

## Bottom Ash Data

2019 Week 17

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The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on May 8, 2019. The data represents bottom ash composite results for week 17 of 2019 (April 21, 2019 to April 27, 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: 30-APR-19  
Report Date: 07-MAY-19 14:18 (MT)  
Version: FINAL

Client Phone: 604-521-1025

## Certificate of Analysis

Lab Work Order #: L2265205  
Project P.O. #: VANCO-0000048466  
Job Reference:  
C of C Numbers:  
Legal Site Desc: PO# 46693 Weekly Bottom Ash - Suite

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Brent Mack, B.Sc.  
Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700  
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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2265205-1 Soil 24-APR-19 09:00 BA1917-A-1	L2265205-2 Soil 24-APR-19 09:00 BA1917-A-2	L2265205-3 Soil 24-APR-19 09:00 BA1917-A-3	L2265205-4 Soil 24-APR-19 09:00 BA1917-A-4	L2265205-5 Soil 24-APR-19 09:00 BA1917-A-5	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	22.1	22.2	21.4	21.8	21.1
	pH (1:2 soil:water) (pH)	10.62	11.19	11.06	11.12	11.17
<b>Metals</b>	Aluminum (Al) (mg/kg)	42300	40800	35600	45100	33500
	Antimony (Sb) (mg/kg)	139	153	147	142	132
	Arsenic (As) (mg/kg)	31.4	38.3	35.1	40.1	33.7
	Barium (Ba) (mg/kg)	656	656	595	683	659
	Beryllium (Be) (mg/kg)	0.43	0.50	0.47	0.47	0.46
	Bismuth (Bi) (mg/kg)	8.19	8.32	13.0	7.36	7.58
	Boron (B) (mg/kg)	215	249	276	352	274
	Cadmium (Cd) (mg/kg)	17.2	17.7	17.6	168	14.8
	Calcium (Ca) (mg/kg)	134000	153000	156000	146000	143000
	Chromium (Cr) (mg/kg)	177	190	253	187	199
	Cobalt (Co) (mg/kg)	42.2	99.7	56.9	44.2	36.8
	Copper (Cu) (mg/kg)	4680	3880	2670	2960	1780
	Iron (Fe) (mg/kg)	40900	66900	65600	66400	69000
	Lead (Pb) (mg/kg)	815	524	578	1460	6160
	Lithium (Li) (mg/kg)	20.7	22.0	21.9	21.0	19.9
	Magnesium (Mg) (mg/kg)	12500	13400	12500	13100	12100
	Manganese (Mn) (mg/kg)	2750	883	951	1010	897
	Mercury (Hg) (mg/kg)	0.057	0.066	0.118	0.084	0.063
	Molybdenum (Mo) (mg/kg)	36.2	39.2	40.9	41.4	38.2
	Nickel (Ni) (mg/kg)	183	213	294	198	185
	Phosphorus (P) (mg/kg)	11300	11400	11900	11100	10400
	Potassium (K) (mg/kg)	6080	5940	6140	5890	5230
	Selenium (Se) (mg/kg)	0.44	0.58	0.49	0.47	0.41
	Silver (Ag) (mg/kg)	4.26	7.00	7.28	4.90	4.08
	Sodium (Na) (mg/kg)	17200	16500	16400	15800	14900
	Strontium (Sr) (mg/kg)	317	363	386	361	335
	Sulfur (S) (mg/kg)	15600	16400	18300	14900	14500
	Thallium (Tl) (mg/kg)	0.080	0.084	0.089	0.084	0.200
	Tin (Sn) (mg/kg)	122	180	141	357	132
	Titanium (Ti) (mg/kg)	808	1010	687	1140	881
	Tungsten (W) (mg/kg)	6.92	7.88	7.06	6.44	5.90
	Uranium (U) (mg/kg)	5.52	5.58	6.21	5.75	5.84
	Vanadium (V) (mg/kg)	53.9	61.7	60.9	56.8	56.4
	Zinc (Zn) (mg/kg)	4670	6080	5180	4200	3500
	Zirconium (Zr) (mg/kg)	1.5	1.2	1.3	1.6	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	L2265205-6 Soil 24-APR-19 09:00 BA1917-A-6	L2265205-7 Soil 24-APR-19 09:00 BA1917-A-7	L2265205-8 Soil 24-APR-19 09:00 BA1917-A-8	L2265205-9 Soil 24-APR-19 09:00 BA1917-A-9	L2265205-10 Soil 24-APR-19 09:00 BA1917-A-10	
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	21.6	21.9	21.2	21.6	23.0
	pH (1:2 soil:water) (pH)	11.04	11.12	11.23	11.10	11.08
<b>Metals</b>	Aluminum (Al) (mg/kg)	39600	46500	38600	34300	44800
	Antimony (Sb) (mg/kg)	135	136	153	160	156
	Arsenic (As) (mg/kg)	33.6	33.8	45.3	44.8	31.1
	Barium (Ba) (mg/kg)	623	607	680	654	670
	Beryllium (Be) (mg/kg)	0.51	0.44	0.47	0.54	0.43
	Bismuth (Bi) (mg/kg)	8.47	9.43	8.38	11.2	7.00
	Boron (B) (mg/kg)	271	215	321	273	325
	Cadmium (Cd) (mg/kg)	14.5	13.8	13.2	16.6	12.5
	Calcium (Ca) (mg/kg)	143000	149000	156000	162000	138000
	Chromium (Cr) (mg/kg)	174	440	244	208	154
	Cobalt (Co) (mg/kg)	54.5	97.9	48.4	65.2	87.7
	Copper (Cu) (mg/kg)	2430	2040	3750	2390	3800
	Iron (Fe) (mg/kg)	62600	58700	86900	60200	52300
	Lead (Pb) (mg/kg)	1010	598	1270	633	1380
	Lithium (Li) (mg/kg)	23.5	21.6	20.0	20.7	19.6
	Magnesium (Mg) (mg/kg)	13100	12500	14000	12200	11200
	Manganese (Mn) (mg/kg)	894	866	1620	776	773
	Mercury (Hg) (mg/kg)	0.070	0.065	0.068	0.067	0.060
	Molybdenum (Mo) (mg/kg)	34.8	46.6	58.0	42.2	36.2
	Nickel (Ni) (mg/kg)	199	400	197	169	496
	Phosphorus (P) (mg/kg)	11500	11600	11000	12600	11700
	Potassium (K) (mg/kg)	5540	5860	5710	6150	5530
	Selenium (Se) (mg/kg)	0.41	0.49	0.50	0.50	0.46
	Silver (Ag) (mg/kg)	4.41	6.32	10.3	6.63	6.30
	Sodium (Na) (mg/kg)	16500	16100	16000	17500	15800
	Strontium (Sr) (mg/kg)	373	805	394	328	331
	Sulfur (S) (mg/kg)	15800	15100	15500	17100	13600
	Thallium (Tl) (mg/kg)	0.086	0.078	0.079	0.084	0.073
	Tin (Sn) (mg/kg)	273	145	275	133	177
	Titanium (Ti) (mg/kg)	911	1020	966	763	1340
	Tungsten (W) (mg/kg)	5.61	6.54	7.35	7.32	6.35
	Uranium (U) (mg/kg)	5.84	5.58	5.91	6.35	5.41
	Vanadium (V) (mg/kg)	58.8	62.1	61.5	57.9	49.4
	Zinc (Zn) (mg/kg)	4470	5810	4660	5000	4370
	Zirconium (Zr) (mg/kg)	2.0	2.0	1.3	1.4	4.2

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2265205-11	L2265205-12		
		Description	Soil	Soil		
		Sampled Date	24-APR-19	24-APR-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1917-A-11	BA1917-A-12		
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	Moisture (%)	20.9	21.6			
	pH (1:2 soil:water) (pH)	11.04	11.63			
<b>Metals</b>	Aluminum (Al) (mg/kg)	41300	37700			
	Antimony (Sb) (mg/kg)	124	170			
	Arsenic (As) (mg/kg)	29.2	28.1			
	Barium (Ba) (mg/kg)	650	662			
	Beryllium (Be) (mg/kg)	0.50	0.40			
	Bismuth (Bi) (mg/kg)	7.28	11.2			
	Boron (B) (mg/kg)	184	676			
	Cadmium (Cd) (mg/kg)	12.1	15.4			
	Calcium (Ca) (mg/kg)	141000	123000			
	Chromium (Cr) (mg/kg)	142	276			
	Cobalt (Co) (mg/kg)	40.9	28.5			
	Copper (Cu) (mg/kg)	1620	35900			
	Iron (Fe) (mg/kg)	55200	65600			
	Lead (Pb) (mg/kg)	1540	562			
	Lithium (Li) (mg/kg)	18.9	16.9			
	Magnesium (Mg) (mg/kg)	11900	11100			
	Manganese (Mn) (mg/kg)	1950	799			
	Mercury (Hg) (mg/kg)	0.071	0.120			
	Molybdenum (Mo) (mg/kg)	34.1	40.7			
	Nickel (Ni) (mg/kg)	138	236			
	Phosphorus (P) (mg/kg)	10800	10000			
	Potassium (K) (mg/kg)	5730	5390			
	Selenium (Se) (mg/kg)	0.45	0.52			
	Silver (Ag) (mg/kg)	3.38	5.88			
	Sodium (Na) (mg/kg)	15500	15000			
	Strontium (Sr) (mg/kg)	311	279			
	Sulfur (S) (mg/kg)	13800	12600			
	Thallium (Tl) (mg/kg)	0.078	0.068			
	Tin (Sn) (mg/kg)	116	119			
	Titanium (Ti) (mg/kg)	1260	1100			
	Tungsten (W) (mg/kg)	5.91	5.92			
	Uranium (U) (mg/kg)	5.47	4.73			
Vanadium (V) (mg/kg)	51.7	52.2				
Zinc (Zn) (mg/kg)	4180	7370				
Zirconium (Zr) (mg/kg)	2.9	1.2				

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2265205-1	L2265205-2	L2265205-3	L2265205-4	L2265205-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	24-APR-19	24-APR-19	24-APR-19	24-APR-19	24-APR-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1917-A-1	BA1917-A-2	BA1917-A-3	BA1917-A-4	BA1917-A-5
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.14	11.17	11.16	11.25	11.21
	2nd Preliminary pH (pH)		8.85	8.42	8.50	8.51	8.41
	Final pH (pH)		6.40	6.47	6.16	6.32	6.36
	Extraction Solution Initial pH (pH)		2.84	2.84	2.84	2.84	2.84
	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)		3.19	3.22	3.13	3.02	3.16
	Cadmium (Cd)-Leachable (mg/L)		0.445	0.211	0.276	0.195	0.235
	Calcium (Ca)-Leachable (mg/L)		2270	2400	2380	2180	2140
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.645	1.04	0.529	0.388	0.391
	Copper (Cu)-Leachable (mg/L)		0.650	0.642	1.14	0.638	0.539
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		<0.25	<0.25	0.29	<0.25	0.30
	Magnesium (Mg)-Leachable (mg/L)		152	145	152	137	135
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.56	0.54	0.54	0.48	0.41
	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)		24.7	26.6	41.4	37.6	28.8

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2265205-6	L2265205-7	L2265205-8	L2265205-9	L2265205-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	24-APR-19	24-APR-19	24-APR-19	24-APR-19	24-APR-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1917-A-6	BA1917-A-7	BA1917-A-8	BA1917-A-9	BA1917-A-10
Grouping	Analyte						
<b>SOIL</b>							
<b>TCLP Metals</b>	1st Preliminary pH (pH)		11.23	11.19	11.19	11.25	11.21
	2nd Preliminary pH (pH)		8.85	8.92	8.97	9.13	8.67
	Final pH (pH)		6.29	6.28	6.30	6.32	6.37
	Extraction Solution Initial pH (pH)		2.84	2.84	2.84	2.84	2.84
	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)		2.90	3.01	2.88	2.84	2.98
	Cadmium (Cd)-Leachable (mg/L)		0.247	0.188	0.263	0.471	0.432
	Calcium (Ca)-Leachable (mg/L)		2330	2280	2240	2260	2300
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.688	0.539	0.533	0.944	0.435
	Copper (Cu)-Leachable (mg/L)		0.827	0.682	0.689	0.712	0.741
	Iron (Fe)-Leachable (mg/L)		<5.0	<5.0	<5.0	<5.0	<5.0
	Lead (Pb)-Leachable (mg/L)		0.45	<0.25	<0.25	<0.25	<0.25
	Magnesium (Mg)-Leachable (mg/L)		147	142	141	149	144
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.55	0.70	0.67	0.45	0.46
	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)		35.4	35.1	30.9	69.3	29.3

\* 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	L2265205-11 Soil 24-APR-19 09:00 BA1917-A-11	L2265205-12 Soil 24-APR-19 09:00 BA1917-A-12		
Grouping	Analyte				
<b>SOIL</b>					
<b>TCLP Metals</b>	1st Preliminary pH (pH)	11.35	11.32		
	2nd Preliminary pH (pH)	8.85	8.72		
	Final pH (pH)	6.27	6.49		
	Extraction Solution Initial pH (pH)	2.84	2.84		
	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)	3.03	2.82		
	Cadmium (Cd)-Leachable (mg/L)	0.432	0.220		
	Calcium (Ca)-Leachable (mg/L)	2280	2230		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	1.11	0.750		
	Copper (Cu)-Leachable (mg/L)	1.09	0.618		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	146	132		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.65	0.44		
	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)	35.3	67.5		

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



## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)	DUP-H	L2265205-12
Duplicate	Boron (B)	DUP-H	L2265205-12
Duplicate	Chromium (Cr)	DUP-H	L2265205-12
Duplicate	Cobalt (Co)	DUP-H	L2265205-12
Duplicate	Copper (Cu)	DUP-H	L2265205-12
Duplicate	Copper (Cu)	DUP-H	L2265205-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)	DUP-H	L2265205-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)	DUP-H	L2265205-12
Duplicate	Manganese (Mn)	DUP-H	L2265205-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)	DUP-H	L2265205-12
Duplicate	Tin (Sn)	DUP-H	L2265205-12
Duplicate	Titanium (Ti)	DUP-H	L2265205-12
Duplicate	Zinc (Zn)	DUP-H	L2265205-12
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2265205-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2265205-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2265205-1, -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.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>HG-200.2-CVAF-VA</b>	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.			
<b>HG-TCLP-CVAFS-VA</b>	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).			
<b>MET-200.2-CCMS-VA</b>	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 <sub>2</sub> S) may be excluded if lost during sampling, storage, or digestion.			
<b>MET-TCLP-CCMS-VA</b>	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).			
<b>MOISTURE-VA</b>	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.			
<b>PH-1:2-VA</b>	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.

## Reference Information

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:

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

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### 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.



Ch



L2265205-COFC

COC #

Page \_\_\_ of \_\_\_

<b>Report To</b>		<b>Report</b>		<b>Requested</b> (Rush for routine analysis subject to availability)	
Company:	Covanta Energy	<input type="checkbox"/> Standard	<input type="checkbox"/> Excel	<input type="checkbox"/> Digital	<input checked="" type="checkbox"/> Regular (Standard Turnaround Times - Business Days)
Contact:	Steve McKinney / Dan Skrypnik	<input checked="" type="checkbox"/> PDF	<input type="checkbox"/> Fax	<input type="checkbox"/> 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="checkbox"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	604-521-1025	Email 2:	rjohnson4@covanta.com	<input type="checkbox"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
	<input type="checkbox"/> Yes <input type="checkbox"/> No	Email 3:	dskrypnik@covanta.com	<b>Analysis Request</b>	
			brent.kirkpatrick@metrovancover.org		
			Sarah.Wellman@metrovancover.org		

<b>Invoice To</b> Same as Report ?		<b>Client / Project Information</b>		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:					

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
BA1917-A-1		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-2		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-3		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-4		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-5		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-6		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-7		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-8		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-9		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-10		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-11		24-Apr-19	9:00	Soil	X	X		X	1
BA1917-A-12		24-Apr-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)			Observations: Yes / No ? If Yes add SIF
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	
<i>[Signature]</i>	30-Apr-19	0730	HA	4/30	11:42	22°C				