium (K) (mg/kg)	4860	4530	5120	4910	5040
	Selenium (Se) (mg/kg)	0.34	0.29	0.29	0.29	0.35
	Silver (Ag) (mg/kg)	3.83	3.37	4.07	3.37	7.05
	Sodium (Na) (mg/kg)	15200	14800	15000	15000	15700
	Strontium (Sr) (mg/kg)	320	305	339	335	311
	Sulfur (S) (mg/kg)	12300	12500	12700	12300	13200
	Thallium (Tl) (mg/kg)	0.061	0.119	0.060	0.061	0.057
	Tin (Sn) (mg/kg)	141	118	114	233	115
	Titanium (Ti) (mg/kg)	534	648	488	447	577
	Tungsten (W) (mg/kg)	8.69	9.16	9.24	9.09	9.84
	Uranium (U) (mg/kg)	4.46	4.00	4.52	4.31	4.80
	Vanadium (V) (mg/kg)	40.6	38.7	43.1	42.1	44.9
	Zinc (Zn) (mg/kg)	15700	27100	4510	11700	4270
	Zirconium (Zr) (mg/kg)	1.1	1.3	2.0	2.6	2.0

* 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	L2234115-6 soil 13-FEB-19 09:00 BA1907-A-6	L2234115-7 soil 13-FEB-19 09:00 BA1907-A-7	L2234115-8 soil 13-FEB-19 09:00 BA1907-A-8	L2234115-9 soil 13-FEB-19 09:00 BA1907-A-9	L2234115-10 soil 13-FEB-19 09:00 BA1907-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	24.9	22.3	24.0	22.5	22.7
	pH (1:2 soil:water) (pH)	11.61	11.56	11.66	11.50	11.58
Metals	Aluminum (Al) (mg/kg)	45600	47500	45300	32700	35900
	Antimony (Sb) (mg/kg)	137	125	466	141	122
	Arsenic (As) (mg/kg)	19.3	17.2	18.2	17.4	16.8
	Barium (Ba) (mg/kg)	522	599	521	522	544
	Beryllium (Be) (mg/kg)	0.34	0.38	0.38	0.41	0.40
	Bismuth (Bi) (mg/kg)	6.05	5.24	7.96	7.05	5.83
	Boron (B) (mg/kg)	320	623	295	415	275
	Cadmium (Cd) (mg/kg)	9.17	7.10	8.94	8.39	8.55
	Calcium (Ca) (mg/kg)	143000	137000	141000	138000	140000
	Chromium (Cr) (mg/kg)	147	150	137	143	121
	Cobalt (Co) (mg/kg)	42.0	32.8	22.1	45.7	21.1
	Copper (Cu) (mg/kg)	2720	1320	3690	3510	2840
	Iron (Fe) (mg/kg)	72000	51100	60600	67200	51500
	Lead (Pb) (mg/kg)	481	1680	1020	460	674
	Lithium (Li) (mg/kg)	15.3	16.1	20.1	16.0	16.3
	Magnesium (Mg) (mg/kg)	11400	15900	13200	13200	13900
	Manganese (Mn) (mg/kg)	905	995	861	944	917
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	25.9	30.6	25.3	26.3	22.6
	Nickel (Ni) (mg/kg)	165	98.5	119	103	94.2
	Phosphorus (P) (mg/kg)	11300	13000	12100	10900	12600
	Potassium (K) (mg/kg)	4670	5130	5380	5730	5650
	Selenium (Se) (mg/kg)	0.32	0.31	0.34	0.38	0.31
	Silver (Ag) (mg/kg)	4.43	5.24	12.3	4.45	4.10
	Sodium (Na) (mg/kg)	15000	16700	17700	17100	16900
	Strontium (Sr) (mg/kg)	354	316	347	336	334
	Sulfur (S) (mg/kg)	13200	11400	13700	13600	12500
	Thallium (Tl) (mg/kg)	0.062	0.061	0.066	0.075	0.068
	Tin (Sn) (mg/kg)	186	153	130	127	118
	Titanium (Ti) (mg/kg)	774	643	493	472	480
	Tungsten (W) (mg/kg)	8.00	10.6	15.5	9.04	22.0
	Uranium (U) (mg/kg)	4.78	4.25	4.80	4.64	4.79
	Vanadium (V) (mg/kg)	44.9	44.1	44.0	48.5	42.2
	Zinc (Zn) (mg/kg)	5150	3040	4530	8950	4110
	Zirconium (Zr) (mg/kg)	1.5	1.5	1.4	1.1	1.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2234115-11	L2234115-12		
		Description	soil	soil		
		Sampled Date	13-FEB-19	13-FEB-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1907-A-11	BA1907-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	22.9	23.7			
	pH (1:2 soil:water) (pH)	11.67	11.80			
Metals	Aluminum (Al) (mg/kg)	52700	36700			
	Antimony (Sb) (mg/kg)	134	146			
	Arsenic (As) (mg/kg)	28.0	19.1			
	Barium (Ba) (mg/kg)	539	448			
	Beryllium (Be) (mg/kg)	0.43	0.36			
	Bismuth (Bi) (mg/kg)	6.04	7.76			
	Boron (B) (mg/kg)	282	253			
	Cadmium (Cd) (mg/kg)	11.5	9.07			
	Calcium (Ca) (mg/kg)	142000	138000			
	Chromium (Cr) (mg/kg)	161	146			
	Cobalt (Co) (mg/kg)	31.1	54.0			
	Copper (Cu) (mg/kg)	4130	2490			
	Iron (Fe) (mg/kg)	56100	65100			
	Lead (Pb) (mg/kg)	407	454			
	Lithium (Li) (mg/kg)	18.0	17.9			
	Magnesium (Mg) (mg/kg)	13600	14200			
	Manganese (Mn) (mg/kg)	869	2700			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	50.9	29.7			
	Nickel (Ni) (mg/kg)	177	130			
	Phosphorus (P) (mg/kg)	12600	10400			
	Potassium (K) (mg/kg)	5840	5510			
	Selenium (Se) (mg/kg)	0.28	0.37			
	Silver (Ag) (mg/kg)	9.45	3.73			
	Sodium (Na) (mg/kg)	16100	15600			
	Strontium (Sr) (mg/kg)	349	581			
	Sulfur (S) (mg/kg)	13900	12800			
	Thallium (Tl) (mg/kg)	0.067	0.066			
	Tin (Sn) (mg/kg)	140	180			
	Titanium (Ti) (mg/kg)	601	397			
	Tungsten (W) (mg/kg)	8.21	17.4			
	Uranium (U) (mg/kg)	5.35	5.24			
Vanadium (V) (mg/kg)	80.0	46.0				
Zinc (Zn) (mg/kg)	6120	5250				
Zirconium (Zr) (mg/kg)	2.2	1.6				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2234115-1	L2234115-2	L2234115-3	L2234115-4	L2234115-5
		Description	soil	soil	soil	soil	soil
		Sampled Date	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1907-A1	BA1907-A2	BA1907-A3	BA1907-A4	BA1907-A5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.43	11.50	11.43	11.57	11.58
	2nd Preliminary pH (pH)		8.66	8.54	8.57	8.62	8.71
	Final pH (pH)		6.25	6.28	6.19	6.28	6.26
	Extraction Solution Initial pH (pH)		2.86	2.86	2.86	2.86	2.86
	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)		4.43	4.72	4.03	3.93	3.92
	Cadmium (Cd)-Leachable (mg/L)		0.171	0.133	0.158	0.127	0.126
	Calcium (Ca)-Leachable (mg/L)		2060	2040	2070	2020	2060
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.381	0.698	0.471	0.389	0.867
	Copper (Cu)-Leachable (mg/L)		0.695	0.616	0.913	1.03	0.508
	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)		149	141	148	146	149
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.38	0.46	0.35	0.39	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)		38.5	54.3	38.4	39.6	32.7

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2234115-6	L2234115-7	L2234115-8	L2234115-9	L2234115-10
		Description	soil	soil	soil	soil	soil
		Sampled Date	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1907-A-6	BA1907-A-7	BA1907-A-8	BA1907-A-9	BA1907-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.54	11.58	11.58	11.55	11.64
	2nd Preliminary pH (pH)		9.12	9.02	9.11	9.00	9.61
	Final pH (pH)		6.33	6.30	6.31	6.39	6.28
	Extraction Solution Initial pH (pH)		2.86	2.86	2.86	2.86	2.86
	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)		3.74	4.10	4.03	4.21	4.30
	Cadmium (Cd)-Leachable (mg/L)		0.137	0.128	0.136	0.222	0.150
	Calcium (Ca)-Leachable (mg/L)		1980	2010	2020	2040	2000
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.442	0.815	0.418	0.366	0.524
	Copper (Cu)-Leachable (mg/L)		0.882	0.855	0.824	0.868	0.757
	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)		144	150	136	143	146
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.55	0.36	0.38	0.39	0.39
	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)		27.5	33.3	41.0	31.9	32.5

* 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	L2234115-11 soil 13-FEB-19 09:00 BA1907-A-11	L2234115-12 soil 13-FEB-19 09:00 BA1907-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.68	11.69		
	2nd Preliminary pH (pH)	9.44	9.56		
	Final pH (pH)	6.44	6.18		
	Extraction Solution Initial pH (pH)	2.86	2.86		
	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)	4.71	5.47		
	Cadmium (Cd)-Leachable (mg/L)	0.391	0.117		
	Calcium (Ca)-Leachable (mg/L)	2050	2060		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	1.05	0.354		
	Copper (Cu)-Leachable (mg/L)	0.763	0.756		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	0.30		
	Magnesium (Mg)-Leachable (mg/L)	145	148		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.52	0.38		
	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)	66.1	35.4		

* 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)
Method Blank	Barium (Ba)	B	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cadmium (Cd)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2234115-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
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.

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, Tl, 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 the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. 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:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

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.



L2234115-COFC

COC # _____

Page ____ of ____



Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Standard	<input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)	
Contact:	Steve McKinney / Dan Skrypnik	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input type="checkbox"/> Fax
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	smckinney@covanta.com		<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Phone:	604-521-1025	Email 2:	rjohnson4@covanta.com		<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnik@covanta.com		<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT
			brent.kirkpatrick@metrovancover.org		
			Sarah.Weilman@metrovancover.org		

Invoice To Same as Report ?		Client / Project Information		Analysis Request	
Hardcopy of Invoice with Report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:			Please indicate below Filtered, Preserved or both (F, P, F/P)
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:			MET-TCLP-VA (all metals, Hg)		MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)		Number of Containers
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type							
BA1907-A-1		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-2		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-3		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-4		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-5		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-6		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-7		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-8		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-9		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-10		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-11		13-Feb-19	9:00	Soil	X	X			X		1
BA1907-A-12		13-Feb-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-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
<i>[Signature]</i>	20 Feb-19	08:00	WA	2/19	12 pm	19 °C				