

Bottom Ash Data

2019 Week 24

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on June 28, 2019. The data represents bottom ash composite results for week 24 of 2019 (June 9, 2019 to June 15, 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.



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Date Received: 18-JUN-19
Report Date: 26-JUN-19 12:03 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2294119
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2294119-1 soil 12-JUN-19 09:00 BA1924-A-1	L2294119-2 soil 12-JUN-19 09:00 BA1924-A-2	L2294119-3 soil 12-JUN-19 09:00 BA1924-A-3	L2294119-4 soil 12-JUN-19 09:00 BA1924-A-4	L2294119-5 soil 12-JUN-19 09:00 BA1924-A-5	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	18.7	18.1	17.1	18.1	17.7
	pH (1:2 soil:water) (pH)	11.02	11.06	10.96	10.94	11.14
Metals	Aluminum (Al) (mg/kg)	29700	29300	29900	34500	28800
	Antimony (Sb) (mg/kg)	141	301	177	160	124
	Arsenic (As) (mg/kg)	43.6	46.6	36.5	37.5	41.3
	Barium (Ba) (mg/kg)	652	609	622	500	599
	Beryllium (Be) (mg/kg)	0.41	0.35	0.38	0.36	0.35
	Bismuth (Bi) (mg/kg)	7.23	10.1	6.76	10.6	8.91
	Boron (B) (mg/kg)	308	262	247	216	334
	Cadmium (Cd) (mg/kg)	11.4	12.1	10.6	11.5	46.2
	Calcium (Ca) (mg/kg)	122000	119000	124000	120000	119000
	Chromium (Cr) (mg/kg)	198	221	215	199	179
	Cobalt (Co) (mg/kg)	61.1	44.2	31.1	37.8	52.4
	Copper (Cu) (mg/kg)	2830	9340	11600	10700	20100
	Iron (Fe) (mg/kg)	53000	61800	62900	67200	47300
	Lead (Pb) (mg/kg)	448	6490	745	1120	827
	Lithium (Li) (mg/kg)	19.6	19.9	18.8	17.9	17.2
	Magnesium (Mg) (mg/kg)	11700	10300	10300	9920	12700
	Manganese (Mn) (mg/kg)	1210	1100	929	920	811
	Mercury (Hg) (mg/kg)	<0.050	0.058	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	34.4	21.3	24.7	24.9	23.2
	Nickel (Ni) (mg/kg)	181	182	117	231	191
	Phosphorus (P) (mg/kg)	10500	11000	9940	10500	10500
	Potassium (K) (mg/kg)	6030	5570	5900	5430	6240
	Selenium (Se) (mg/kg)	0.32	0.41	0.32	0.34	0.36
	Silver (Ag) (mg/kg)	3.20	7.72	2.90	9.29	4.65
	Sodium (Na) (mg/kg)	18000	15700	17300	16400	15400
	Strontium (Sr) (mg/kg)	296	291	270	267	278
	Sulfur (S) (mg/kg)	12200	12000	11800	12700	12300
	Thallium (Tl) (mg/kg)	0.061	0.101	0.063	0.056	0.054
	Tin (Sn) (mg/kg)	144	120	177	295	87.5
	Titanium (Ti) (mg/kg)	738	702	854	562	767
	Tungsten (W) (mg/kg)	5.14	7.14	5.17	4.50	6.52
	Uranium (U) (mg/kg)	6.12	6.47	5.90	6.38	5.81
	Vanadium (V) (mg/kg)	72.6	57.9	52.4	54.4	52.7
	Zinc (Zn) (mg/kg)	3620	5100	4860	5310	7160
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	1.3	<1.0

* 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	L2294119-6 soil 12-JUN-19 09:00 BA1924-A-6	L2294119-7 soil 12-JUN-19 09:00 BA1924-A-7	L2294119-8 soil 12-JUN-19 09:00 BA1924-A-8	L2294119-9 soil 12-JUN-19 09:00 BA1924-A-9	L2294119-10 soil 12-JUN-19 09:00 BA1924-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.6	17.6	18.3	18.1	18.6
	pH (1:2 soil:water) (pH)	11.10	11.14	11.15	11.21	11.16
Metals	Aluminum (Al) (mg/kg)	31500	32600	37100	25400	31100
	Antimony (Sb) (mg/kg)	127	130	135	133	129
	Arsenic (As) (mg/kg)	34.6	40.8	38.5	43.3	30.9
	Barium (Ba) (mg/kg)	652	665	617	580	602
	Beryllium (Be) (mg/kg)	0.33	0.37	0.37	0.33	0.34
	Bismuth (Bi) (mg/kg)	8.10	7.20	7.17	6.82	6.46
	Boron (B) (mg/kg)	258	289	245	498	222
	Cadmium (Cd) (mg/kg)	12.0	10.9	13.7	12.0	11.2
	Calcium (Ca) (mg/kg)	122000	117000	124000	119000	118000
	Chromium (Cr) (mg/kg)	143	147	217	167	144
	Cobalt (Co) (mg/kg)	60.3	18.3	31.6	82.5	22.1
	Copper (Cu) (mg/kg)	47300	2950	1280	3790	1780
	Iron (Fe) (mg/kg)	48400	53900	53500	53000	49000
	Lead (Pb) (mg/kg)	471	724	1300	373	788
	Lithium (Li) (mg/kg)	19.7	22.4	18.5	19.8	17.6
	Magnesium (Mg) (mg/kg)	9980	10200	10500	9750	10600
	Manganese (Mn) (mg/kg)	854	867	919	1090	717
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	21.5	22.9	21.8	22.7	23.3
	Nickel (Ni) (mg/kg)	100	135	99.1	206	276
	Phosphorus (P) (mg/kg)	11100	10400	10700	9890	11000
	Potassium (K) (mg/kg)	5530	5300	5540	5380	5360
	Selenium (Se) (mg/kg)	0.36	0.35	0.32	0.29	0.39
	Silver (Ag) (mg/kg)	19.1	3.78	3.80	5.38	3.11
	Sodium (Na) (mg/kg)	15700	15600	16400	15300	16000
	Strontium (Sr) (mg/kg)	396	307	286	736	279
	Sulfur (S) (mg/kg)	11800	11800	12500	11700	12300
	Thallium (Tl) (mg/kg)	0.065	0.100	0.066	0.053	0.063
	Tin (Sn) (mg/kg)	98.2	127	85.8	157	96.4
	Titanium (Ti) (mg/kg)	991	855	576	496	707
	Tungsten (W) (mg/kg)	6.70	6.22	4.42	5.47	4.86
	Uranium (U) (mg/kg)	6.17	6.36	6.14	5.68	5.70
	Vanadium (V) (mg/kg)	52.6	59.2	55.1	53.3	49.7
	Zinc (Zn) (mg/kg)	5340	6200	4150	4670	3800
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0

* 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	L2294119-11 soil 12-JUN-19 09:00 BA1924-A-11	L2294119-12 soil 12-JUN-19 09:00 BA1924-A-12		
Grouping	Analyte				
SOIL					
Physical Tests	Moisture (%)	19.2	18.2		
	pH (1:2 soil:water) (pH)	11.11	11.16		
Metals	Aluminum (Al) (mg/kg)	30700	31800		
	Antimony (Sb) (mg/kg)	119	117		
	Arsenic (As) (mg/kg)	29.1	31.8		
	Barium (Ba) (mg/kg)	659	502		
	Beryllium (Be) (mg/kg)	0.38	0.34		
	Bismuth (Bi) (mg/kg)	7.87	7.17		
	Boron (B) (mg/kg)	273	193		
	Cadmium (Cd) (mg/kg)	9.66	10.1		
	Calcium (Ca) (mg/kg)	118000	115000		
	Chromium (Cr) (mg/kg)	139	233		
	Cobalt (Co) (mg/kg)	95.1	20.9		
	Copper (Cu) (mg/kg)	3070	2330		
	Iron (Fe) (mg/kg)	64000	58000		
	Lead (Pb) (mg/kg)	418	10800		
	Lithium (Li) (mg/kg)	17.8	14.2		
	Magnesium (Mg) (mg/kg)	10100	9430		
	Manganese (Mn) (mg/kg)	1010	875		
	Mercury (Hg) (mg/kg)	<0.050	<0.050		
	Molybdenum (Mo) (mg/kg)	20.7	19.0		
	Nickel (Ni) (mg/kg)	118	138		
	Phosphorus (P) (mg/kg)	9530	9240		
	Potassium (K) (mg/kg)	5340	4920		
	Selenium (Se) (mg/kg)	0.37	0.29		
	Silver (Ag) (mg/kg)	3.87	2.85		
	Sodium (Na) (mg/kg)	15800	14700		
	Strontium (Sr) (mg/kg)	288	271		
	Sulfur (S) (mg/kg)	10900	11300		
	Thallium (Tl) (mg/kg)	0.057	0.124		
	Tin (Sn) (mg/kg)	92.8	109		
	Titanium (Ti) (mg/kg)	601	449		
	Tungsten (W) (mg/kg)	4.44	4.53		
	Uranium (U) (mg/kg)	5.54	5.11		
	Vanadium (V) (mg/kg)	48.8	47.0		
	Zinc (Zn) (mg/kg)	4260	5640		
	Zirconium (Zr) (mg/kg)	1.0	1.2		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2294119-1	L2294119-2	L2294119-3	L2294119-4	L2294119-5
		Description	soil	soil	soil	soil	soil
		Sampled Date	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1924-A-1	BA1924-A-2	BA1924-A-3	BA1924-A-4	BA1924-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.32	11.36	11.37	11.43	11.34
	2nd Preliminary pH (pH)		8.33	8.29	8.12	8.51	8.87
	Final pH (pH)		5.77	5.91	6.00	6.01	6.05
	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)		2.97	3.14	2.95	2.97	3.03
	Cadmium (Cd)-Leachable (mg/L)		0.215	0.342	0.184	0.173	0.168
	Calcium (Ca)-Leachable (mg/L)		1690	1790	1750	1750	1870
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.824	0.782	0.954	0.808	0.867
	Copper (Cu)-Leachable (mg/L)		0.471	0.958	1.08	0.940	0.786
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	0.27	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		111	124	128	119	126
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.87	0.52	0.55	0.48	0.53
	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)		42.0	53.0	36.2	48.8	30.2

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2294119-6	L2294119-7	L2294119-8	L2294119-9	L2294119-10
		Description	soil	soil	soil	soil	soil
		Sampled Date	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1924-A-6	BA1924-A-7	BA1924-A-8	BA1924-A-9	BA1924-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.38	11.38	11.31	11.35	11.40
	2nd Preliminary pH (pH)		8.59	8.44	8.23	8.00	8.56
	Final pH (pH)		5.78	5.92	5.94	6.05	5.95
	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)		2.83	3.13	2.97	3.02	3.25
	Cadmium (Cd)-Leachable (mg/L)		0.406	0.307	0.182	0.186	0.193
	Calcium (Ca)-Leachable (mg/L)		1840	1780	1900	1880	1920
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.563	1.00	0.597	3.19	0.447
	Copper (Cu)-Leachable (mg/L)		0.859	1.82	1.20	1.01	0.736
	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)		120	124	119	126	125
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.70	0.55	0.55	0.69	0.56
	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)		53.7	44.1	49.4	33.6	48.1

* 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	L2294119-11 soil 12-JUN-19 09:00 BA1924-A-11	L2294119-12 soil 12-JUN-19 09:00 BA1924-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.38	11.43		
	2nd Preliminary pH (pH)	8.45	8.40		
	Final pH (pH)	5.97	6.03		
	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)	3.19	3.11		
	Cadmium (Cd)-Leachable (mg/L)	0.508	0.991		
	Calcium (Ca)-Leachable (mg/L)	1820	1880		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	0.529	1.61		
	Copper (Cu)-Leachable (mg/L)	1.26	1.09		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	126	127		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.47	0.53		
	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)	34.3	38.6		

* 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	Bismuth (Bi)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Manganese (Mn)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Molybdenum (Mo)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)	DUP-H	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Laboratory Control Sample	Antimony (Sb)	MES	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2294119-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2294119-1, -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.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
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
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Reference Information

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.



L2294119-COFC

COC # _____

Page _____ of _____

Report To		Rept		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	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT			
Address:	5150 Riverbend Drive Burnaby BC	Email 1:	smckinney@covanta.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT			
Phone:	604-521-1025	Fax:	dskrypnik@covanta.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT			
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 2:	trjohnson4@covanta.com			Analysis Request			
		Email 3:	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 #:				MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)					Number of Containers
Company:		PO / AFE:	PO# 46693 Weekly Bottom Ash - Suite											
Contact:		LSD:	(includes 2:1 pH)											
Address:		Quote #:												
Phone:		Fax:												
Lab Work Order # (lab use only)		ALS Contact:		Sampler:										

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-TCLP-VA (all metals, Hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)					Number of Containers
BA1924-A-1		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-2		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-3		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-4		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-5		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-6		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-7		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-8		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-9		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-10		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-11		12-Jun-19	9:00	Soil	X	X		X					1
BA1924-A-12		12-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-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
<i>[Signature]</i>	18-JUN-19	0800	HA	6/18	1103	220C				Yes / No ? If Yes add SIF