

Bottom Ash Data

2019 Week 30

The following analytical report was sent to the Ministry of Environment and Climate Change Strategy on August 8, 2019. The data represents bottom ash composite results for week 30 of 2019 (July 21, 2019 to July 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-JUL-19
Report Date: 06-AUG-19 17:19 (MT)
Version: FINAL

Client Phone: 604-521-1025

Certificate of Analysis

Lab Work Order #: L2319540
Project P.O. #: VANCO-0000048466
Job Reference:
C of C Numbers:
Legal Site Desc: 46693 Weekly Bottom Ash - Suite (includes 2:1 pH)

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	L2319540-1 Soil 24-JUL-19 09:00 BA1930-A-1	L2319540-2 Soil 24-JUL-19 09:00 BA1930-A-2	L2319540-3 Soil 24-JUL-19 09:00 BA1930-A-3	L2319540-4 Soil 24-JUL-19 09:00 BA1930-A-4	L2319540-5 Soil 24-JUL-19 09:00 BA1930-A-5
Grouping	Analyte				
SOIL					
Physical Tests	Moisture (%)	17.0	17.3	17.9	17.0
	pH (1:2 soil:water) (pH)	10.92	10.78	11.16	10.84
Metals	Aluminum (Al) (mg/kg)	33100	40600	34300	29600
	Antimony (Sb) (mg/kg)	111	110	104	105
	Arsenic (As) (mg/kg)	31.6	30.4	33.3	26.5
	Barium (Ba) (mg/kg)	649	620	596	544
	Beryllium (Be) (mg/kg)	0.46	0.36	0.40	0.39
	Bismuth (Bi) (mg/kg)	8.44	5.91	6.39	14.9
	Boron (B) (mg/kg)	263	232	276	233
	Cadmium (Cd) (mg/kg)	12.4	13.6	14.0	10.7
	Calcium (Ca) (mg/kg)	125000	117000	117000	118000
	Chromium (Cr) (mg/kg)	133	181	162	144
	Cobalt (Co) (mg/kg)	26.7	31.7	117	25.0
	Copper (Cu) (mg/kg)	3770	5370	1440	1320
	Iron (Fe) (mg/kg)	57200	91100	89700	68200
	Lead (Pb) (mg/kg)	376	271	293	356
	Lithium (Li) (mg/kg)	18.0	17.5	30.1	16.8
	Magnesium (Mg) (mg/kg)	10400	9050	9400	8890
	Manganese (Mn) (mg/kg)	911	867	1330	727
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	23.0	41.5	23.4	28.9
	Nickel (Ni) (mg/kg)	81.4	208	277	373
	Phosphorus (P) (mg/kg)	10900	9560	9980	9440
	Potassium (K) (mg/kg)	5250	4940	4910	4780
	Selenium (Se) (mg/kg)	0.40	0.37	0.31	0.34
	Silver (Ag) (mg/kg)	3.78	3.86	3.63	4.80
	Sodium (Na) (mg/kg)	15200	14900	15600	14400
	Strontium (Sr) (mg/kg)	269	285	267	270
	Sulfur (S) (mg/kg)	11500	10900	10900	10900
	Thallium (Tl) (mg/kg)	0.050	<0.050	<0.050	<0.050
	Tin (Sn) (mg/kg)	117	141	105	143
	Titanium (Ti) (mg/kg)	1410	1740	1630	935
	Tungsten (W) (mg/kg)	6.49	4.49	4.73	7.07
	Uranium (U) (mg/kg)	4.35	3.85	4.19	3.84
	Vanadium (V) (mg/kg)	46.3	45.3	44.4	46.3
	Zinc (Zn) (mg/kg)	3440	5500	3480	3580
	Zirconium (Zr) (mg/kg)	1.4	2.0	1.8	1.2

* 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	L2319540-6 Soil 24-JUL-19 09:00 BA1930-A-6	L2319540-7 Soil 24-JUL-19 09:00 BA1930-A-7	L2319540-8 Soil 24-JUL-19 09:00 BA1930-A-8	L2319540-9 Soil 24-JUL-19 09:00 BA1930-A-9	L2319540-10 Soil 24-JUL-19 09:00 BA1930-A-10	
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.4	17.6	17.6	17.5	17.3
	pH (1:2 soil:water) (pH)	10.97	10.93	10.92	10.76	10.65
Metals	Aluminum (Al) (mg/kg)	30800	41700	35700	29600	46600
	Antimony (Sb) (mg/kg)	135	120	97.8	118	108
	Arsenic (As) (mg/kg)	38.2	30.3	29.8	28.3	28.2
	Barium (Ba) (mg/kg)	790	571	584	637	636
	Beryllium (Be) (mg/kg)	0.38	0.48	0.72	0.39	0.40
	Bismuth (Bi) (mg/kg)	8.16	6.29	8.62	7.43	6.83
	Boron (B) (mg/kg)	431	300	293	275	294
	Cadmium (Cd) (mg/kg)	12.9	11.1	9.97	11.7	9.92
	Calcium (Ca) (mg/kg)	125000	124000	114000	125000	126000
	Chromium (Cr) (mg/kg)	194	136	130	134	177
	Cobalt (Co) (mg/kg)	26.1	30.3	22.2	23.9	29.6
	Copper (Cu) (mg/kg)	8370	5250	4100	1520	7970
	Iron (Fe) (mg/kg)	75400	68000	75000	86200	69700
	Lead (Pb) (mg/kg)	1460	1210	391	342	346
	Lithium (Li) (mg/kg)	16.3	21.5	17.9	16.0	17.3
	Magnesium (Mg) (mg/kg)	9380	8220	8400	9180	8800
	Manganese (Mn) (mg/kg)	844	896	3400	2380	2250
	Mercury (Hg) (mg/kg)	0.058	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	29.1	26.2	109	24.6	27.2
	Nickel (Ni) (mg/kg)	424	136	156	103	108
	Phosphorus (P) (mg/kg)	9830	9560	9600	10600	11100
	Potassium (K) (mg/kg)	4960	4970	4460	5080	5160
	Selenium (Se) (mg/kg)	0.39	0.32	0.33	0.40	0.48
	Silver (Ag) (mg/kg)	5.26	5.35	22.1	3.03	4.36
	Sodium (Na) (mg/kg)	15000	15600	13700	14900	14900
	Strontium (Sr) (mg/kg)	281	293	242	264	265
	Sulfur (S) (mg/kg)	11600	11800	10200	11700	11000
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.053	<0.050
	Tin (Sn) (mg/kg)	188	118	375	137	467
	Titanium (Ti) (mg/kg)	1580	1740	1440	1030	1480
	Tungsten (W) (mg/kg)	11.6	3.77	3.83	5.20	6.87
	Uranium (U) (mg/kg)	4.50	4.16	3.75	4.33	4.36
	Vanadium (V) (mg/kg)	42.4	42.2	39.6	51.4	44.6
	Zinc (Zn) (mg/kg)	5310	8910	3960	10800	3960
	Zirconium (Zr) (mg/kg)	1.9	3.4	1.5	1.0	2.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2319540-11	L2319540-12		
		Description	Soil	Soil		
		Sampled Date	24-JUL-19	24-JUL-19		
		Sampled Time	09:00	09:00		
		Client ID	BA1930-A-11	BA1930-A-12		
Grouping	Analyte					
SOIL						
Physical Tests	Moisture (%)	17.2	17.4			
	pH (1:2 soil:water) (pH)	10.66	10.66			
Metals	Aluminum (Al) (mg/kg)	35900	47500			
	Antimony (Sb) (mg/kg)	147	94.8			
	Arsenic (As) (mg/kg)	28.9	27.6			
	Barium (Ba) (mg/kg)	586	608			
	Beryllium (Be) (mg/kg)	0.38	0.39			
	Bismuth (Bi) (mg/kg)	11.6	7.86			
	Boron (B) (mg/kg)	222	236			
	Cadmium (Cd) (mg/kg)	10.5	29.3			
	Calcium (Ca) (mg/kg)	113000	106000			
	Chromium (Cr) (mg/kg)	141	151			
	Cobalt (Co) (mg/kg)	21.2	97.3			
	Copper (Cu) (mg/kg)	12500	1900			
	Iron (Fe) (mg/kg)	66500	60400			
	Lead (Pb) (mg/kg)	413	1210			
	Lithium (Li) (mg/kg)	32.9	20.0			
	Magnesium (Mg) (mg/kg)	8970	11000			
	Manganese (Mn) (mg/kg)	688	914			
	Mercury (Hg) (mg/kg)	<0.050	<0.050			
	Molybdenum (Mo) (mg/kg)	26.6	27.3			
	Nickel (Ni) (mg/kg)	203	174			
	Phosphorus (P) (mg/kg)	8980	9260			
	Potassium (K) (mg/kg)	4480	5150			
	Selenium (Se) (mg/kg)	0.33	0.39			
	Silver (Ag) (mg/kg)	5.37	3.61			
	Sodium (Na) (mg/kg)	13400	14700			
	Strontium (Sr) (mg/kg)	302	251			
	Sulfur (S) (mg/kg)	10900	11900			
	Thallium (Tl) (mg/kg)	<0.050	<0.050			
	Tin (Sn) (mg/kg)	347	103			
	Titanium (Ti) (mg/kg)	602	1040			
	Tungsten (W) (mg/kg)	5.41	4.47			
	Uranium (U) (mg/kg)	3.88	3.59			
Vanadium (V) (mg/kg)	41.9	43.8				
Zinc (Zn) (mg/kg)	3830	3980				
Zirconium (Zr) (mg/kg)	1.5	1.4				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2319540-1	L2319540-2	L2319540-3	L2319540-4	L2319540-5
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	24-JUL-19	24-JUL-19	24-JUL-19	24-JUL-19	24-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1930-A-1	BA1930-A-2	BA1930-A-3	BA1930-A-4	BA1930-A-5
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.44	11.47	11.41	11.48	11.44
	2nd Preliminary pH (pH)		8.24	8.38	8.71	8.77	9.01
	Final pH (pH)		5.92	5.79	5.79	5.86	5.85
	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)		2.66	2.94	2.68	2.54	2.80
	Cadmium (Cd)-Leachable (mg/L)		0.195	0.459	0.186	0.344	0.242
	Calcium (Ca)-Leachable (mg/L)		1950	1960	1980	1900	1970
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		0.416	0.498	0.516	0.699	0.247
	Copper (Cu)-Leachable (mg/L)		0.824	1.34	0.867	0.426	1.46
	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)		114	112	115	117	114
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.65	0.46	0.56	0.52	0.43
	Selenium (Se)-Leachable (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	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)		53.0	43.4	64.8	60.0	43.5

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2319540-6	L2319540-7	L2319540-8	L2319540-9	L2319540-10
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	24-JUL-19	24-JUL-19	24-JUL-19	24-JUL-19	24-JUL-19
		Sampled Time	09:00	09:00	09:00	09:00	09:00
		Client ID	BA1930-A-6	BA1930-A-7	BA1930-A-8	BA1930-A-9	BA1930-A-10
Grouping	Analyte						
SOIL							
TCLP Metals	1st Preliminary pH (pH)		11.47	11.45	11.47	11.45	11.39
	2nd Preliminary pH (pH)		8.82	8.44	8.38	8.20	7.97
	Final pH (pH)		5.99	5.70	5.84	5.68	5.79
	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)		2.84	2.49	2.67	2.75	3.36
	Cadmium (Cd)-Leachable (mg/L)		0.231	0.346	0.207	0.205	0.243
	Calcium (Ca)-Leachable (mg/L)		2080	1870	1950	1950	1980
	Chromium (Cr)-Leachable (mg/L)		<0.25	<0.25	<0.25	<0.25	<0.25
	Cobalt (Co)-Leachable (mg/L)		1.11	0.565	0.451	1.14	0.717
	Copper (Cu)-Leachable (mg/L)		1.22	0.658	1.06	1.03	1.29
	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)		118	106	113	109	114
	Mercury (Hg)-Leachable (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Leachable (mg/L)		0.61	0.54	0.50	0.44	0.49
	Selenium (Se)-Leachable (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	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)		58.3	51.9	47.6	50.3	43.4

* 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	L2319540-11 Soil 24-JUL-19 09:00 BA1930-A-11	L2319540-12 Soil 24-JUL-19 09:00 BA1930-A-12		
Grouping	Analyte				
SOIL					
TCLP Metals	1st Preliminary pH (pH)	11.52	11.48		
	2nd Preliminary pH (pH)	8.30	8.24		
	Final pH (pH)	5.91	5.82		
	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)	2.76	2.85		
	Cadmium (Cd)-Leachable (mg/L)	0.196	0.213		
	Calcium (Ca)-Leachable (mg/L)	2030	1940		
	Chromium (Cr)-Leachable (mg/L)	<0.25	<0.25		
	Cobalt (Co)-Leachable (mg/L)	1.45	0.920		
	Copper (Cu)-Leachable (mg/L)	1.32	1.10		
	Iron (Fe)-Leachable (mg/L)	<5.0	<5.0		
	Lead (Pb)-Leachable (mg/L)	<0.25	<0.25		
	Magnesium (Mg)-Leachable (mg/L)	115	123		
	Mercury (Hg)-Leachable (mg/L)	<0.0010	<0.0010		
	Nickel (Ni)-Leachable (mg/L)	0.91	0.68		
	Selenium (Se)-Leachable (mg/L)	<0.10	<0.10		
	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)	47.2	54.4		

* 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)
Laboratory Control Sample	Phosphorus (P)	MES	L2319540-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Laboratory Control Sample	Potassium (K)	MES	L2319540-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2319540-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Leachable	MS-B	L2319540-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Leachable	MS-B	L2319540-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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**
AG-200.2-A-CCMS-VA	Soil	Elevated Ag in Soil by CRC ICPMS	EPA 200.2/6020A
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.			
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:

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

Chain of Custody Numbers:

Reference Information

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.



L2319540-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

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			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT				
Address: 5150 Riverbend Drive		Email 1: smckinney@covanta.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT				
Burnaby BC		Email 2: rjohnson4@covanta.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT				
Phone: 604-521-1025		Email 3: dskrypnik@covanta.com			Analysis Request				
Fax: <input type="checkbox"/> Yes <input type="checkbox"/> No		brent.kirkpatrick@metrovancoouver.org							
		Sarah.Wellman@metrovancoouver.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 #:			<table border="1"> <tr> <td rowspan="5">MET-TCLP-VA (all metals, hg)</td> <td rowspan="5">MOISTURE</td> <td rowspan="5">Chrome 6</td> <td rowspan="5">MET-CSR+FULL-VA (all metals)</td> <td colspan="5"></td> <td rowspan="5">Number of Containers</td> </tr> <tr><td colspan="5"></td></tr> <tr><td colspan="5"></td></tr> <tr><td colspan="5"></td></tr> <tr><td colspan="5"></td></tr> </table>					MET-TCLP-VA (all metals, hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)						Number of Containers																				
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:		ALS Contact:			Sampler:																																		

Lab Work Order # (lab use only)		Sample Identification			Date	Time	Sample Type						Number of Containers	
Sample #	(This description will appear on the report)				(dd-mmm-yy)	(hh:mm)		MET-TCLP-VA (all metals, hg)	MOISTURE	Chrome 6	MET-CSR+FULL-VA (all metals)			
BA1930-A-1					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-2					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-3					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-4					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-5					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-6					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-7					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-8					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-9					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-10					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-11					24-Jul-19	9:00	Soil	X	X		X			1
BA1930-A-12					24-Jul-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>S.M.T.</i>	30/7/19	07:35	<i>BT</i>	July 30, 2019	12:15p	23 °C				Yes? No? If Yes add SIF