

Monthly Operating Reports

May 2022

The following May 2022 operating report was sent to the Ministry of Environment and Climate Change Strategy on July 14, 2022.

Metro Vancouver - Waste-to-Energy Facility CONTINUOUS EMISSION MONITORING SYSTEM

May 2022

1. Monthly Summary Report

Parameter	Compliance Limit (mg/dscm)	Compliance Period	Maximum Measurement (mg/dscm)		
			Unit 1	Unit 2	Unit 3
CO	50	24 hr	40.7	37.5	42.6
SO ₂	200	24 hr	109.9	103.4	132.9
NOx	190	24 hr	129.3	156.6	149.0
THC	10	24 hr	0.66	1.02	0.27
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.44	0.27	0.36
CO			28.8	23.7	28.3
THC			0.06	0.11	0.17
SO ₂			53.5	49.0	73.5
NOx			126.3	129.8	134.2

Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits and Response Limits will apply

a. HCl – March 3, 2025

b. SO₂ – March 3, 2025

2. Monthly Exceedance Report

2.a. Discharge Limit Exceedances

Unit	Compliance Parameter	Discharge Limit (mg/dscm)	Date	Exceedance Level
	Reason/Action Taken			

2.b. Response Limit Exceedances

Compliance Parameter: Carbon Monoxide

Response Limit: 100 mg/dscm 1/2 hour average

Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
6-May 12:00	30 min	111.2	Volatile fuel. Started gas burner, adjusted airflow, modified feed rate.
9-May 02:30	30 min	163.6	Adjusted airflow, modified feed rate.
12-May 03:00	30 min	130.8	Feeder hang-up. Started gas burners, adjusted airflow, modified feed rate.
12-May 10:00	30 min	163.4	Started gas burner, adjusted airflow, modified feed rate, checked instrumentation.
13-May 14:00	30 min	104.0	Started gas burner, adjusted airflow.
18-May 10:30	30 min	103.4	Volatile fuel. Started gas burner, adjusted airflow, modified feed rate.
19-May 09:30	30 min	116.9	Started gas burner, adjusted airflow, modified feed rate.
24-May 19:00	30 min	110.1	Started gas burner, adjusted airflow.
28-May 08:30	30 min	129.1	Volatile fuel. Started gas burner, adjusted airflow, modified feed rate.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
6-May 06:30	30 min	136.2	Boiler trip. Started gas burner, adjusted airflow.
7-May 14:00	30 min	122.2	Boiler trip. Started gas burner, adjusted airflow, modified feed rate.
7-May 19:00	30 min	101.8	Started gas burner, adjusted airflow.
8-May 09:00	30 min	194.1	Started gas burner, adjusted airflow, modified feed rate, checked instrumentation.
9-May 02:00	30 min	259.1	Adjusted airflow, modified feed rate.
19-May 11:30	30 min	273.8	Feeder hang-up. Started gas burners, adjusted airflow, modified feed rate.
20-May 20:00	30 min	123.6	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
20-May 23:00	30 min	102.3	Volatile fuel. Adjusted airflow.
30-May 13:30	30 min	129.9	Started gas burners, adjusted airflow, modified feed rate.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 3

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
2-May 08:00	30 min	166.0	Adjusted airflow, modified feed rate.
2-May 12:00	30 min	114.8	Started gas burner, adjusted airflow, modified feed rate.
5-May 17:30	30 min	106.7	Started gas burner, adjusted airflow, modified feed rate.
8-May 00:00	30 min	131.7	Started gas burner, adjusted airflow.
8-May 08:30	30 min	130.7	Started gas burner, adjusted airflow, modified feed rate, checked instrumentation.
10-May 23:30	30 min	134.0	Feeder hang-up. Started gas burner, adjusted air flow, modified feed rate.
11-May 08:30	30 min	120.9	Volatile fuel, started gas burners, adjusted boiler airflow, modified feed rate, checked instrumentation.
11-May 11:30	30 min	145.5	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
22-May 01:00	30 min	105.3	Adjusted airflow.
31-May 20:30	1 hr	125.7	Feeder hang-up. Started gas burner, adjusted air flow, modified feed rate, checked instrumentation.
31-May 22:00	30 min	137.3	Feeder hang-up. adjusted airflow, modified feed rate.

2.c. Transient Conditions

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	10 minutes	4-May-22	16:44-16:54	
Cause				
Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.				
Unit 3 was placed in shutdown mode at 2022-05-04 16:44 due to an induced and forced draft fan trip. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 10 minutes between 2022-05-04 16:44 and 2022-05-04 16:54.				
Action Taken to Restore Steady State Conditions				
Covanta restarted the induced and forced draft fans at 2022-05-04 16:45. The natural gas burners were back online at 2022-05-04 16:54. The shutdown was completed at 2022-05-04 17:13.				
Remedial Action Planned and/or Taken				
During the 2022 fall outages, Covanta will be installing an electrical braking system in the induced draft fan variable frequency drives to prevent the over voltage trips.				

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	1 hr 11 min	May 7-8, 2022	23:21-00:32	
Cause				
Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.				
Unit 3 was placed in shutdown mode at 2022-05-07 23:05 during a baghouse inspection. At 2022-05-07 23:21 the induced and forced draft fans tripped. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 1 hr and 11 minutes between 2022-05-07 23:21 and 2022-05-08 00:32.				
Action Taken to Restore Steady State Conditions				
Covanta started the induced draft fan at 2022-05-07 23:26 and the forced draft fan at 2022-05-08 00:22. The natural gas burners were back online at 2022-05-08 00:32. The shutdown was completed at 2022-05-08 00:42.				
Remedial Action Planned and/or Taken				
Covanta reminded the operators to monitor the induced draft fan motors while conducting baghouse inspections to prevent motor trips.				

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	100	100	100
Oxygen	90	Hour	98	99	98
CO	90	Hour	98	99	98
SO ₂	90	Hour	98	99	98
NOx	90	Hour	98	99	98
THC	90	Hour	97	99	98
Stack Flow	90	Hour	98	98	98

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
0.27	Induced draft fan trip	May 1
0.12	Induced draft fan trip	May 1
0.28	Induced draft fan trip	May 2
0.30	Induced draft fan trip	May 3
0.37	Induced draft fan trip	May 3
0.45	Induced draft fan trip	May 4
0.78	Fabric filter baghouse inspection	May 8
0.27	Induced draft fan trip	May 8
0.08	Induced draft fan trip	May 16
1.73	Ash discharger plug	May 28

Unit 2

Duration in Hours	Reason	Date
0.10	Forced draft fan trip	May 6
0.33	Forced draft fan trip	May 7
1.25	Forced draft fan trip	May 7
0.13	Forced draft fan trip	May 7
1.10	Forced draft fan trip	May 8
0.70	High furnace pressure trip	May 9

Unit 3

Duration in Hours	Reason	Date
8.40	Baghouse ash conveyor jammed	May 1
0.48	Induced draft fan trip	May 4
9.58	Fabric filter baghouse compartment bridged	May 6
1.60	Fabric filter baghouse inspection	May 7-8
0.37	Induced draft fan trip	May 13
0.23	Forced draft fan trip	May 13
0.27	Induced draft fan trip	May 20
21.40	Grate bar failure	May 24

5. Facility Bypass and Emergency/spill Event Report

Date/Time	Cause	Duration
	Action Taken	

6. Other Data

		UNIT 1	UNIT 2	UNIT 3
Waste Received	tonnes/day	21,604		
Waste Processed	tonnes/day	237	234	225
Maximum Waste Processed	tonnes/day	247	247	247
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	2,489		
	m ³ /month	77,159		
Fly ash disposed	tonnes	910		
Bottom ash disposed	tonnes	3,481		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

May 2022 - Monthly CEMS Data

	Boiler #1								Boiler #2								Boiler #3							
	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace
Date	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp
5/1/22	154	9.5	85.6	123.4	25.6	0.66	0.07	947	140	10.4	92.3	156.6	21.5	1.02	0.04	922								
5/2/22	154	9.8	60.3	126.3	34.3	0.00	0.32	926	140	10.2	62.6	148.5	23.2	0.11	0.00	932	152	10.1	96	144.8	42.6	0.24	0.50	878
5/3/22	155	10	57.6	128.9	30.1	0.00	0.90	936	140	10.2	58.9	131	26.4	0.10	0.03	936	150	10.4	88	136.2	39.6	0.17	0.49	893
5/4/22	153	10.2	69.3	127.2	36.8	0.00	1.54	927	139	10.3	76	132.3	22.7	0.12	0.01	933	151	10.7	89	143.8	32.9	0.19	0.57	887
5/5/22	153	10.1	56.8	126.8	40.7	0.01	2.19	933	139	10.2	58.9	131.5	25.4	0.11	0.02	935	149	10.4	80.2	133.8	35.2	0.27	0.57	897
5/6/22	152	9.9	46.3	124.7	36.1	0.04	1.05	923	140	10.2	49.2	131.4	28.7	0.13	0.02	921								
5/7/22	154	9.6	66.5	125	28.1	0.00	0.00	945	141	10	58.6	130.2	28.3	0.13	0.05	929	149	10.2	85.9	137.6	32.7	0.15	0.93	898
5/8/22	152	10	64.6	126	24.8	0.00	0.00	934	140	10.5	65.9	133	26.4	0.11	0.08	924	151	10.7	101.1	149	26	0.27	0.49	888
5/9/22	152	9.4	68.3	123	30.2	0.08	0.00	941	140	10.1					0.08	927	153	10.4	120.7	131.4	27	0.15	0.49	894
5/10/22	151	9.6	67.9	122.3	27.7	0.00	0.11	949	142	10.2	65.9	129	20	0.08	0.02	931	154						0.51	936
5/11/22	154	9.6	52.4	127.8	25.6	0.00	0.27	949	139	10.3	45.2	129.8	25	0.17	0.02	941	154	11.3	86.8	135	35.7	0.23	0.50	905
5/12/22	155	9.6	71.5	125	31.7	0.02	0.26	950	139	10	75.3	128.4	23	0.08	0.00	937	153	10.6	80.5	132.1	27.8	0.13	0.53	909
5/13/22	153	9.6	54.7	126.8	24.9	0.03	0.34	952	138	9.8	50.8	124.8	25.4	0.07	0.01	937	149	10.4	82	130.3	32.1	0.19	0.52	918
5/14/22	154	9.6	67.9	126.5	22.4	0.00	0.38	960	139	9.9	67.8	128.2	18.6	0.01	0.02	940	152	10.6	92.4	129.1	25.9	0.26	0.51	915
5/15/22	155	9.5	109.9	125.7	26.8	0.05	0.44	956	141	9.8	103.4	128	18.3	0.05	0.00	944	153	10.4	132.9	130.6	24.7	0.25	0.53	920
5/16/22	155	9.6	76.2	123.3	27	0.04	0.38	966	140	10	58.2	127.2	18	0.06	0.01	953	151	10.5	85.7	130	25	0.22	0.45	921
5/17/22	152	9.4	48.7	124	28	0.14	0.24	959	137	9.8	41.6	126	26.4	0.05	0.00	942	149	10.4	53.2	132.2	29	0.23	0.26	932
5/18/22	151	9.3	35.1	125.2	30.2	0.21	0.05	995	138	9.7	27.7	125.4	26.1	0.06	0.01	965	149	10.1	43.6	135.3	29.1	0.17	0.12	944
5/19/22	153	9.6	33.2	128.1	29.3	0.13	0.03	995	137	9.6	26.6	125.1	37.5	0.07	0.23	957	150	10.3	41	132.8	29.2	0.12	0.13	939
5/20/22	153	10	34.9	128.3	22.1	0.07	0.08	967	139	10.2	30.8	126.7	35.1	0.07	0.58	921	153	10.3	55.7	132.7	28.6	0.14	0.16	933
5/21/22	154	10.3	46	129.3	22	0.12	0.09	957	141	10.1	47.8	129.7	26.3	0.08	0.59	921	152	10.5	70	133	26.9	0.14	0.21	923
5/22/22	153	9.6	40.8	127.8	28.3	0.11	0.14	977	139	9.9	38.6	129.1	18.6	0.05	0.54	929	153	11	71.5	138	30.4	0.15	0.26	907
5/23/22	154	9.5	35.5	128.2	22.2	0.06	0.10	976	140	9.5	25.1	128.9	19.5	0.03	0.47	948	153	10.8	60.3	135.8	29.1	0.15	0.23	916
5/24/22	150	9.7	51.6	125.2	37.3	0.03	0.14	983	139	10	32.6	128.1	20.5	0.04	0.61	938								
5/25/22	149	9.8	33	126.5	35.3	0.03	0.08	965	138	10	28.1	127.3	17.4	0.05	0.49	934	151	9.9	53.4	132	25.6	0.15	0.12	933
5/26/22	147	9.9	28.5	127.5	30.2	0.01	0.06	955	137	10.1	27.1	125.4	21.3	0.06	0.55	931	153	10.1	51	134.6	25.1	0.11	0.14	935
5/27/22	153	10	27.3	126.3	28.9	0.03	0.04	951	138	9.9	23.8	123.2	25.6	0.06	0.48	933	151	10	42.8	131.7	21.1	0.06	0.13	925
5/28/22	153	9.6	39.6	129.3	27.2	0.00	0.10	942	137	9.6	23.5	127.7	17.2	0.07	0.74	937	149	9.5	52.3	129.9	15.6	0.03	0.15	935
5/29/22	156	9.6	56.8	128.9	25.7	0.01	1.04	950	141	9.8	44	127.8	21.9	0.06	1.32	938	153	9.7	68.5	133.3	17.8	0.08	0.20	931
5/30/22	150	9.9	30.4	125.6	29.7	0.02	1.60	948	137	10.1	20.5	127.6	24.8	0.04	1.06	917	149	9.9	45.3	129.9	19	0.08	0.22	924
5/31/22	151	9.8	40.3	127.9	23.3	0.01	1.62	956	139	9.7	43.5	126.2	23.2	0.04	0.21	935	151	9.6	55.7	128.1	29.4	0.20	0.21	929
Average	153	9.7	53.5	126.3	28.8	0.06	0.44	954	139.2	10.0	49.0	129.8	23.7	0.11	0.27	935.1	151.3	10.3	73.5	134.2	28.3	0.17	0.36	916.6
Min	147	9.3	27.3	122.3	22.0	0.00	0.00	923	137.0	9.5	20.5	123.2	17.2	0.01	0.00	917.0	149.0	9.5	41.0	128.1	15.6	0.03	0.12	878.0
Max	156	10.3	109.9	129.3	40.7	0.66	2.19	995	142.0	10.5	103.4	156.6	37.5	1.02	1.32	965.0	154.0	11.3	132.9	149.0	42.6	0.27	0.93	944.0
St Dev	2.0	0.25	18.85	1.92	4.83	0.12	0.59	18.2	1.37	0.25	21.27	6.69	4.79	0.18	0.35	10.78	1.72	0.41	23.85	4.95	6.09	0.07	0.20	18.17

Blank days have less than 18 hours of valid data due to unit shut downs or analyzer outage/maintenance.

According to standard guidelines used by Metro Vancouver Air Quality Policy and Environment Division, a minimum of 18 hours of valid data is required to generate a valid 24hr average.