

Monthly Operating Reports

September 2019

The following September 2019 operating report was sent to the Ministry of Environment and Climate Change Strategy on November 4, 2019.

Metro Vancouver - Waste-to-Energy Facility

CONTINUOUS EMISSION MONITORING SYSTEM

September 2019

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	28.4	36.7	35.7
SO ₂	200	24 hr	158.1	121.6	131.3
NOx	190	24 hr	133.1	131.5	135.4
THC	10	24 hr	0.95	0.62	0.88
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			0.57	1.53	1.18
CO			22.7	25.4	30.4
THC			0.29	0.10	0.36
SO ₂			82.5	71.9	58.4
NOx			128.4	128.3	131.8

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

a. THC – December 31, 2018

c. SO₂ – December 31, 2022

b. HCl – December 31, 2022

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
26-Sep 08:30	30 min	104.0	Adjusted airflow, modified feed rate.
28-Sep 06:00	30 min	162.8	Started gas burners, adjusted airflow, modified feed rate.
30-Sep 08:00	30 min	106.2	Started gas burners, adjusted airflow.
30-Sep 20:30	30 min	110.3	Started gas burners, 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
4-Sep 22:00	30 min	115.6	Adjusted airflow, modified feed rate.
17-Sep 08:30	30 min	120.8	Started gas burners, adjusted airflow, modified feed rate.
20-Sep 12:00	30 min	110.3	Volatile fuel, adjusted airflow, modified feed rate.
20-Sep 20:00	30 min	117.7	Started gas burners, adjusted airflow, modified feed rate.
25-Sep 05:00	30 min	136.2	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
25-Sep 10:30	30 min	125.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

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

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
4-Sep 22:30	30 min	100.4	Induced draft fan trip, started gas burners, adjusted airflow, modified feed rate.
15-Sep 11:30	30 min	121.2	Adjusted airflow, modified feed rate.
19-Sep 11:00	30 min	123.6	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

2.c. Transient Conditions

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date	Time	
#3	23 minutes	18-Sep-19	11:11 - 11:34	
Cause				
Auxiliary burners on unit 3 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.				
Unit 3 was shutdown following a furnace thermocouple failure and the feeder hang up at 2019-09-18 11:11. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The boiler operator turned off the forced draft fan to allow the operator to open access doors to determine what was causing the feeder hang up. The operator was unable to start the auxiliary burners, as the boiler safety interlock requires a boiler purge to ignite the burners when the boiler temperature is below the safety permissive. The auxiliary burners were unavailable for a period of 23 minutes between 2019-09-18 11:11 and 2019-09-18 11:34.				
Action Taken to Restore Steady State Conditions				
Covanta restarted the forced draft fan and induced draft fan at 2019-09-18 11:19. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-08-18 11:34. The shutdown was completed at 2019-09-18 12:18.				
Remedial Action Planned and/or Taken				
Metro Vancouver's facility operator (Covanta) will be doing maintenance during the fall outage to address feeder hang ups and feed chute plugs.				

Gas burners unavailable and unable to close feed chute damper during shutdown				
Unit	Duration	Date	Time	
#3	69 minutes	28-Sep-19	8:38 - 10:24	
Cause				
Auxiliary burners on unit 3 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.				
The unit 3 was placed in shutdown mode at 2019-09-28 8:38 to clear a feed chute plug. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. During the shutdown the facility experienced a BC Hydro power outage at 2019-09-28 9:15 which tripped the forced draft fan, induced draft fan, and auxiliary burners. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act the Act require a boiler purge once the fans are running before restarting the burners. The auxiliary burners were unavailable for a period of 1 hour 9 minutes between 2019-09-28 9:15 and 2019-09-28 10:24.				
Action Taken to Restore Steady State Conditions				
Covanta restarted the induced draft fan at 2019-09-28 9:42 and the forced draft fan at 2019-09-28 9:43. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-09-28 10:24. The shutdown was completed at 2019-09-28 10:33.				
Remedial Action Planned and/or Taken				
Metro Vancouver's facility operator (Covanta) reviewed the outage with the operators to reduce the extended purge time which occurred following this power outage.				

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	99	100	100
Oxygen	90	Hour	99	99	99
CO	90	Hour	99	99	99
SO ₂	90	Hour	99	99	99
NO _x	90	Hour	99	99	99
THC	90	Hour	99	98	99
Stack Flow	90	Hour	99	99	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
373.77	Annual Major Maintenance outage	Sept 9 - 24

Unit 2

Duration in Hours	Reason	Date
15.10	Generating bank wash	September 19
0.25	BC Hydro power outage	September 20
1.87	Poor refuse quality	September 25
0.42	BC Hydro power outage	September 28
5.15	Ash discharger plugged	September 30

Unit 3

Duration in Hours	Reason	Date
0.30	Induced draft fan trip	September 4
1.25	Underfire air plugged	September 9
0.80	Forced draft fan trip	September 11
1.12	Feed chute plugged	September 18
0.27	BC Hydro power outage	September 20
2.20	Feed chute plugged	September 22
0.23	Crane failure, blocked feed chute	September 24
0.55	Feed chute plugged	September 27
1.30	BC Hydro power outage	September 28
0.37	Feed chute plugged	September 28
29.80	Annual minor outage	Sept 29-30

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	17,675		
Waste Processed	tonnes/day	119	224	224
Maximum Waste Processed	tonnes/day	265	249	249
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	3,926		
	m ³ /month	117,768		
Fly ash disposed	tonnes	656		
Bottom ash disposed	tonnes	2,698		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

September 2019 - Monthly CEMS Data

Date	Boiler #1								Boiler #2								Boiler #3							
	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp
9/1/19	153	10	54.4	127.5	23.5	0.24	0.16	936	157	8.4	65.4	127.7	22	0.05	0.72	934	154	9.9	57.1	134.9	32.4	0.39	1.00	931
9/2/19	154	9.8	42.4	128.2	22.1	0.26	0.57	937	156	8.5	51.8	127.2	19.7	0.04	1.06	931	152	9.7	39.8	133.1	31.5	0.34	1.02	927
9/3/19	153	9.9	50.1	128.1	17.9	0.25	0.66	939	155	8.5	66.4	125.4	19.1	0.07	1.22	939	150	9.9	38.9	132.1	30.8	0.40	0.92	928
9/4/19	154	9.9	68.5	126	21	0.22	0.66	936	155	8.3	69.6	126.2	23.3	0.10	1.34	945	150	9.7	51.2	132	34.6	0.42	0.94	926
9/5/19	153	9.9	54.4	125.3	22.2	0.95	0.66	936	155	8.7	63	126	25	0.05	1.19	944	147	9.2	41.1	131.9	34.9	0.35	0.89	952
9/6/19	152	9.9	48.4	124.7	19.8	0.25	0.67	947	157	8.5	68.4	127.5	22.1	0.03	1.23	945	149	9.4	42.7	133.2	29.6	0.30	0.87	937
9/7/19	154	10	57.6	127.6	23	0.23	0.65	955	157	8.6	72.9	128.1	18.9	0.05	1.03	954	153	9.4	51.6	132.2	33	0.26	0.98	939
9/8/19	153	9.7	56.9	127.5	22.5	0.23	0.68	949	158	8.8	70.4	128.7	22	0.06	1.10	925	152	9	55.7	132.9	24.6	0.28	1.04	935
9/9/19									156	8.3	70.8	126.3	26.8	0.04	0.93	937	149	8.9	52.3	132.7	29.3	0.33	0.93	923
9/10/19									156	8.5	90	126.8	23.7	0.09	0.85	934	148	9.1	62.9	130.6	29.9	0.32	0.92	928
9/11/19									156	8.9	85.8	126.1	26.4	0.08	1.21	929	148	9.2	62.3	130.6	31.4	0.31	0.93	926
9/12/19									154	8.7	59.3	125.4	36.7	0.07	1.37	932	150	9.1	51.2	129.6	33.1	0.35	1.15	927
9/13/19									154	9.1	54.9	129.8	30.9	0.06	1.60	905	149	9.3	49.3	130	31.4	0.33	1.20	924
9/14/19									151	9.1	55.4	128.1	23.4	0.07	1.60	921	148	9.4	53.8	131.3	27.5	0.28	1.24	922
9/15/19									152	9.1	63.5	129.2	20.9	0.06	1.72	926	148	9.4	52.2	131.3	29.8	0.45	1.25	922
9/16/19									151	9.4	37.1	129.1	22.1	0.07	1.61	905	145	9.4	43.7	129.7	27.5	0.36	1.15	915
9/17/19									153	9.6	47.9	127.1	34	0.13	1.83	897	148	9.6	35	130.1	30.7	0.34	1.27	891
9/18/19									153	9.7	64.3	126.9	27	0.14	1.78	887	147	9.6	63.6	130.3	30.5	0.30	1.26	893
9/19/19																	146	9.8	54.7	129.7	35.7	0.61	1.25	914
9/20/19									151	9.1	72.6	126.8	33.8	0.15	1.64	941	149	9.4	49.8	131.4	31.2	0.33	1.25	935
9/21/19									155	9.1	89.3	131.5	27.7	0.23	1.73	944	150	9	68	135.4	23.8	0.35	1.28	942
9/22/19									154	9.5	90	130.9	26.8	0.06	1.88	917	150	9	76.5	132.7	25.6	0.32	1.39	927
9/23/19									155	9.4	61.1	129.6	24.2	0.08	2.13	903	151	9	45	132.1	31.3	0.28	1.37	915
9/24/19									157	8.8	82.4	129.6	28.2	0.28	2.08	902	153	8.9	66	132.6	29.9	0.27	1.39	911
9/25/19	151	9.1	103.2	122.8	21	0.26	0.54	880	156	9.2	104.6	130.8	35.1	0.62	2.17	914	152	9.4	76.4	131.8	29	0.24	1.42	908
9/26/19	150	9.3	95.5	129.8	28.4	0.25	0.51	882	156	9.3	71.4	129.7	27	0.05	1.99	898	151	9.9	63.1	132.2	35.3	0.88	1.39	897
9/27/19	153	9.6	119.9	132.6	21.4	0.20	0.51	893	156	9.3	76.3	129.9	25.5	0.05	2.18	905	150	9.5	72	130.5	29.2	0.31	1.43	916
9/28/19	150	9.9	124.8	133.1	24.7	0.22	0.53	893	154	9.1	76.3	129.1	19.1	0.08	2.10	909	152	9.5	87.4	132.5	28.3	0.32	1.49	890
9/29/19	149	9.5	158.1	131.3	22.6	0.20	0.54	906	156	9.4	121.6	130.9	19.7	0.08	1.82	911	153	9.4	131.3	132.1	29.8	0.33	1.58	898
9/30/19	151	9.8	120.5	133	27.5	0.28	0.59	902	158	9.4	81.8	130.5	25	0.10	1.22	917								
Average	152.1	9.7	82.5	128.4	22.7	0.29	0.57	920.8	155.0	9.0	71.9	128.3	25.4	0.10	1.53	922.8	149.8	9.4	58.4	131.8	30.4	0.36	1.18	920.7
Min	149.0	9.1	42.4	122.8	17.9	0.20	0.16	880.0	151.0	8.3	37.1	125.4	18.9	0.03	0.72	887.0	145.0	8.9	35.0	129.6	23.8	0.24	0.87	890.0
Max	154.0	10.0	158.1	133.1	28.4	0.95	0.68	955.0	158.0	9.7	121.6	131.5	36.7	0.62	2.18	954.0	154.0	9.9	131.3	135.4	35.7	0.88	1.58	952.0
St Dev	1.66	0.27	37.02	3.21	2.77	0.19	0.13	26.64	1.99	0.41	17.18	1.82	4.94	0.11	0.43	17.68	2.26	0.30	18.77	1.44	2.93	0.12	0.21	15.71

Blank days have less than 18 hours of valid data due to unit shut downs.

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.