

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

October 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	33.0	30.5	43.4
SO ₂	200	24 hr	102.3	150.9	150.0
NOx	190	24 hr	126.1	136.7	137.5
THC	10	24 hr	1.09	0.10	1.87
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.75	0.51	0.25
CO			24.4	22.5	32.1
THC			0.08	0.06	1.07
SO ₂			69.7	78.3	82.4
NOx			116.1	130.0	131.9

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
1-Oct 10:00	30 min	109.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
2-Oct 16:30	30 min	100.7	Started gas burners, adjusted airflow, modified feed rate.
8-Oct 09:00	30 min	130.1	Started gas burners, adjusted airflow, modified feed rate.
10-Oct 03:00	30 min	117.0	Started gas burners, adjusted airflow, modified feed rate.
15-Oct 10:00	30 min	139.4	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
1-Oct 08:00	30 min	171.9	Started gas burners, adjusted airflow, modified feed rate.
1-Oct 22:00	30 min	133.1	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
9-Oct 17:00	30 min	100.7	Started gas burners, adjusted airflow, modified feed rate.
14-Oct 10:00	30 min	116.7	Started gas burners, adjusted airflow.
15-Oct 10:00	30 min	136.3	Started gas burners, adjusted airflow, modified feed rate.
17-Oct 17:00	30 min	113.9	Started gas burners, adjusted airflow, modified feed rate.
20-Oct 08:30	30 min	203.4	Started gas burners, adjusted airflow, modified feed rate.
20-Oct 13:30	30 min	173.9	Started gas burners, adjusted airflow, modified feed rate.
25-Oct 15:00	30 min	146.5	Started gas burners, adjusted airflow, modified feed rate.

2.c. Transient Conditions

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

Unit	Duration	Date	Time
#1	39 minutes	5-Oct-21	07:15-07:54
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 on 2021-10-05 at 07:15 due to a communications failure with the turbo generator. 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 39 minutes between 2021-10-05 07:15 and 07:54.			
Action Taken to Restore Steady State Conditions			
The induced draft fan and forced draft fan were restarted at 2021-10-05 07:24. Natural gas burners were online at 2021-10-05 07:54. The shutdown was complete at 2021-10-05 08:14.			
Remedial Action Planned and/or Taken			
Delta V control cards are scheduled for replacement in 2022 and 2023.			

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

Unit	Duration	Date	Time	
#2	70 minutes	5-Oct-21	07:15-08:25	
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 on 2021-10-05 at 07:15 due to a communications failure with the turbo generator. 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 70 minutes between 2021-10-05 07:15 and 08:25.				
Action Taken to Restore Steady State Conditions				
The induced draft fan and forced draft fan were restarted at 2021-10-05 07:25. Natural gas burners were online at 2021-10-05 08:25. The shutdown was complete at 2021-10-05 08:48.				
Remedial Action Planned and/or Taken				
Delta V control cards are scheduled for replacement in 2022 and 2023.				

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

Unit	Duration	Date	Time	
#2	19 minutes	14-Oct-21	14:15-14:34	
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 2021-10-14 at 14:15 due to a BC Hydro power failure. 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 19 minutes between 2021-10-14 14:15 and 14:34.				
Action Taken to Restore Steady State Conditions				
The induced draft fan was restarted at 2021-10-14 14:20 and the forced draft fan at 2021-10-14 14:21. Natural gas burners were online at 2021-10-14 14:34. The shutdown was complete at 2021-10-14 14:35.				
Remedial Action Planned and/or Taken				
No action required.				

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	99	99	98
CO	90	Hour	99	99	98
SO ₂	90	Hour	99	99	98
NOx	90	Hour	99	99	98
THC	90	Hour	97	99	98
Stack Flow	90	Hour	99	99	98

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
5.05	Baghouse ash screw conveyor jammed	October 1
1.00	Delta V controller power supply issue	October 5
0.33	Emergency stop tripped by accident	October 5
1.50	Visual inspection of underfire air compartments	October 6
0.28	Visual inspection of underfire air compartments	October 12
335.90	Annual major maintenance outage	October 18-31

Unit 2

Duration in Hours	Reason	Date
1.55	Delta V controller power supply issue	October 5
0.33	BC Hydro power interruption	October 14
0.53	Induced draft fan trip	October 15

Unit 3

Duration in Hours	Reason	Date
94.15	Annual minor maintenance outage	October 3-7
0.33	BC Hydro power interruption	October 14
8.95	Ash conveyor jammed	October 15-16

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	16,818		
Waste Processed	tonnes/day	115	246	210
Maximum Waste Processed	tonnes/day	225	261	254
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	6,197		
	m ³ /month	192,113		
Fly ash disposed	tonnes	789		
Bottom ash disposed	tonnes	2,469		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

October 2021 - 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
10/1/21	149	9.8	37.8	111.5	33	0.09	0.70	908	152	9.3	65.4	128.2	30.5	0.07	0.02	907	159	8.6	54.7	125.7	37.6	0.39	2.44	931
10/2/21	155	9.2	71.9	111.7	26.8	0.02	0.71	906	154	9.4	104.3	135	22.1	0.05	0.00	887	160	8.6	63.6	130.8	31.2	0.36	1.04	904
10/3/21	154	9.8	98.5	114.6	21.3	0.01	0.72	910	154	9.3	142.8	129.5	22.4	0.07	0.00	913	158	8.6	94.1	127	33.5	0.51	0.22	925
10/4/21	153	9.7	59.9	113.9	23.4	0.00	0.66	911	154	9.8	98.4	127.9	20.1	0.06	0.01	896								
10/5/21	153	9.6	102.3	114.2	20.7	0.00	0.68	930	150	10	150.9	129.1	23.6	0.08	0.01	911								
10/6/21	152	9.4	89.2	116.8	18.4	0.00	0.75	926	151	9.8	107.7	129.8	23.3	0.07	0.00	910								
10/7/21	155	9.8	75.6	114.2	25.3	0.00	0.78	923	151	10	81.8	128.9	23.4	0.03	0.05	896								
10/8/21	155	9.6	71.2	119.1	23.2	0.00	0.76	926	152	10.1	94	132.7	20.4	0.08	0.04	901	154	11.2	85.1	135.6	35.4	1.75	0.08	881
10/9/21	155	9.7	94.9	118.8	24.8	0.00	0.76	934	150	9.5	108.4	129.4	20.4	0.06	0.07	913	156	11.4	135.6	137.5	40.7	1.87	0.14	907
10/10/21	154	9.5	66	113.6	25.8		0.73	925	153	9.3	86.9	128.2	22.4	0.05	0.00	908	157	11.7	100.6	132.3	32.1	1.42	0.16	916
10/11/21	154	10	53.3	120.5	19.2	0.00	0.74	920	153	9.8	78.1	129.9	19.6	0.07	0.12	890	157	11.6	95.2	132.3	28.8	1.67	0.12	917
10/12/21	152	9.5	46.9	124.5	16.1	0.00	0.80	921	153	9.3	63.9	129.2	20	0.04	0.12	914	157	11.1	88.8	134.2	30.2	1.16	0.16	937
10/13/21	154	9.4	57.1	126.1	26.1	0.00	0.81	933	153	8.9	61.6	129.1	25.1	0.07	0.09	919	158	11.3	100.9	132.4	36.2	1.34	0.13	920
10/14/21	153	9.5	51.3	121.8	26.5	0.00	0.76	913	153	9	54.2	130.6	22.1	0.04	0.02	944	154	11.4	83.7	133.6	32	1.25	0.09	914
10/15/21	153	9.7	62	118.6	29.8	0.01	0.78	921	153	9.5	68.7	132.9	23.5	0.05	0.00	938	151	11.1	97.6	131	34	0.93	0.09	911
10/16/21	151	9.8	59.1	114.9	24.7	0.01	0.76	905	154	9.8	63.7	129.8	18.6	0.05	0.15	886								
10/17/21	154	11.1	87.1	99.4	29.5	1.09	0.77	911	154	9.6	95.2	127	20.3	0.04	0.17	881	159	11.1	150	129.5	33.2	1.25	0.08	894
10/18/21									155	9.3	86.2	130.6	21.9	0.06	0.24	897	159	11.2	100.9	132.2	30.9	1.24	0.05	917
10/19/21									153	9.4	87.2	130.2	19.7	0.05	0.32	897	155	11.3	75.5	132.5	26.8	1.14	0.07	918
10/20/21									154	9.5	83.3	132.6	26.5	0.04	0.17	891	155	11.5	63.2	134	43.4	1.20	0.10	920
10/21/21									152	9.5	53.5	128.6	24.7	0.04	0.63	889	154	11.2	33.5	133.2	34.9	1.04	0.09	919
10/22/21									155	9.6	59.4	128.1	26.7	0.04	0.93	889	156	11.4	47.3	130.8	31	0.97	0.12	912
10/23/21									154	9.3	76.3	129.4	25.2	0.07	1.25	892	156	11.3	54.7	132.7	28.4	1.07	0.10	914
10/24/21									152	9.2	85.5	126.9	23.5	0.03	1.06	898	155	11.1	103.9	131.5	30.6	0.94	0.14	911
10/25/21									152	9.4	76.4	126.8	29.3	0.10	0.80	895	151	11.1	126.7	129	34	0.90	0.11	931
10/26/21									153	9.6	61.6	128.7	22	0.06	1.42	886	152	11.4	49.9	133.1	29.2	0.91	0.13	918
10/27/21									151	9.3	56.3	128.7	22.8	0.08	1.51	916	153	11.3	88.5	135.5	35.8	1.11	0.13	934
10/28/21									154	9.6	34.5	133.6	19.8	0.05	1.59	891	156						0.15	915
10/29/21									152	9.6	32.7	130.7	24.6	0.06	1.07	909	155	11.1	40.3	129.7	25.2	0.67	0.14	926
10/30/21									153	9.3	49.5	136.7	15.8	0.05	1.83	916	156	11.2	59.6	133.8	24.6	0.84	0.19	912
10/31/21									152	8.8	58.5	130.9	18	0.08	2.00	927	155	10.5	65	128.1	23.3	0.81	0.23	922
Average	153	9.7	69.7	116.1	24.4	0.08	0.75	919	152.8	9.5	78.3	130.0	22.5	0.06	0.51	903.5	155.7	10.9	82.4	131.9	32.1	1.07	0.25	916.4
Min	149	9.2	37.8	99.4	16.1	0.00	0.66	905	150.0	8.8	32.7	126.8	15.8	0.03	0.00	881.0	151.0	8.6	33.5	125.7	23.3	0.36	0.05	881.0
Max	155	11.1	102.3	126.1	33.0	1.09	0.81	934	155.0	10.1	150.9	136.7	30.5	0.10	2.00	944.0	160.0	11.7	150.0	137.5	43.4	1.87	2.44	937.0
St Dev	1.6	0.41	19.10	6.06	4.35	0.27	0.04	9.5	1.31	0.31	26.84	2.31	3.18	0.02	0.64	15.42	2.40	0.91	29.61	2.73	4.76	0.38	0.48	11.84

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.