

Monthly Operating Reports

July 2021

The following July 2021 operating report was sent to the Ministry of Environment and Climate Change Strategy on September 13, 2021.

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

July 2021

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	36.5	30.9	40.7
SO ₂	200	24 hr	129.4	128.7	133.1
NO _x	190	24 hr	134.7	133.4	141.6
THC	10	24 hr	0.06	0.18	0.35
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.34	1.04	0.43
CO			22.4	21.3	30.7
THC			0.00	0.05	0.28
SO ₂			72.8	76.1	90.4
NO _x			129.1	128.4	133.6

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
3-Jul 11:00	30 min	104.7	Adjusted airflow, modified feed rate.
7-Jul 16:00	30 min	101.9	Started gas burners, adjusted airflow, modified feed rate.
8-Jul 10:30	30 min	124.4	Started gas burners, adjusted airflow, modified feed rate.
18-Jul 20:00	30 min	211.6	Started gas burners, adjusted airflow, modified feed rate.
23-Jul 10:00	30 min	132.6	Started gas burners, adjusted airflow, modified feed rate.
26-Jul 16:00	30 min	164.0	Started gas burners, adjusted airflow.
26-Jul 16:30	30 min	164.0	Started gas burners, adjusted airflow, modified feed rate.
27-Jul 10:00	30 min	138.2	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
5-Jul 14:30	30 min	165.6	Started gas burners, adjusted airflow, modified feed rate.
5-Jul 14:30	30 min	327.1	Started gas burners, adjusted airflow, modified feed rate.
11-Jul 16:00	30 min	141.2	Restarted forced draft fan following trip.
11-Jul 23:00	30 min	149.7	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
16-Jul 09:00	30 min	109.3	Started gas burners, adjusted airflow, modified feed rate.
19-Jul 15:00	30 min	123.0	Started gas burners, adjusted airflow, modified feed rate.
21-Jul 09:30	30 min	101.0	No action required.
21-Jul 15:30	30 min	103.1	Started gas burners, adjusted airflow.
22-Jul 13:30	30 min	116.4	Started gas burners, adjusted airflow, modified feed rate.
28-Jul 23:30	30 min	125.8	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-Jul 07:00	30 min	102.0	Started gas burners, adjusted airflow, modified feed rate.
2-Jul 10:00	30 min	166.1	Started gas burners, adjusted airflow, modified feed rate.
8-Jul 04:00	30 min	122.7	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
13-Jul 10:30	30 min	117.9	Started gas burners, adjusted airflow, modified feed rate.
14-Jul 17:00	30 min	105.7	Started gas burners, adjusted airflow, modified feed rate.
15-Jul 09:00	30 min	158.2	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
18-Jul 20:30	30 min	184.6	Started gas burners, adjusted airflow, modified feed rate.
20-Jul 09:30	30 min	306.8	Started gas burners, adjusted airflow, modified feed rate.
20-Jul 10:00	30 min	116.7	Started gas burners, adjusted airflow, modified feed rate.
21-Jul 12:00	30 min	107.6	Started gas burners, adjusted airflow, modified feed rate.
26-Jul 10:30	30 min	167.1	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
29-Jul 14:00	30 min	108.0	Adjusted airflow, modified feed rate, checked instrumentation.

Compliance Parameter: Nitrogen Oxide
Response Limit: 350 mg/dscm 1/2 hour average
Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
17-Jul 11:00	30 min	831.9	Checked aqueous ammonia flow, checked low NOx system air flow, checked aqueous ammonia spray nozzle pattern, checked instrumentation.

2.c. Transient Conditions

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

Unit	Duration	Date	Time	
#1	53 minutes	4-Jul-21	11:25-12:18	
Cause				
Auxiliary burners on unit 1 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.				
Unit 1 was placed in shutdown mode at 2021-07-04 at 10:36 due to a mechanical issue with both refuse cranes which impacted all three boilers. The gas burners tripped at 11:19 due to low incoming gas pressure. 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 53 minutes between 2021-07-04 11:25 and 2021-07-04 12:18.				
Action Taken to Restore Steady State Conditions				
The boiler purge was started at 2021-07-04 12:08 and completed at 2021-07-04 12:17. Natural gas burners were back online at 2021-07-04 12:18.				
Remedial Action Planned and/or Taken				
The refuse crane was repaired.				

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

Unit	Duration	Date	Time	
#2	1hr 1 minutes	4-Jul-21	11:25-12:26	
Cause				
Auxiliary burners on unit 2 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.				
Unit 2 was placed in shutdown mode at 2021-07-04 at 10:36 due to a mechanical issue with both refuse cranes which impacted all three boilers. The gas burners tripped at 11:19 due to low incoming gas pressure. 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 1 minutes between 2021-07-04 11:25 and 2021-07-04 12:26.				
Action Taken to Restore Steady State Conditions				
The boiler purge was started at 2021-07-04 12:10 and completed at 2021-07-04 12:25. The natural gas burners were back online at 2021-07-04 12:26.				
Remedial Action Planned and/or Taken				
The refuse crane was repaired.				

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

Unit	Duration	Date	Time	
#3	2 hr 56 min	4-Jul-21	11:25-14:21	
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 2021-07-04 at 10:36 due to a mechanical issue with both refuse cranes which impacted all three boilers. The gas burners tripped at 11:19 due to low incoming gas pressure. 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 2 hr 56 minutes between 2021-07-04 11:25 and 2021-07-04 14:21.				
Action Taken to Restore Steady State Conditions				
The forced draft fan was started at 2021-07-04 14:15 and the natural gas burners were back online at 2021-07-04 14:21. The shutdown was complete at 2021-07-04 16:10.				
Remedial Action Planned and/or Taken				
The refuse crane was repaired.				

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	100	99	100
Oxygen	90	Hour	99	99	100
CO	90	Hour	99	99	100
SO ₂	90	Hour	99	99	100
NOx	90	Hour	99	99	100
THC	90	Hour	99	99	100
Stack Flow	90	Hour	99	92	98

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
0.17	Forced draft fan trip	July 3
45.74	Both refuse cranes down, grate bar repair, boiler wash	July 4 - 6
0.75	Refuse crane ground fault	July 15
0.48	BC Hydro power interruption	July 20
0.32	Induced draft fan trip	July 24

Unit 2

Duration in Hours	Reason	Date
3.58	Both refuse cranes down	July 4
0.13	High furnace pressure trip	July 8
0.22	Low steam drum level trip	July 9
0.37	Low steam drum level trip	July 9
27.32	Boiler wash	July 15-16
0.68	BC Hydro power interruption	July 20
0.28	Induced draft fan trip	July 27

Unit 3

Duration in Hours	Reason	Date
4.75	Both refuse cranes down	July 4
1.63	Refuse crane ground fault	July 15
0.40	Induced draft fan trip	July 19
0.48	BC Hydro power interruption	July 20
0.88	Visual inspection for broken grate bars	July 22
24.27	Grate bar repair	July 22-23

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	21,331		
Waste Processed	tonnes/day	222	223	224
Maximum Waste Processed	tonnes/day	245	244	243
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	2,245		
	m ³ /month	69,582		
Fly ash disposed	tonnes	917		
Bottom ash disposed	tonnes	3,635		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

July 2021 - Monthly CEMS Data

Date	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
	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
7/1/21	154	8.9	41.2	125.4	21.2	0.00	0.19	944	154	8.2	42.3	126.9	24	0.04	1.58	975	156	9.1	94.6	132.5	38.5	0.25	0.42	902
7/2/21	153	8.3	34.3	124.5	28.1	0.06	0.17	933	155	7.9	39.6	126.7	20.5	0.01	0.90	972	159	9.3	91.6	133.7	37.9	0.32	0.41	893
7/3/21	151	9.2	36.4	124.3	24.5	0.00	0.15	931	156	8.5	42.1	128.3	19.9	0.06	1.00	959	156	9.2	99.1	130.8	28.2	0.30	0.39	916
7/4/21									153	8.3	57.7	124.9	20	0.05	1.08	953	157	9.4	101.9	132.4	30.7	0.35	0.42	908
7/5/21									154	8.4	40.8	126.8	30.9	0.17	1.86	937	158	9	101.8	132.2	31.3	0.30	0.44	899
7/6/21									152	8.4	90.2	127.4	21.1	0.02	0.92	934	157	9	128.5	131.5	29.6	0.27	0.46	913
7/7/21	153	8.7	94.3	130.2	28.8	0.00	0.48	883	151	8.2	50.1	126.7	23.1	0.04	1.31	951	156	9.2	86.8	132.2	33.1	0.29	0.45	897
7/8/21	151	8.7	89.9	128.3	33.8	0.00	0.11	925	152	8.6	63.3	126.2	22.1	0.06	1.26	949	154	9.1	91.7	129.5	28.4	0.21	0.41	916
7/9/21	151	8.7	83.1	131.1	22.5	0.00	0.00	926	155	8.8	67.2	128.3	28.8	0.03	0.93	932	154	9	83.4	130.6	28	0.20	0.38	914
7/10/21	151	8.7	102.1	129.3	18.4	0.00	0.22	914	153	9	59	126.8	20.5	0.04	1.25	947	156	9.2	96.8	130.4	27.3	0.21	0.41	921
7/11/21	153	8.9	97.1	130.8	14.9	0.00	0.36	916	152	9	60.7	127.7	21.4	0.18	1.25	944	156	8.8	108.5	132	28.3	0.28	0.45	927
7/12/21	156	8.5	79.1	129	16.4	0.00	0.34	932	153	8.7	40.5	125.5	17	0.05	1.09	957	158	8.2	84.2	130.5	28.4	0.28	0.43	922
7/13/21	157	8.7	89.4	130	19.7	0.00	0.34	921	149	8.7	48.7	124.2	22.5	0.02	1.40	969	158	9	106	135	31	0.27	0.46	898
7/14/21	158	8.9	78.4	134.7	19.9	0.00	0.41	889	150	8.5	42.6	125.6	16.7	0.02	1.47	966	158	9.1	77.2	134.9	32.8	0.24	0.48	904
7/15/21	156	8.5	88.8	131.6	25.5	0.02	0.44	909									159	8.9	101.3	135.3	38.3	0.33	0.47	909
7/16/21	158	8.6	129.4	128.9	20.3	0.00	0.40	903	154	8.3	128.2	130.5	20.6	0.05	1.07	969	157	9	133.1	129.7	28	0.27	0.47	910
7/17/21	157	8.6	86.1	130.1	12.6	0.00	0.41	932	155	8.5	128.7	132	16.8	0.03	0.91	983	158	8.6	92.4	134.1	25.3	0.23	0.43	924
7/18/21	158	8.7	80.9	130.1	17.7	0.00	0.45	921	156	8.4	117.7	131.3	17.7	0.04	0.73	987	158	9.1	87.1	137.7	35.1	0.35	0.44	910
7/19/21	160	8.7	57.2	128.6	17.2	0.00	0.39	919	156	8.3	95.2	129.4	25.9	0.07	0.80	958	159	9.2	65.8	132.4	31.5	0.30	0.43	902
7/20/21	155	8.3	80.4	126	27.9	0.00	0.39	918	153	8.2	117	128.3	20.2	0.06	0.93	949	154	8.9	84.7	131.8	40.7	0.27	0.40	900
7/21/21	155	8.7	71.5	127.1	18.8	0.00	0.40	914	153	8.3	93.4	126.7	27.6	0.05	1.07	969	157	9.3	73.1	129.2	34.3	0.34	0.46	905
7/22/21	157	8.6	55.3	126	21.5	0.00	0.43	926	154	8.5	83	129.1	20.9	0.04	0.99	941	155	9.3	63.5	133.2	33.2	0.35	0.45	888
7/23/21	160	9.1	63.4	129	21.9	0.00	0.44	914	153	8.4	75.6	126.9	15.6	0.05	0.95	943								
7/24/21	158	8.7	85.9	129.4	28	0.00	0.38	937	155	8.8	113.5	132.4	13.6	0.03	0.97	945	157	9	110.3	141.1	29.1	0.30	0.43	913
7/25/21	158	8.6	77.2	129	21.6	0.00	0.33	929	155	8.4	99.2	129.5	15.1	0.04	0.85	977	159	9.4	88.3	141.6	31.1	0.29	0.43	908
7/26/21	158	8.7	67.4	127.2	36.5	0.03	0.37	904	155	8.7	93.8	128	21.4	0.04	0.60	962	158	8.7	77.2	136.2	29.7	0.34	0.44	900
7/27/21	159	9.4	73	131.6	31.7	0.00	0.38	914	156	9	116.2	131	23.9	0.03	0.50	970	157	9	103.3	133.2	30.7	0.23	0.42	912
7/28/21	159	8.8	50	130.6	22.9	0.00	0.41	928	156	8.8	72.6	130.4	28.8	0.05	0.11	959	157	8.7	74.5	133.7	25.7	0.20	0.43	915
7/29/21	155	8.4	50.7	131.7	17.8	0.00	0.35	936	154	8.5	67.1	132.5	24.9	0.04	0.52	954	155	8.5	71.1	137.7	29	0.31	0.38	930
7/30/21	157	8.5	45.5	130.5	20.1	0.00	0.37	922	156	8.7	64.5	133.4	18.3	0.03	1.13	968	156	8.6	64.4	138.5	24.7	0.19	0.41	914
7/31/21	158	8.6	50.8	130.6	18.2	0.00	0.38	930	154	8.9	71.7	129.9	19.5	0.05	1.77	957	155	8.7	69.4	135.8	21.7	0.27	0.43	923
Average	156	8.7	72.8	129.1	22.4	0.01	0.34	920	153.8	8.5	76.1	128.4	21.3	0.05	1.04	957.9	156.8	9.0	90.4	133.6	30.7	0.28	0.43	909.8
Min	151	8.3	34.3	124.3	12.6	0.00	0.00	883	149.0	7.9	39.6	124.2	13.6	0.01	0.11	932.0	154.0	8.2	63.5	129.2	21.7	0.19	0.38	888.0
Max	160	9.4	129.4	134.7	36.5	0.06	0.48	944	156.0	9.0	128.7	133.4	30.9	0.18	1.86	987.0	159.0	9.4	133.1	141.6	40.7	0.35	0.48	930.0
St Dev	2.8	0.24	22.21	2.39	5.76	0.01	0.12	13.9	1.83	0.27	28.59	2.42	4.23	0.04	0.37	14.32	1.52	0.28	17.42	3.23	4.35	0.05	0.03	10.29

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.