metrovancouver

2018 Annual Report

The 2018 Annual Report was sent to the Ministry of Environment and Climate Change Strategy on March 18, 2019.

Metro Vancouver - Waste-to-Energy Facility

CONTINUOUS EMISSION MONITORING SYSTEM

2018 Annual Emission Report

1. ANNUAL SUMMARY REPORT

Parameter	Limit (mg/m^3)	Compliance Period	Maximum Measurement (mg/m^3)		
			Unit 1	Unit 2	Unit 3
Carbon Monoxide (CO)	50	24 hr	**43.6**	**43.8**	**51.2**
Sulphur Dioxide (SO_2)	200	24 hr[1]	**180.2**	**179.0**	**178.1**
Nitrogen Oxides (NO_x)	190	24 hr	**135.5**	**163.9**	**141.6**
			Annual Average (mg/m^3)		
			Unit 1	Unit 2	Unit 3
Opacity			**0.7**	**0.7**	**0.6**
Carbon Monoxide (CO)			**24.4**	**25.7**	**32.8**
Sulphur Dioxide (SO_2)			**50.1**	**55.9**	**64.5**
Nitrogen Oxides (NO_x)			**128.2**	**130.2**	**132.8**

1. Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits will apply:

a. THC – December 31, 2018

b. HCl – December 31, 2022

c. SO_2 – December 31, 2022

2. ANNUAL EXCEEDANCE REPORT

2.a. Discharge Limit Exceedances

Unit	Compliance Parameter	Discharge Limit (mg/dscm)	Date	Exceedance Level
Unit 3	**CO 24-hr average**	**50**	**1/29/18**	**51.2**
	Reason/Action Taken			
	Unit 3 experienced high CO at 0700 and 1900 with the combustion of wet refuse. In both instances the operator put the natural gas burners on and modified the boiler air flow to address elevated CO. The unit was also shutdown at 1018 for 26 minutes due to a BC Hydro power outage and at 1956 for 2.3 hours to clear a plugged ash discharger. The 24-hr CO discharge average for the day was 51.2 mg/dscm as compared to the 24-hr average discharge limit of 50 mg/dscm.			

2.b. Response Limit Exceedances

Unit	Compliance Parameter	Response Limit	Date / Time	Exceedance Level
Unit 2	Opacity	5%	April 17 2018 6:00PM to 6:30PM	20.86%
	Reason/Action Taken			
	Opacity started to rise which is a characteristic of instrument failure. Covanta instrumentation specialist checked the opacity meter to confirm it was operational. Covanta inspected fabric filter and conducted visual inspection of stack. Stack had a pink plume, which is typically caused by iodine in the waste stream. Plume returned to normal within 1/2 hour response period.			

Unit	Compliance Parameter	Response Limit	Date / Time	Exceedance Level
Unit 2	Carbon Monoxide	100 mg/dscm	Dec 31, 2018 10:30am-11:00am	100 mg/dscm
	Response limit exceedance due to volatile fuel. Operators stopped feeding refuse and adjusted control system parameters to address high carbon monoxide level.			

2.c. Transient Conditions - Furnace Temperature Below 800°C

Unit	Duration	Date/Time	Average	Cause

3. ANALYZER AVAILABILITY

Analyzer	Required Availability (% hours per annum)	Averaging Period	Annual Availability		
			Unit 1	Unit 2	Unit 3
Opacity	95	Hour	99.8%	99.6%	99.9%
Oxygen	95	Hour	98.8%	98.5%	98.5%
Carbon Monoxide (CO)	95	Hour	98.8%	98.5%	98.5%
Sulphur Dioxide (SO_2)	95	Hour	98.8%	98.4%	98.5%
Nitrogen Oxides (NO_x)	95	Hour	98.7%	98.4%	98.5%

4. ANNUAL MANUAL STACK TESTING SUMMARY

Manual Stack Tests:	Units	Discharge Regulatory Limit	Maximum Value		
			Unit 1	Unit 2	Unit 3
Particulate Matter	mg/dscm	9	0.33	1.47	1.02
HF	mg/dscm	1	0.16	0.02	0.03
Hg	ug/dscm	20	0.5	0.9	1.5
Cd	ug/dscm	7	0.1	0.4	0.2
Sum of Lead (Pb), Arsenic (As), Chromium (Cr)	ug/dscm	64	1.8	5.8	7.9
Trace Organics Tests:					**Unit 3**
PCDD/PCDF	ng/dscm	0.08			0.0013
Chlorophenols	ug/dscm	1			0.0718
Chlorobenzenes	ug/dscm	1			0.3007
PAH's	ug/dscm	5			0.0291
PCB	ug/dscm	1			0.0011

Manual Stack Tests:	Units	Annual Average		
		Unit 1	Unit 2	Unit 3
Particulate Matter	mg/dscm	0.22	0.85	0.49
HF	mg/dscm	0.05	0.01	0.02
Hg	ug/dscm	0.3	0.3	0.5
Cd	ug/dscm	0.1	0.2	0.1
Sum of Lead (Pb), Arsenic (As), Chromium	ug/dscm	1.7	4.8	4.8

5. SHUTDOWN REPORT

Reason	Hours		
	Unit 1	Unit 2	Unit 3
Annual Scheduled Maintenance Outages	**560**	**567**	**414**
Unplanned Maintenance Outages	**311**	**297**	**341**
Waste Quality	**8**	**7**	**17**

6. FACILITY BYPASS AND EMERGENCY/SPILL EVENT REPORT

Date/Time	Duration	Cause	Action Taken

7. OVERVIEW OF PLANT PERFORMANCE AND OPERATIONAL INFORMATION

Summaries/interpretation of compliance and complaints information	No compliance issues reported. Noise Complaint received on September 6, 2018: Unit 2 Air cooled condensor gearbox failed. Facility venting steam to maintain production. Noise should be reduced during boiler outage, and with cooler weather
Status of Operations and Maintenance of Various Equipment	Scheduled outages were completed on all three boilers. The turbogenerator ran with an annual availability of 97.15%. There were a total of 30 turbogenerator outages resulting in 247.37 hours offline, including a scheduled minor maintenance outage.
Incidences of Emergencies and Response Measures Implemented	No incidents reported.
Evaluation of monitoring programs	All monitoring programs were completed as per the Operational Certificate. Manual stack testing was completed on February 5-8, 2018, May 8-11, 2018, August 13-17, 2018, August 22-24, 2018 (semi-volatile organics) and November 5-8, 2018
Bottom ash and fly ash disposal method	Both bottom and fly ash are treated with a patented system used throughout the industry to inhibit metals leaching. Bottom ash was beneficially used for Coquitlam Landfill closure works. Fly ash was disposed at the Columbia Ridge Landfill and Recycling Center located in Arlington Oregon. Prior to hauling, each fly ash load is tested by an independent laboratory to confirm the material meets disposal criteria. Three loads did not meet the criteria for disposal and were reprocessed on site. The 3 failed loads resulted from an inconsistent fly ash flow which impacted the fly ash to phosphoric acid mixing ratio. The remaining fly ash loads were released for disposal.

Overview of Plant Performance			
	Plant Availability	%	**90.4%**
	Waste Received	Tonnes	**253,122**
	Waste Processed	Tonnes	**255,304**
	Energy Generated	MWh	**162,558**
	Natural Gas Consumed	GJ	**29,459**
	Bottom Ash	Tonnes	**42,540**
	Fly Ash	Tonnes	**10,479**
	Ferrous Metal Sold	Tonnes	**5,664**
	Non-Ferrous Metal Sold	Tonnes	**23**

Summary of operation; performance, and maintenance of emissions control devices

CEMS Calibration Data	Date Calibrated	Description of Calibration
Opacity	Daily	RATA tests on Units 1, 2, and 3 were completed the weeks of May 28 and November 26. Analysers are calibrated daily against a zero value and a known reference value.
Oxygen	Daily	
CO	Daily	
SO2	Daily	
NOx	Daily	