

## Report:

Covanta Durham York Renewable Energy Limited Partnership Durham York Energy Centre 2020 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: March 8, 2022





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Report No.: 22050

55 pages, 28 Appendices

#### **Revision History**

Version	Date	Summary Changes/Purpose of Revision		
1	January 19, 2021	None		
2	March 8, 2022	Revised Aldehyde ad Acrolein Data – Analytical laboratory identified an error in the units shown in the report		

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#### **EXECUTIVE SUMMARY**

**NOTE:** This report was updated on March 8, 2022. During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, the analytical laboratory, it was determined that the data for the 2021 compliance testing program was correct but there may have been an issue with the data reported for previous testing programs. ORTECH requested that all historical aldehyde data be reviewed by ALS to identify if an error in reporting had occurred. ALS determined that the units used to report the acetaldehyde, formaldehyde and acrolein data was incorrect for this, the 2020 compliance testing program. The data was previously reported as ng and should have been reported as µg and as a result the emission data for these parameters was previously under reported. ORTECH has revised this 2020 compliance testing report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling. As discussed below, this correction does not impact the compliance status of the facility.

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 9 and November 12, 2020. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the eleventh comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

Test Program	Test Date	ORTECH Report No.
2015 Compliance	September/October 2015	21546
2016 Voluntary	May 2016	21656
2016 Compliance	October/November 2016	21698
2017 Voluntary	May 2017	21754
2017 Compliance	October 2017	21800
2018 Voluntary	May/June 2018	21840
2018 Compliance	September 2018	21880
2019 Voluntary	June 2019	21936
2019 Compliance	September 2019	21960
2020 Voluntary	June 2020	22001
2020 Compliance	November 2020	22050



Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method		
Particulate and Metals	US EPA Method 29		
PM <sub>2.5</sub> /PM <sub>10</sub> and Condensable Particulate	US EPA Methods 201A and 202		
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2		
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)		
Aldehydes	NCASI Method ISS/FP-A105.01		
Halides and Ammonia	US EPA Method 26A		
Combustion Gases:			
Oxygen and Carbon Dioxide	Facility CEM		
Carbon Monoxide	Facility CEM		
Sulphur Dioxide	Facility CEM		
Nitrogen Oxides	Facility CEM		
Total Hydrocarbons	ORTECH per US EPA Method 25A		

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. Instack emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter for comparison with the results from compliance source testing. In-stack emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a continuous emission monitoring system (CEMS).

Since relative accuracy and system bias testing was conducted in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 9 to November 12, 2020) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 9, 2020 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.



Consistent with the approach commonly required by the MECP for compliance emission testing programs, the following results are conservative in the sense that when the analytical result is reported to be below the detection limit, the full detection limit is used to calculate emission data and is shown by a "<" symbol. Also, when one or both Boiler results are reported to be below the detection limit, the detection limit was used to conservatively estimate the total emission rate for the Main Stack.

The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides an updated framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same. The dioxins, furans and dioxin-like PCBs toxicity equivalent emission data was also calculated using half the detection limit for those compounds not detected. The half detection limit data was used to assess against the dispersion modelling Point of Impingement limit. The toxicity equivalent concentrations calculated using the full detection limit, for those compounds less than the reportable detection limit, were used to assess against the in-stack limit detailed in Schedule C of the ECA.



The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1230	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	199	-
NO <sub>x</sub> Reagent Injection Rate (liters/day)*	-	-	-	507	-
Carbon Injection (kg/day)*	-	-	-	133	-
Lime Injection (kg/day)*	-	-	-	4237	-
Filterable Particulate (mg/Rm³) (1)	3.35	4.07	0.36	2.60	9
PM <sub>10</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.77	<5.15	<4.08	<4.67	-
PM <sub>2.5</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<3.90	<4.95	<3.94	<4.26	-
Hydrogen Fluoride (mg/Rm³) (1)	<0.097	<0.10	<0.11	<0.10	-
Ammonia (mg/Rm³) <sup>(1)</sup>	0.55	0.67	0.61	0.61	-
Cadmium (μg/Rm³) <sup>(1)</sup>	0.093	0.075	0.058	0.075	7
Lead (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	0.48	0.34	0.29	0.37	50
Mercury (μg/Rm³) <sup>(1)</sup>	0.55	0.35	0.13	0.34	15
Antimony (µg/Rm³) (1)	0.092	0.046	<0.040	<0.059	-
Arsenic (μg/Rm³) (1)	<0.046	<0.045	<0.040	<0.044	-
Barium (μg/Rm³) <sup>(1)</sup>	1.55	1.38	1.81	1.58	-
Beryllium (μg/Rm³) <sup>(1)</sup>	<0.046	<0.045	<0.040	<0.044	-
Chromium (µg/Rm³) (1)	1.41	1.00	0.65	1.02	-
Cobalt (μg/Rm³) (1)	<0.046	<0.045	0.069	<0.053	-
Copper (µg/Rm³) (1)	5.25	5.22	5.16	5.21	-
Molybdenum (μg/Rm³) <sup>(1)</sup>	5.60	5.34	4.79	5.24	-
Nickel (µg/Rm³) (1)	1.31	2.34	0.97	1.54	-
Selenium (µg/Rm³) (1)	1.33	1.84	<0.20	<1.12	-
Silver (μg/Rm³) <sup>(1)</sup>	<0.046	<0.045	<0.040	<0.044	-
Thallium (μg/Rm³) <sup>(1)</sup>	0.22	0.091	<0.040	<0.12	-
Vanadium (μg/Rm³) <sup>(1)</sup>	<0.023	<0.023	<0.020	<0.022	-
Zinc (µg/Rm³) (1)	8.23	5.17	4.52	5.97	-
Dioxins and Furans (pg TEQ/Rm <sup>3</sup> ) (3)	<31.2	<31.0	<23.8	<28.7	60
Total Chlorobenzenes (ng/Rm³) (1)	<761	<942	<848	<850	-
Total Chlorophenols (ng/Rm³) (1)	<178	<185	<175	<180	-
Total PAHs (ng/Rm <sup>3</sup> ) <sup>(1)</sup>	<200	<515	<219	<311	-
VOCs (μg/Rm³) <sup>(1)</sup>	<308	<267	<305	<293	-
Aldehydes (μg/Rm³) (1)	<79.9	<60.5	<78.5	<73.0	-
Total VOCs (μg/Rm³) (1) (4)	<388	<328	<384	<366	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.9	0.2	0.3	0.5	50

<sup>\*</sup> based on process data provided by Covanta

<sup>(1)</sup> dry at  $25^{\circ}$ C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(2)</sup> dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

<sup>(3)</sup> calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(4)</sup> Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).



The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	805	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO <sub>x</sub> Reagent Injection Rate (liters/day)*	-	-	-	816	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm³) (1)	2.72	0.76	2.52	2.00	9
PM <sub>10</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.96	<5.40	<4.68	<5.01	-
PM <sub>2.5</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.89	<5.27	<4.54	<4.90	-
Hydrogen Fluoride (mg/Rm³) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm³) (1)	0.73	0.65	0.60	0.66	-
Cadmium (µg/Rm³) (1)	0.054	0.034	0.078	0.056	7
Lead (µg/Rm³) (1)	0.34	0.32	0.36	0.34	50
Mercury (μg/Rm³) (1)	0.058	<0.033	<0.045	<0.045	15
Antimony (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	<0.038	0.051	<0.045	<0.044	-
Arsenic (μg/Rm³) (1)	<0.038	<0.045	<0.045	<0.042	-
Barium (µg/Rm³) (1)	0.22	1.93	2.18	1.44	-
Beryllium (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	<0.038	<0.045	<0.045	<0.042	-
Chromium (μg/Rm³) <sup>(1)</sup>	0.75	0.85	0.74	0.78	-
Cobalt (μg/Rm³) (1)	<0.038	<0.045	0.066	<0.050	-
Copper (µg/Rm <sup>3</sup> ) (1)	5.00	5.11	5.14	5.09	-
Molybdenum (μg/Rm³) <sup>(1)</sup>	4.55	5.33	5.20	5.03	-
Nickel (µg/Rm³) (1)	0.66	0.83	1.11	0.87	-
Selenium (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	<0.19	0.68	<0.22	< 0.37	-
Silver (μg/Rm³) <sup>(1)</sup>	<0.038	<0.045	<0.045	<0.042	-
Thallium (μg/Rm³) <sup>(1)</sup>	<0.038	0.058	0.16	<0.084	-
Vanadium (µg/Rm³) (1)	<0.019	<0.022	0.061	< 0.034	-
Zinc (μg/Rm³) <sup>(1)</sup>	3.75	5.36	5.67	4.93	-
Dioxins and Furans (pg TEQ/Rm <sup>3</sup> ) (3)	<6.90	<8.31	<6.59	<7.26	60
Total Chlorobenzenes (ng/Rm³) (1)	<440	<436	<337	<404	-
Total Chlorophenols (ng/Rm <sup>3</sup> ) (1)	<206	<173	<215	<198	-
Total PAHs (ng/Rm <sup>3</sup> ) <sup>(1)</sup>	<229	<311	<227	<256	-
VOCs (μg/Rm³) <sup>(1)</sup>	<317	<400	<345	<354	-
Aldehydes (µg/Rm³) (1)	<110	<81.1	<102	<97.7	-
Total VOCs (μg/Rm³) (1) (4)	<427	<481	<447	<452	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.6	1.0	0.6	1.1	50

<sup>\*</sup> based on process data provided by Covanta

<sup>(1)</sup> dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(2)</sup> dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

<sup>(3)</sup> calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(4)</sup> Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).



A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
	Carbon Monoxide (mg/Rm <sup>3</sup> ) (1)	7.8	11.4	16.8	40
Boiler No. 1	Hydrogen Chloride (mg/Rm <sup>3</sup> ) (2)	3.4	3.8	4.4	9
Boller No. 1	Nitrogen Oxides (mg/Rm <sup>3</sup> ) (2)	109	110	110	121
	Sulphur Dioxide (mg/Rm <sup>3</sup> ) (2)	0	0.1	0.5	35
Boiler No. 2	Carbon Monoxide (mg/Rm³) (1)	10.8	14.1	20.8	40
	Hydrogen Chloride (mg/Rm <sup>3</sup> ) (2)	2.8	3.2	3.7	9
	Nitrogen Oxides (mg/Rm³) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm <sup>3</sup> ) (2)	0	0.1	0.5	35

- (1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
- (2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume

The emission data measured at each Boiler BH Outlet during the testing program was combined and used to assess the emissions from the Main Stack against the current point of impingement criteria detailed in Ontario Regulation 419/05.

The CALPUFF dispersion modelling (using Version 6.263 as requested by the MECP) for the November 2020 emission testing program was performed by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 27) based on calculated ground level Point of Impingement (POI) concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations for all of the contaminants were well below the relevant MECP standards.

In summary, the key results of the emission testing program are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 803 tonnes of steam per day for each Boiler (approximately 99.0% of maximum continuous rating). The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in Schedule C of the ECA.
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below all current standards in Regulation 419/05 under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.



#### 1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed the annual compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between November 9 and November 12, 2020. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the eleventh comprehensive Schedule E source testing program conducted at the facility. A list of the test programs conducted by ORTECH to date is provided below:

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2015 Compliance	September/October 2015	21546
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2020 Compliance	November 2020	22050

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler.

Prior to commencing the test program, a Pre-Test Plan was submitted to the MECP detailing the sampling and analytical methodology, and operating scenario proposed for the source testing. Provided in Appendix 3 is a copy of the Pre-Test Plan acceptance letter received from the MECP, dated October 14, 2020, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 3.

Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA between November 9 and November 12, 2020.



#### 2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

The facility was built to operate on a continuous basis; 24 hours/day, seven days/weeks, 365 days/year. Waste may be delivered six days per week between 7:00 am to 7:00 pm. The proposed operating schedule may be adjusted depending on demand and facility needs within the established setup indicated in the ECA (i.e., waste can only be received from Monday to Saturday - excluding statutory holidays, and between 7:00 am and 7:00 pm - ECA's Condition 4(1)(b)).

MSW arrives at the facility via covered refuse trucks and is deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

The facility consists of two thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. The treated exhaust gases are vented to a common 87.6 m stack and released to atmosphere.

#### 2.1 Control Equipment

Flue gasses pass through a dry recirculating type scrubber for acid control and a fabric filter for particulate control. A Selective Non-Catalytic Reduction System (SNCR) with ammonia injection is used for  $NO_X$  control. Powdered carbon is injected for mercury, and dioxin and furan control between the dry recirculating type scrubber and the fabric filter.

#### 2.2 Continuous Emission Monitoring Systems

Continuous Emissions Monitors are installed in the vertical ductwork between the economizer and dry recirculating type scrubber (location referred to as the Quench Inlet), and in the vertical ductwork between the fabric filter and the ID fan (location referred to as the BH Outlet).



### A summary of the CEMS installed at each location is provided below:

		Analyzer				
Unit	Location	Manufacturer	Model No.	Serial No.	Parameter	Range
				2504	CO (Low)	0-500 ppm
		5 ·			CO (High)	0-2000 ppm
1	Quench Inlet	Environmental SA	MIR 9000	2684	HCl	0-1500 ppm
	iniet				O <sub>2</sub> (Dry)	0-25%
		Ametek	RM CEM O <sub>2</sub> /IQ	10217710-2	O <sub>2</sub> (Wet)	0-25%
					NO <sub>X</sub>	0-500 ppm
					SO <sub>2</sub>	0-200 ppm
		Environmental SA	MIR 9000	2686	HCl	0-100 ppm
		Environmental SA	IVIIK 9000	2080	HF	0-100 ppm
					O <sub>2</sub> (Dry)	0-25%
1	DII Outlet				CO <sub>2</sub>	0-25%
1	BH Outlet	Ametek	RM CEM O <sub>2</sub> /IQ	10217710-1	O <sub>2</sub> (Wet)	0-25%
		Tethys	EXM400	F130304	NH <sub>3</sub>	0-50 ppm
		OSI	OFS-2000W	13020629	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602492	Opacity	0-100%
		Environmental SA	Graphite 52M	647	THC	0-100 ppm
		Environmental SA	Amesa	1825-269	Dioxin/Furan	0-10 ng/m <sup>3</sup>
		Environmental SA MIR 9000	MIR 9000	2685	CO (Low)	0-500 ppm
	Quench Inlet				CO (High)	0-2000 ppm
2					HCl	0-1500 ppm
					O <sub>2</sub> (Dry)	0-25%
		Ametek	RM CEM O2/IQ	10218084-1	O <sub>2</sub> (Wet)	0-25%
					NO <sub>x</sub>	0-500 ppm
				2687	SO <sub>2</sub>	0-200 ppm
		Environmental SA	MIR 9000		HCl	0-100 ppm
		Elivirollillelital 3A	IVIIK 9000	2007	HF	0-100 ppm
					O <sub>2</sub> (Dry)	0-25%
2	BH Outlet				CO <sub>2</sub>	0-25%
2	BH Outlet	Ametek	RM CEM O2/IQ	10218084-2	O <sub>2</sub> (Wet)	0-25%
		Tethys	EXM400	F130303	NH <sub>3</sub>	0-50 ppm
		OSI	OFS-2000W	13020633	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602493	Opacity	0-100%
		Environmental SA	Graphite 52M	648	THC	0-100 ppm
		Environmental SA	Amesa	1825-284	Dioxin/Furan	0-10 ng/m <sup>3</sup>



#### 3. SAMPLING LOCATIONS

The BH Outlet sampling ports are located on the vertical circular ductwork between the baghouse outlet and the ID Fan inlet. There are two 6-inch ports, located 90 degrees apart, at the same elevation and a single 4-inch port located approximately 0.8 m upstream of the 6-inch ports. The two 6-inch sampling ports were used for isokinetic sampling and the 4-inch ports were used for all non-isokinetic sampling.

The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two 6-inch ports are approximately 4.4 duct diameters (6.1 meters) downstream and 0.68 duct diameters (0.94 meters) upstream from the nearest flow disturbances.

The Quench Inlet sampling ports are located on the circular ductwork between the Boiler Outlet and the Recirculating Type Dry Scrubber Inlet. There are two 6-inch ports, located 90 degrees apart, at the same height. The Quench Inlet duct has a diameter of 1.37 meters (54 inches) at the sampling ports. The ports are located approximately 3.8 duct diameters (5.2 meters) downstream and 4.7 duct diameters (6.4 meters) upstream from the nearest flow disturbances.

The sampling ports are located at a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances.

Cyclonic flow checks were performed by ORTECH at the BH Outlet and Quench Inlet sampling locations on each Boiler on September 22, 2015. The cyclonic flow checks were performed using an S-type pitot tube and manometer following the procedures detailed in Ontario Source Testing Code Method 1. Briefly, the pitot tube was positioned at each sampling point so that the planes of the face openings were parallel to the cross-sectional axis of the duct. The pitot tube was then rotated about its longitudinal axis until the manometer reading was zero. The absolute value of the rotational angle was recorded to the nearest degree at each point. The average of the recorded angles was calculated at each location. If the average angle is less than 15°, cyclonic flow is not present and sampling may proceed as normal.

The results for the cyclonic flow checks are summarized below:

		Average Angle	
Sampling Location	Performance Specification	(°)	Cyclonic Flow Present
Boiler No. 1 Quench Inlet	Average <15°	6.6	No
Boiler No. 2 Quench Inlet	Average <15°	8.4	No
Boiler No. 1 BH Outlet	Average <15°	8.8	No
Boiler No. 2 BH Outlet	Average <15°	8.1	No

In addition, reverse flow was not observed at any point at any of the four sample locations during the cyclonic flow checks or during any test.



#### 4. SAMPLING PROCEDURES

#### 4.1 General

This section outlines the sampling procedures as well as pre-test and on site internal quality assurance/quality control (QA/QC) procedures which were utilized in the testing program. The procedures described in this section ensured that representative samples were collected and that the integrity of the collected samples was maintained. The use of these sampling procedures significantly reduced the possibility of sample contamination from external sources. Sample handling and documentation requirements were key factors in this program.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, acid gases, volatile organic compounds, aldehydes and combustion gases at the BH Outlet of each Boiler. Triplicate emission tests were also completed for total hydrocarbons at the Quench Inlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method	
Particulate and Metals	US EPA Method 29	
PM <sub>2.5</sub> /PM <sub>10</sub> and Condensable	US EPA Methods 201A and 202	
Particulate		
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2	
Volatile Organic Compounds	US EPA SW-846 Method 0030 (SLO VOST modification)	
Aldehydes	NCASI Method ISS/FP-A105.01	
Halides and Ammonia	US EPA Method 26A	
Combustion Gases:		
Oxygen and Carbon Dioxide	Facility CEM	
Carbon Monoxide	Facility CEM	
Sulphur Dioxide	Facility CEM	
Nitrogen Oxides	Facility CEM	
Total Hydrocarbons	ORTECH per US EPA Method 25A	

Since relative accuracy and system bias testing was performed in July 2020, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the days when isokinetic testing was performed at each unit (November 9 to November 12, 2020) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH on November 9, 2020 was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.



#### 4.2 Particulate and Metals

Particulate and metals were sampled using the sampling procedures outlined in US EPA Method 29. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A quartz fiber filter with a low metal background
- The first impinger was initially empty to collect moisture
- The second and third impingers initially contained 100 mL each of 5% nitric acid/10% hydrogen peroxide solution to collect metals
- The fourth impinger was initially empty
- The fifth and sixth impingers initially contained 100 mL each of 4% potassium permanganate/10% sulphuric acid solution to collect mercury
- The seventh impinger contained silica gel

Each test for particulate matter and metals involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the BH Outlet duct. Each of the twenty-four points was sampled for 7.5 minutes for a total actual sampling time of one hundred and eighty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The particulate and metals field data sheets are provided in Appendix 4.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 cubic meters per minute (m³/min) or 4% of the estimated sampling rate, whichever is less. All of the leak-checks, as detailed on the field data sheets, were acceptable.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.



#### 4.3 Particle Size Distribution

Particle Size Distribution (PSD) tests were performed at each of the BH Outlet sample locations in accordance with the test procedures described in US EPA Method 201A using  $PM_{10}$  and  $PM_{2.5}$  combined cyclone heads and US EPA Method 202. Sampling was conducted for approximately one hundred and twenty minutes at six points across each traverse of the duct using isokinetic dwell time sampling. At approximately ten minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the PSD tests are provided in Appendix 5.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

#### 4.4 Semi-Volatile Organic Compounds

Semi-volatile organic compounds (SVOC), including dioxins and furans, polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) were sampled at the BH Outlet of each Boiler using the sampling train and sampling procedures outlined in Environment Canada Report EPS 1/RM/2. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A clean and proven glass fiber filter
- Amberlite XAD-2 sorbent resin was used in a trap to collect semi-volatile organics
- The first impinger was initially empty
- The second impinger contained 100 mL of ethylene glycol
- The third impinger was initially empty
- The fourth impinger contained silica gel

All test train and auxiliary glassware were cleaned according to the methods as outlined in Environment Canada EPS 1/RM/2 except that the methods were modified by combining proofing extracts prior to analysis for the target analytes.



Each test for semi-volatile organic compounds at the BH Outlet involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for ten minutes for a total actual sampling time of two hundred and forty minutes.

At five minute time increments the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- XAD-2 trap outlet temperature
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the SVOC tests are provided in Appendix 6.

At the start and finish of sampling each traverse, the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m<sup>3</sup>/min or 4% of the estimated average sampling rate, whichever is less. All of the leak-checks for the tests reported, as detailed on the field data sheets, were acceptable.

A blank train was prepared in a manner identical to the test trains for each Boiler. It was assembled, transported and left at the sampling site for a period of time equal to the test trains. The blank train was treated at the sampling site in the same manner as the test trains and a gas volume was drawn through the blank train approximately equal to the leak-check volume for the test trains.

#### 4.5 Acid Gases

Hydrogen fluoride, hydrogen chloride and ammonia were sampled together using the sampling train and sampling procedures outlined in US EPA Method 26A. Major components of the test train were as follows:

- A glass nozzle and probe liner assembly
- The first and second impingers contained 100 ml of 0.1N H<sub>2</sub>SO<sub>4</sub>
- The third impinger was initially empty
- The fourth impinger contained silica gel



At five minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the acid gases tests are provided in Appendix 7.

At the start and finish of each test the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m<sup>3</sup>/min or 4% of the estimated average sampling rate, whichever is less.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

#### 4.6 Volatile Organic Compounds

Volatile Organic Compound (VOC) sampling was performed in accordance with US EPA SW-846 Method 0030 (SLO-VOST modification). Briefly, the sampling method involved withdrawing a sample of the stack gas through a heated glass lined sampling probe containing a glass wool plug to remove particulate material. The sample was then passed through a water cooled condenser and a Tenax GC adsorbent tube, as the primary volatile organic collection device. Condensate was collected in an initial condensate trap and the sample was then drawn through a second condenser and a combined secondary Tenax GC/charcoal adsorbent tube, as the secondary volatile organic collection device. The sampled gas stream then passed through a silica gel trap to remove any remaining traces of moisture prior to the rotameter, pump and dry gas meter.

During each test, a single forty minute run was completed at an approximate flowrate of 0.5 L/min. A fourth run was also conducted and the tube pair was archived in case a sample was lost during desorption or analysis. The analytical results from the three runs performed were combined and used to calculate test average results for the respective source.



At five minute time increments throughout sampling each pair of tubes, the following information was measured and recorded:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe and first condenser outlet temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The sampling train components were cleaned using the procedures in US EPA SW-846 Method 0030, Volatile Organic Sampling Train (VOST).

Field data sheets for the VOST tests are provided in Appendix 8.

Blank tube samples analyzed for the program included two pairs of field blank tubes, a trip blank pair of tubes and one laboratory blank pair of tubes.

#### 4.7 Aldehydes

Some of the compounds listed as VOC's (acetaldehyde, formaldehyde and acrolein) are more commonly classified as aldehydes. These compounds were captured in a separate test train in accordance with NCASI Method ISS/FP-A105.01.

Major components of the test train were as follows:

- A Teflon probe liner assembly was used.
- The first, second and third impingers contained approximately 15 ml each of o-Benzylhydroxylamine (BHA).
- The fourth impinger contained silica gel

A single test for aldehydes involved the collection of gas sampled at a single point in the duct at a sampling flowrate of approximately 0.5 liters per minute for sixty minutes.



At five minute time increments throughout each test, the following information was measured and recorded for the train:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- Dry gas meter temperature
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the aldehyde tests are provided in Appendix 9.

#### 4.8 Combustion Gases

In July 2020, relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler. DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. Therefore, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide.

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen, sulphur dioxide and total hydrocarbons, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured continuously by the DYEC CEMS at the Quench Inlet.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. The data measured by the DYEC CEMS, from November 9, 2020 at 00:00 to November 12, 2020 at 23:00, was used to assess against the in-stack emission limit stated in the ECA for each Boiler.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the calculated 1-hour average data to compare to the in-stack emission limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data to compare to the in-stack emission limit stated in the ECA.

Total hydrocarbon concentrations were measured by ORTECH following the procedures detailed in US EPA Method 25A. Triplicate one-hour tests were conducted at the Quench Inlet and BH Outlet of each Boiler on November 9, 2020. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA.



#### 5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Canada Ltd. Copies of Sample Logs/Chain of Custody Forms for all samples submitted for chemical analysis are provided in Appendix 10.

#### 5.1 Particulate and Metals

Before loading of the field test trains commenced, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The particulate and metals train recovery data sheets are provided in Appendix 11.

Following the conclusion of each test performed with the metals train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the onsite ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Filter and impinger content colors were recorded. The filter housing was disassembled and the filter carefully transferred to its pre-test petri dish with the use of Teflon coated tweezers.

All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle and probe assembly. The front half was then rinsed in triplicate using 0.1 N nitric acid but no brushing was performed.

The contents of the first four impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with 0.1 N nitric acid and combined with the impinger solution sample.

The contents of the fifth and sixth impingers were combined. The impingers with connecting glassware were then rinsed in triplicate with approximately 100 mL of fresh potassium permanganate solution followed by a triplicate rinse with 100 mL of distilled, de-ionized water. All of the glassware rinses were added to the sample container.

Any brown residue which was present in the fifth and sixth impingers was removed by incrementally rinsing with small amounts of 8 N hydrochloric acid. These acid rinses were added to a separate sample bottle which initially contained 150 mL of distilled, de-ionized water. The impingers were then rinsed with distilled, de-ionized water into the same sample container.



Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The test samples were prepared and analyzed for metals according to US EPA Method 29 (modified). The inorganic analytical reports are provided in Appendix 12.

#### 5.2 Particle Size Distribution

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 13.

The particle size distribution (PSD) samples were recovered in much the same way as the particulate samples from the particulate and metals trains. Following the conclusion of each test performed with the PSD trains, the probe was disconnected and all openings sealed with Teflon tape. The sample recoveries were performed in the on-site ORTECH sample recovery trailer.

The test trains were visually inspected to ensure that no damage during movement had occurred. The recovery procedure is briefly described as follows.

The condition of the test train was noted and the filter and impinger colours were recorded. The nozzle,  $PM_{10}$  cyclone walls, collection cup and outside of the exit stem was brushed and rinsed thoroughly with acetone into a glass sample container to determine particulate greater than  $PM_{10}$ . The  $PM_{10}$  cup and connecting parts were rinsed with acetone in a glass sample container to determine particulate less than  $PM_{10}$  but greater than  $PM_{2.5}$ . The  $PM_{2.5}$  cup and connecting parts up to the backup filter were rinsed with acetone into a glass sample container to determine particulate less than  $PM_{2.5}$ . The back-up filter was transferred to its original petri dish.

The impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content. The back half of the sampling train was then purged with nitrogen at 14 lpm for 1 hour as soon as possible after the completion of each test.

The back-half of the sampling train was recovered following the procedures detailed in US EPA Method 202 for condensable particulate. The contents of the first impinger were poured into a glass sample bottle and rinses of the impinger and connecting glassware were performed with water which was added to the sample. The glassware was then rinsed with acetone and the rinse was repeated in duplicate with hexane. The acetone and hexane rinses were combined into a single glass sample bottle.



Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The particle size and condensable particulate matter results are presented with the inorganic analytical reports provided in Appendix 12.

#### 5.3 Semi-Volatile Organic Compounds

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 14.

Following the conclusion of each test performed with the semi-volatile organics train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. Filter, XAD-2 trap and impinger content colours were recorded. The filter housing was disassembled and the filter carefully transferred, with the use of Teflon coated tweezers, to a piece of pre-cleaned aluminum foil. Each filter was then folded in half onto itself within the foil, the foil ends crimped, then placed in a pre-cleaned glass petri dish. Both the foil containing the filter(s) and the glass Petri dish were labeled.

All of the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train, up to but not including the trap, was brushed and rinsed thoroughly with acetone. A Teflon probe brush was used to assist in dislodging particulate material that may have adhered to the inside surfaces of the cyclone bypass and filter top assembly. This front half rinse was then repeated using hexane, with no brushing, and all rinsing was combined with the probe rinse sample. The filter bottom, filter bottom u-tube and trap inlet stem were soaked for five minutes in each of acetone and hexane then rinsed.

The XAD-2 trap was drained of excess cooling water and weighed. The ends were then sealed with Teflon tape and the trap was labeled and wrapped in aluminum foil. Since ORTECH uses a one piece trap and condenser, the five minute soak of this component was performed by the analytical laboratory.



The contents of the first three impingers were combined in a pre-cleaned amber glass sample bottle. Triplicate rinses of the impingers and connecting glassware back to and including the trap bottom utube were performed first with HPLC water, which was added to the impinger solution sample, and then with acetone followed by hexane. The acetone and hexane rinses were combined in a separate sample bottle from the impinger solutions.

Each sample container was sealed and labeled once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form then refrigerated until they were delivered to ALS for analysis.

Semi-volatile organic analyses were performed on single composite extracts for each test according to EPS 1/RM/3 and EPS 1/RM/23. These methods were modified slightly to include other semi-volatile organic compounds following the Environment Canada NITEP/Mid-Connecticut combustion test procedures. These analytical improvements have been implemented over many years and have been identified and approved through laboratory accreditation and acceptance by the MECP.

The SVOC analytical reports are provided in Appendix 15.

#### 5.4 Acid Gases

Following the conclusion of each test performed with the acid gas train, the probe was disconnected and all openings sealed with Teflon tape. The test trains were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted and the impinger content colors were recorded. All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The contents of the first three impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with high purity water and combined with the impinger solution sample.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for hydrogen fluoride, hydrogen chloride and ammonia was performed via ion chromatography.

Train recovery data sheets are provided in Appendix 16. The acid gases analytical results are presented with inorganic analytical reports in Appendix 12.



#### 5.5 Volatile Organics Train Recovery

Following the conclusion of each tube pair run performed with the volatile organic sampling train (VOST), the tubes were removed from the train, capped and placed in appropriately labeled test tubes which were also capped. The tubes were sent to ALS for volatile organic compound (VOC) analysis.

The VOST samples were analyzed via SW846 Method 5041A/8260B. Briefly, after spiking with internal and surrogate standards, the traps were thermally desorbed through a clam shell heater then through a chilled aqueous purge to remove the bulk of the moisture onto a secondary trap. These secondary traps are further dried using a counter current flow of helium. The secondary traps are then thermally desorbed into a VOC sample concentrator and again the VOCs are thermally transferred/concentrated onto a GC column. The VOC compounds are separated via gas chromatography (GC) and analyzed via GC/MS.

The condensate collected from each tube pair run was carefully transferred to a glass bottle and combined as a single sample for each sampling location. The condensate samples were archived for future analysis if necessary.

The VOST analytical report is provided in Appendix 17.

#### 5.6 Aldehydes

Following the conclusion of each test performed with the Aldehyde Train the probe was disconnected and all openings were sealed with Teflon tape. The test train was then recovered on site in an ORTECH sample recovery trailer separate from all other test train recoveries and solvents. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. All the impingers were wiped dry and weighed. The contents of the impingers were transferred into a glass sample container. The probe and impingers were rinsed with a small amount of DI water followed by a small amount of hexane into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the laboratory for analysis.

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. The sample recovery data sheets are provided in Appendix 18 and the analytical results are presented in Appendix 19.



### 6. INTERNAL AND EXTERNAL QA/QC PROGRAM

#### 6.1 General

As with other emission testing programs conducted by ORTECH, a comprehensive internal quality assurance/quality control (QA/QC) program was included.

Blank sampling trains were recovered and analyzed or reagent blanks were analyzed using the same procedures as the test trains to provide background concentrations of the emission test components.

#### 6.2 Pre-Test Activities

Prior to the commencement of the emission testing program, the following activities were performed:

- Preparation, pre-cleaning and proofing of the manual stack sampling trains and sample containers.
- Preparation and quality checks of chemicals, reagents, filters and XAD-2 adsorbent resin.
- Calibration of all sampling and monitoring equipment.
- Development (and review) of data acquisition, data reduction and summary procedures.
- Development of internal QA/QC field data sheets.
- Review of equipment calibration logs.
- Review of proposed field and laboratory procedures.

All proving data for the Semi-Volatile Organics Train glassware and auxiliary equipment was deemed acceptable prior to the test program.

A proof rinse of the sampling probes was collected and archived for future analysis if necessary.

For each batch of VOST tubes, a minimum of 1 pair in 10 was analyzed to demonstrate an absence of significant background contaminants from the tubes prior to the test program.

The proof data for the semi-volatile organics glassware and VOST tubes is provided in Appendix 20. The proof data for the aldehyde solutions is provided in the aldehyde analytical report.

All equipment used in the field testing program was calibrated and checked prior to the field testing program. Pertinent equipment calibration data is supplied in Appendix 21.

As part of ORTECH's internal QA/QC, data acquisition, data reduction and summary procedures were already in place and periodic spot checks of the computer programs were performed using known data sets.



#### 6.3 Emission Testing QA/QC Results

Prior to the field testing program, preliminary data was acquired to perform the required calculations for choosing a nozzle size to permit isokinetic sampling.

The internal diameter of each duct was verified and the appropriate number of sampling points was marked on each sampling probe.

The following general QA/QC criteria were satisfied for each of the test trains where applicable:

- All sampling equipment was cleaned and proven clean (where applicable) prior to the commencement of the field testing program.
- All sampling equipment passed a visual and operational check prior to use in the field.
- Oil filled manometer gauges which had been properly leveled and zeroed were used to measure the velocity pressure.
- All sampling data was recorded in ink on preformatted data sheets at least once every 5 minutes and/or at least twice during sampling each traverse point.
- Any unusual occurrences were noted during each test on the appropriate data form.
- The field team leader reviewed all calibration and sampling data forms daily.
- Only tapered edge sampling nozzles and S-type pitot tubes that had been visually inspected and caliper measured, and deemed acceptable, were used for sampling.
- Each leg of the S-type pitot was leak-checked before the start of testing. The leak-checks were all acceptable (no leak detected).
- Each entire sampling train met acceptable leak-check criteria before and after each test, and during any move from one sampling traverse to another. If a test did not meet the leak-check criteria the test was voided and repeated.
- The S-type pitot tube and sampling nozzle were maintained parallel to the flow during testing and care was taken to ensure that they did not scrape the ports when being inserted and removed from the stack.
- The probe and filter components were maintained at  $120^{\circ}\text{C} \pm 14^{\circ}\text{C}$  during testing. If the probe or filter temperature was outside of the acceptable range the test was halted until the temperature could be brought back into the acceptable range.
- Covanta was responsible for monitoring process operations during testing and notified ORTECH when testing was to proceed.



#### 6.4 Sample Recovery, Handling and Custody

ORTECH's sample identification scheme and system for handling and processing samples was initiated as part of ORTECH's sample tracking system for stack emission samples. All samples were identified by a unique sample number comprised of a series of numbers and letters. A master sample log/chain of custody form was maintained by the QA/QC designate and was made available to the ORTECH personnel designated to perform the sample recovery for a specific sampling train. Once a sample was collected it was labeled and checked against the sample log by the QA/QC designate.

The information contained within the sample number and the sample log enabled the sampling, recovery, data reduction and report writing personnel to easily determine the test date, test number, test type and train sample identification for a given sample. To ensure continuity, the analytical laboratory was requested to use the ORTECH number for sample identification.

The ORTECH personnel responsible for delivering samples used the master sample log/chain of custody form to document the transfer of the samples to the analytical laboratory. Appropriate care was taken when shipping the samples in order to maintain sample integrity. Once the samples and master sample log/chain of custody forms were received by the analytical laboratory, the laboratory personnel verified that all samples had been received and their integrity maintained. The laboratory personnel then signed the master log and made a photocopy which ORTECH personnel received as a record of the chain of custody for the samples.

#### 6.5 Analytical Results

ORTECH uses a one piece condenser and XAD-2 trap for SVOC collection, this component of the test train was Teflon sealed and wrapped with foil prior to being transported to the analytical laboratory where it was given the required five minute soaking with each of acetone and hexane. This is consistent with all SVOC test programs conducted by ORTECH and the modification was documented in the Pre-Test Plan approved by the MECP.

Analyses for the present emission testing program were performed using acceptable laboratory procedures in accordance with the specified analytical protocols. Adherence to the prescribed QA/QC procedures ensured data of consistent and measurable quality. Analytical quality control focused on the use of control standards to provide a measure of analytical accuracy. Replicate analysis (usually duplicate analysis) of the same sample was used as a means of determining precision of the various analytical procedures. Also specific acceptance criteria were defined for various analytical operations including calibrations, control standard analysis, drift checks, blanks, etc.



The following general QA/QC procedures were incorporated into the analytical effort:

- the on-site Field Supervisor reviewed all data and QA/QC data on a daily basis for completeness and acceptability
- master sample logs were maintained for all samples collected
- analytical QA/QC data was tabulated by the analytical laboratories using appropriate charts or forms
- all hard copy raw data was maintained in organized files

Specific analytical QA/QC procedures are presented in the analytical reports and are briefly summarized below.

#### 6.5.1 Metals Sample Analysis QA/QC

The analysis of the Method 29 stack samples involved sample digestion followed by Inductively Coupled Argon Plasma Mass Spectroscopy (ICP-MS) analysis. The analysis for mercury employed cold vapour atomic absorption (CVAA). The analytical QA/QC is described as follows and the results are provided in the analytical report.

#### **ICPMS Analysis**

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for the test program. The relative percent difference
  was less than 4.4% well within the acceptable limit of less than ±20%, for elements that are greater
  than 5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 96-104%. The acceptable limit is 85-115% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 83-101%. The acceptable limit is 70-130% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- An instrument calibration check standard was analyzed immediately after the calibration curve and must be within 90%-110% of the actual concentrations.
- Instrument calibration blank check sample were analyzed with every 10 samples and must be within three times the minimum detection limit.
- A continuing calibration check is run every 10 samples and must be within 85%-115% of the actual concentrations.
- Instrument (interference) check sample for ICP-MS analysis was analyzed before and after each analytical run. The value(s) found for the interference check sample must be within 80%-120% of the true value.



Barium, chromium, copper, lead, molybdenum and nickel were detected in the blank train at levels greater than the limit of reporting. Chromium, copper, molybdenum and nickel were observed by the analytical laboratory in the method blank at levels greater than the limit of reporting. The test sample data may be biased high for these compounds as a result of this potential background.

#### **Mercury Analysis**

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- One duplicate sample analysis was performed for each fraction. The relative percent difference
  was less than 1.1% within the acceptable limit of less than ±20%, for fractions that are greater than
  5 times the minimum detection limit.
- A blank spike (performed as a pre-digestion spike) was analyzed with the test samples. All of the recovery results were between 93-95% within the acceptable limit of 90-110% of the true value.
- A matrix spike (performed as a post digestion spike) was analyzed with the test samples. All of the recovery results were between 88-99%, within the acceptable limit of 85-115% of the true value.

The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 5 point calibration was performed.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 85%-115% of the actual concentration.
- Instrument calibration blank check sample is analyzed with every 10 samples and must be within three times the minimum detection limit.

#### 6.5.2 Acid Gas Sample Analysis QA/QC

Analyses of the acid gas samples from the Method 26A sampling train was performed by Ion Chromatography (IC). The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. Specific QA/QC results are summarized below:

- All of the hydrogen chloride and hydrogen fluoride analyses were conducted in duplicate. One
  duplicate sample analysis was also performed for ammonia. The relative percent difference was
  less than 4.0%, well within the acceptable limit of less than ±20% for compounds that are greater
  than 5 times the minimum detection limit.
- A blank spike sample was analyzed with the test samples. The recovery results for the blank spike sample were 97% for hydrogen chloride, 101% for hydrogen fluoride and 103% for ammonia, within the acceptable range of 90-110%.
- A matrix spike (spike confirmation) sample was analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike sample were 105% for hydrogen chloride, 95% for hydrogen fluoride and 101% for ammonia, within the acceptable range of 80-120%.



The following general analytical QA/QC requirements must also be met or the samples are re-analyzed:

- A 6 point calibration bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 90%-110% of the actual concentration.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.

#### 6.5.3 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples were analyzed with the test samples. Two laboratory control samples were prepared by the analytical laboratory and analyzed with the test samples ( $5\mu g$  and  $2.5 \mu g$ ). The recovery for the  $5\mu g$  sample was 119% for acetaldehyde, 75% for formaldehyde and 66% for acrolein. The recovery for the  $2.5\mu g$  sample was 144% for acetaldehyde, 102% for formaldehyde and 25% for acrolein.

Acrolein was not detected in any of the samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities similar to those found in the test samples. Formaldehyde was also detected in the method blank. The test sample data may be biased high for these compounds as a result of this potential background.

During the preparation of the 2021 compliance testing report (ORTECH Report No. 22085) an inconsistency was noted by ORTECH in regards to the units being used in the analytical reports for acetaldehyde, formaldehyde and acrolein. Upon review by ALS, it was determined that the data reported for the 2020 compliance testing program was incorrect. The data was reported as  $\mu g$ ; as a result the emission data in the original report, dated January 19, 2021, was incorrect for these compounds. ORTECH has revised this report to correct the acetaldehyde, formaldehyde and acrolein emission data and dispersion modelling.



#### 6.5.4 SVOC Sample Analysis QA/QC

The combined filter, probe rinse, Amberlite XAD-2 cartridge, impinger solutions and associated rinse and soaking solutions for each of the semi-volatile organics trains were analyzed together as one sample per test.

Staff at ALS added extraction standards to all samples prior to extraction. Clean-up standards were added just prior to the clean-up process. Recoveries of the clean-up standards provide an indication on the losses that occur during the extract clean-up. The analytical report includes the lists of the field spike, extraction and clean-up standards used. The analysis of samples involved complex sample extraction and cleanup, followed by HRMS/MS analysis.

Recovery of the dioxin and furan field spike standards were between 75-123% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains.

Per the dioxin and furan analytical report, 123678-HxCDF showed the presence of a peak in the corresponding diphenylether channel on the field samples. Historical evidence has shown that this diphenylether is a false positive and the HxCDF value is considered real and unbiased. Also, the mass resolution deteriorated during the 12 hour run sequence with the resolution being slightly below 10,000 for selected functions at the end of the run sequence. There is no evidence for enhanced interferences or noise to negatively impact data quality.

Per the analytical report for chlorophenols, select C-13 extraction/internal standards were biased low and below the targeted 20% lower control limit. However, due to isotope dilution corrections the lower recoveries should not compromise the quantitation of positive target responses.

#### 6.5.5 Volatile Organic Compound Analysis QA/QC

Prior to sampling VOST tube pairs were cleaned and conditioned under helium sweep (approximately 50 mL/min flow) through each tube in an oven at 280°C for at least 12 hours. One VOST pair was analyzed and proven clean for every 10 pairs cleaned. VOST tubes were end-capped and stored sealed in individual screw-capped vials at 4°C between conditioning and shipment to the field.

Two field blanks, a trip blank and a laboratory method blank were analyzed with the test sample tubes. VOST tubes were desorbed and analyzed, combined as pairs, according to SW846 Method 5041A/8260B.

The analytical report includes the field standards, internal standards and surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 71-116%.



#### 7. RESULTS AND DISCUSSION

Emission tests were completed for particulate matter, particle size distribution, condensable particulate matter, metals, semi-volatile organic compounds, aldehydes, acid gases and volatile organic compounds at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet.

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide were measured during the emission testing program (November 9 to November 12, 2020) by the DYEC CEMS. Total hydrocarbon concentrations were also measured at the BH Outlet and Quench Inlet by ORTECH on November 9, 2020.

Tables referenced in this report for the tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 1 and Appendix 2, respectively.

Detailed test schedules are provided in Table 1 and Table 2 of Appendix 1 and Appendix 2 for Boiler No. 1 and Boiler No. 2, respectively.

#### 7.1 Stack Gas Sampling Parameters

Emission test calculations for the particulate and metals, particle size, acid gases, and SVOC tests conducted are provided in Appendix 22 to Appendix 25, respectively.

Stack gas sampling parameters for the tests conducted at each location are summarized in Table 3 (Appendix 1 and Appendix 2). These parameters include calibration data, nozzle diameter, dry gas volume sampled and average percentage of isokineticity for each test.

#### 7.2 Stack Gas Physical Parameters

Stack gas physical parameters for tests conducted at each BH Outlet location are presented in Table 4 (Appendix 1 and Appendix 2). The average values from the isokinetic tests at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	140	142
Moisture by Volume (%)	16.1	15.7
Velocity (m/s)	17.5	17.5
Static Pressure (kPa)	-2.34	-2.28
Absolute Pressure (kPa)	98.4	98.6
Carbon Dioxide by Volume (%)**	10.8	11.0
Oxygen by Volume (%)**	8.49	8.32

<sup>\*</sup> Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct

<sup>\*\*</sup> dry basis, measured by DYEC CEMS



#### 7.3 Volumetric Flowrate Data

Stack gas volumetric flowrates for the tests conducted at each BH Outlet location are presented in Table 5 (Appendix 1 and Appendix 2). The average flowrate values from the tests at each site are summarized below:

Volumetric Flowrate	Boiler No. 1 BH Outlet*	Boiler No. 2 BH Outlet*
Actual Flowrate (m <sup>3</sup> /s)	25.8	25.8
Dry Reference Flowrate (Rm <sup>3</sup> /s)**	15.2	15.2
Dry Adjusted Flowrate (Rm <sup>3</sup> /s)***	19.0	19.3
Wet Reference Flowrate (Rm <sup>3</sup> /s)**	18.1	18.0

- \* Excludes the isokinetic Acid Gases tests as testing was conducted on a single traverse of the duct
- \*\* at 25°C and 1 atmosphere
- \*\*\* at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

#### 7.4 Particulate Emission Data

Filterable particulate emission data obtained from each of the particulate and metals tests conducted at the BH Outlet of each Boiler is presented in Table 6 (Appendix 1 and Appendix 2). Average filterable particulate emission data for each BH Outlet location is summarized below:

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m³)	1.90	1.49
Dry Reference Conc. (mg/Rm <sup>3</sup> )*	3.19	2.54
Dry Adjusted Conc. (mg/Rm³)**	2.60	2.00
Wet Reference Conc. (mg/Rm <sup>3</sup> )*	2.70	2.14
Emission Rate (mg/s)	49.6	39.3

at 25°C and 1 atmosphere

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The average particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (2.60 mg/Rm³, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (2.00 mg/Rm³, adjusted to 11% oxygen) were well below the maximum limit (9 mg/Rm³, adjusted to 11% oxygen) stated in the ECA.

The amount of particulate matter detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 1 BH Outlet was 0.6 mg and 0.6 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 BH Outlet was 0.3 mg and <0.1 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



Particle size distribution tests were also conducted at the BH Outlet of each Boiler.  $PM_{10}$  and  $PM_{2.5}$  emission data is detailed in Table 7 (Appendix 1 and Appendix 2) for each location. Average emission data for each BH Outlet location is summarized below:

	PM <sub>10</sub>		PM <sub>2.5</sub>	
PM <sub>10</sub> and PM <sub>2.5</sub>	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Emission Parameter	BH Outlet	BH Outlet	BH Outlet	BH Outlet
Actual Conc. (mg/m³)	<0.46	<0.39	<0.17	<0.30
Dry Reference Conc. (mg/Rm <sup>3</sup> )*	<0.79	<0.65	<0.28	<0.51
Dry Adjusted Conc. (mg/Rm³)**	<0.63	<0.51	<0.22	<0.40
Wet Reference Conc. (mg/Rm³)*	<0.66	<0.55	<0.24	<0.43
Emission Rate (mg/s)	<12.3	<10.0	<4.36	<7.86

at 25°C and 1 atmosphere

Condensable particulate emission data obtained from the back-half of each of the particle size distribution tests conducted at the BH Outlet for each Boiler is presented in Table 8 (Appendix 1 and Appendix 2). Average condensable particulate emission data for each BH Outlet location is summarized below:

	Inorganic Fraction		Organic Fraction	
Condensable Particulate Emission	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Parameter	BH Outlet	BH Outlet	BH Outlet	BH Outlet
Actual Conc. (mg/m³)	1.84	2.10	1.14	1.31
Dry Reference Conc. (mg/Rm <sup>3</sup> )*	3.15	3.53	1.96	2.20
Dry Adjusted Conc. (mg/Rm <sup>3</sup> )**	2.49	2.77	1.55	1.73
Wet Reference Conc. (mg/Rm³)*	2.63	2.98	1.64	1.86
Emission Rate (mg/s)	47.9	53.3	29.7	33.2

<sup>\*</sup> at 25°C and 1 atmosphere

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 1.4 mg for the inorganic fraction and 0.5 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 1.9 mg for the inorganic fraction and 0.6 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the condensable particulate emission data.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The average PM<sub>10</sub> and PM<sub>2.5</sub> results, including condensable particulate matter, are summarized below for each Boiler:

	PM <sub>10</sub> + Condensable		$PM_{2.5}$ + Condensable	
PM <sub>10</sub> and PM <sub>2.5</sub> + Condensable	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Emission Parameter	BH Outlet	BH Outlet	BH Outlet	BH Outlet
Actual Conc. (mg/m³)	<3.44	<3.79	<3.15	<3.71
Dry Reference Conc. (mg/Rm <sup>3</sup> )*	<5.90	<6.38	<5.39	<6.24
Dry Adjusted Conc. (mg/Rm <sup>3</sup> )**	<4.67	<5.01	<4.26	<4.90
Wet Reference Conc. (mg/Rm <sup>3</sup> )*	<4.93	<5.38	<4.51	<5.27
Emission Rate (mg/s)	<88.9	<96.5	<82.0	<94.3

at 25°C and 1 atmosphere

#### 7.5 Acid Gases

Hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler are presented in Table 9 (Appendix 1 and Appendix 2). Hydrogen fluoride was not detected in any of the test samples in quantities greater than the detection limit. The detection limit was used to calculate hydrogen fluoride emission data. Hydrogen chloride and ammonia were detected in quantities greater than the detection limit in all of the samples collected at each location.

Average hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
Acid Gases	Boiler No.	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Emission Parameter	1					
Actual Conc. (mg/m³)	2.94	2.29	<0.075	<0.076	0.45	0.49
Dry Reference Conc. (mg/Rm³)*	4.91	3.90	<0.13	<0.13	0.75	0.84
Dry Adjusted Conc. (mg/Rm <sup>3</sup> )**	4.00	3.06	<0.10	<0.10	0.61	0.66
Wet Reference Conc. (mg/Rm <sup>3</sup> )*	4.18	3.27	<0.11	<0.11	0.64	0.70
Emission Rate (mg/s)	76.2	60.8	<1.95	<2.02	11.6	13.1
Dry Adjusted Conc. (ppm)**	2.69	2.05	<0.13	<0.13	0.88	0.94

<sup>\*</sup> at 25°C and 1 atmosphere

Hydrogen fluoride and ammonia were not detected in the blank samples in quantities greater than the detection limit. Hydrogen chloride was detected in Blank Train No. 2 in quantities greater than the detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



#### 7.6 Combustion Gas Emission Data

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen and sulphur dioxide, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen was also measured at the Quench Inlet by the DYEC CEMS. The oxygen, carbon dioxide and carbon monoxide concentrations for each test period were used to calculate the molecular weight of the gas stream. The oxygen concentration data was also used to correct the dry reference concentration data to 11% oxygen.

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 9, 2020 at 00:00 to November 12, 2020 at 23:00 for each Boiler.

A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The minimum, average and maximum 1-hour, 4-hour and 24-hour combustion gas data measured by the DYEC CEMS is summarized in Table 10 (Appendix 1 and Appendix 2). The maximum concentration, along with the in-stack limit stated in the ECA, is summarized in the following table for each component.

		In-Stack ECA	Maximum Co	oncentration
Combustion Gases Emission Parameter		Limit	Boiler No. 1	Boiler No. 2
	Oxygen (%, 1-hr)	-	9.51	8.90
	Carbon Monoxide (mg/Rm <sup>3</sup> , 4-hr)*	≤ 40	16.8	20.8
BH Outlet	Sulphur Dioxide (mg/Rm <sup>3</sup> , 24-hr)*	≤ 35	0.5	0.5
bn Outlet	Nitrogen Oxides (mg/Rm <sup>3</sup> , 24-hr)*	≤ 121	110	111
	Hydrogen Chloride (mg/Rm <sup>3</sup> , 24-hr)*	≤ 9	4.4	3.7
	Total Hydrocarbons (mg/Rm³, 1-hr)*	-	0	1
Quench Inlet	Oxygen (%, 1-hr)	≥ 6	9	9

<sup>\*</sup> dry at reference conditions, adjusted to 11% oxygen

<sup>\*\*</sup> dry at reference conditions



Total hydrocarbon concentration data was measured by ORTECH on November 9, 2020 at the Quench Inlet and BH Outlet sampling locations. The results of the total hydrocarbons tests are summarized in Table 10 (Appendix 1 and Appendix 2). The average THC concentration for each location, along with the in-stack limit stated in the ECA, is summarized in the following table.

			Average Co	ncentration
Com	oustion Gases Emission Parameter	Limit	Boiler No. 1	Boiler No. 2
DI C. Hat	Total Hydrocarbons (1-minute)*	-	0.5	0.3
BH Outlet	Total Hydrocarbons (10-minute)**	-	0.5	0.3
Ouench Inlet	Total Hydrocarbons (1-minute)*	-	0.5	1.1
Quench Inlet	Total Hydrocarbons (10-minute)**	50	0.5	1.1

- \* ppm dry basis, expressed as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)
- \*\* ppm dry basis, expressed as equivalent methane (average of each 60 minute test calculated using the 10-minute rolling average)

The one-minute average total hydrocarbon data and the 10-minute total hydrocarbon data measured by ORTECH and expressed on a dry basis as equivalent methane is provided in Appendix 26.

#### 7.7 Metal Emission Data

Metal analytical results for the tests performed at the BH Outlet of each Boiler are given in Tables 11, 12 and 13 (Appendix 1 and Appendix 2) for Test No. 1, Test No. 2 and Test No. 3, respectively. Metal concentrations and emission rates are shown in Tables 14, 15 and 16 for Test No. 1, Test No. 2 and Test No. 3, respectively.

Summaries of the metal actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates including the coefficients of variation for the tests performed are provided in Tables 17, 18, 19, 20 and 21, respectively. Table 22 summarizes the average metal emission data for the tests performed.

Table 23 summarizes the results from the blank metals trains. The amount of metals detected in the blank trains was significant when compared to the amounts collected in the test trains since most of the metals in the test trains were at or near the detection limit. The emission data was not corrected for the blank data.

The metals analysis of the Method 29 test trains was performed on two separate analytical fractions, the probe and filter hydrofluoric acid digest and analysis of the train impingers and associated rinses. In instances where all analyses were reported to be below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, and the remaining fraction was assigned a value of zero. In instances where any given fraction was detected that value was used to calculate emission data, and the remaining undetected fraction were assigned a value of zero.



The ECA stipulates maximum in-stack limits for the emissions of various compounds including cadmium and lead.

The average cadmium emission data is summarized below:

Cadmium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (μg/m³)	0.055	0.041
Dry Reference Conc. (μg/Rm³)*	0.093	0.071
Dry Adjusted Conc. (μg/Rm³)**	0.075	0.056
Wet Reference Conc. (μg/Rm³)*	0.079	0.060
Emission Rate (mg/s)	0.0014	0.0011

<sup>\*</sup> at 25°C and 1 atmosphere

The average lead emission data is summarized below:

Lead Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (μg/m³)	0.27	0.25
Dry Reference Conc. (μg/Rm³)*	0.46	0.43
Dry Adjusted Conc. (μg/Rm³)**	0.37	0.34
Wet Reference Conc. (μg/Rm³)*	0.39	0.36
Emission Rate (mg/s)	0.0071	0.0067

<sup>\*</sup> at 25°C and 1 atmosphere

The cadmium and lead dry adjusted concentrations were well below the maximum in-stack emission limits stated in the ECA (7  $\mu$ g/Rm³, adjusted to 11% oxygen for cadmium and 50  $\mu$ g/Rm³, adjusted to 11% oxygen for lead).

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



## 7.8 Mercury Emission Data

Mercury analysis, concentration and emission data are also summarized in the metals emission tables. Mercury was detected in samples from each test at Boiler No. 1 and in one of the three tests at Boiler No. 2, specifically in the impinger sample analysis, and as is the case with all other analyses the mercury analytical results are not blank corrected.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (μg/m³)	0.25	<0.034
Dry Reference Conc. (μg/Rm <sup>3</sup> )*	0.42	<0.058
Dry Adjusted Conc. (μg/Rm³)**	0.34	<0.045
Wet Reference Conc. (μg/Rm³)*	0.36	<0.048
Emission Rate (mg/s)	0.0065	<0.00089

<sup>\*</sup> at 25°C and 1 atmosphere

The mercury dry adjusted concentrations were well below the maximum in-stack emission limit stated in the ECA of 15  $\mu$ g/Rm<sup>3</sup>, adjusted to 11% oxygen.

#### 7.9 Semi-Volatile Organic Emission Data

The combined filter and probe rinse, and combined Amberlite XAD-2 cartridge and impinger solutions for each of the semi-volatile organics trains were analyzed together (one analysis per test) for semi-volatile organic compounds including select dioxins, furans, dioxin-like polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) at the BH Outlet of each Boiler.

#### 7.9.1 Dioxins and Furans Emission Data

Dioxins and furans are groups of chemically related chlorinated organic compounds or congeners. There are seventy-five dioxin congeners and one hundred and thirty five furan congeners. The individual congeners all have different molecular structures and they may also have different molecular formulae. Individual congeners, which have the same molecular formula but different molecular structure, are referred to as isomers. Groups of isomers are referred to as congener groups or homologues. The basic dioxin and furan molecules have the molecular formulae  $C_{12}H_8O_2$  and  $C_{12}H_8O$ , respectively. In chlorinated dioxin and furans, between one and eight chlorine atoms may replace an equal number of hydrogen atoms in the basic molecule.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The following table lists the chlorinated dioxin and furan congener groups, and the number of isomers present in each group:

Congener G	roup Abbreviation	Number of Chlorine Atoms Per Molecule	Molecular Formula	Number of Isomers Per Congener Group
	M1CDD	1	C <sub>12</sub> H <sub>7</sub> ClO <sub>2</sub>	2
	D2CDD	2	$C_{12}H_6Cl_2O_2$	10
	T3CDD	3	$C_{12}H_5Cl_3O_2$	14
Dioxins	T4CDD	4	$C_{12}H_4CI_4O_2$	22
DIOXINS	P5CDD	5	$C_{12}H_3CI_5O_2$	14
	H6CDD	6	$C_{12}H_2CI_6O_2$	10
	H7CDD	7	$C_{12}H_1CI_7O_2$	2
	O8CDD	8	$C_{12}CI_8O_2$	1
	M1CDF	1	C <sub>12</sub> H <sub>7</sub> ClO	4
	D2CDF	2	$C_{12}H_6CI_2O$	16
	T3CDF	3	$C_{12}H_5Cl_3O$	28
Furanc	T4CDF	4	$C_{12}H_4CI_4O$	38
Furans	P5CDF	5	$C_{12}H_3CI_5O$	28
	H6CDF	6	$C_{12}H_2CI_6O$	16
	H7CDF	7	$C_{12}H_1CI_7O$	4
	O8CDF	8	$C_{12}CI_8O$	1

In Ontario, the MECP normally requires that only the higher tetra to octa (T4CDD to O8CDD) dioxin congeners and the higher tetra to octa (T4CDF to O8CDF) furan congeners are included in air emission testing. This is because the lower mono to tri congener groups (M1CDD to T3CDD and M1CDF to T3CDF) are considered to be generally less toxic than the higher congener groups and the test procedures have not been validated for these lower groups. In addition, it is acceptable to the MECP to use only specific isomers in the higher congener groups to compare emission data with the MECP criteria for dioxin and furan emissions.

Dioxin and furan congener group analytical results and emission data for the tests performed at the BH Outlet of each Boiler are given in Table 24 to Table 32 (Appendix 1 and Appendix 2). The results are shown as congener groups from T4CDF to O8CDF and T4CDD to O8CDD, as normally required by the MECP.

The average dioxin congener group emission data for each location is summarized below:

Dioxin Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m³)	1.29	0.30
Dry Reference Conc. (ng/Rm <sup>3</sup> )*	2.20	0.52
Dry Adjusted Conc. (ng/Rm <sup>3</sup> )**	1.75	0.41
Wet Reference Conc. (ng/Rm <sup>3</sup> )*	1.84	0.44
Emission Rate (ng/s)	32.6	7.86

at 25°C and 1 atmosphere

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The average furan congener group emission data for each location is summarized below:

Furan Congener Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m³)	0.38	<0.082
Dry Reference Conc. (ng/Rm³)*	0.65	<0.14
Dry Adjusted Conc. (ng/Rm <sup>3</sup> )**	0.52	<0.11
Wet Reference Conc. (ng/Rm <sup>3</sup> )*	0.54	<0.12
Emission Rate (ng/s)	9.66	<2.12

<sup>\*</sup> at 25°C and 1 atmosphere

The amounts of dioxin and furan congeners detected in the blank sampling trains and in the laboratory blank were insignificant when compared to the amounts detected in the test trains. The blank sampling train analytical results are shown in Table 33. The blank analyses were not subtracted from the test sample analyses during calculation of the dioxin and furan congener emission data.

Dioxin, furan and dioxin-like PCB specific isomer analytical results and emission data for the tests performed are given in Table 34 to Table 42 (Appendix 1 and 2) for the BH Outlets. The isomers included in these tables are considered the most toxic of all the dioxin and furan isomers. They are characterized by having chlorine atoms located at the 2, 3, 7 and 8 positions of the basic dioxin and furan molecules.

The blank sampling train analytical results are shown in Table 43 for the BH Outlet. The blank analyses were not subtracted from the test sample analyses during the calculation of the dioxin and furan isomer emission data.

Several schemes have been proposed for calculating dioxin and furan toxic equivalents (TEQ's) in which different factors have been assigned to the various isomers and congener groups. Calculations in this report are based on the methods preferred by the MECP, which use WHO and NATO/CCMS (1989) toxicity equivalence factors (TEFs).

The purpose in calculating dioxin and furan emission rates as toxic equivalents is to provide a means of assessing and comparing the effects of dioxin and furan emission rates for different emission sources. In these calculations, 2,3,7,8-T4CDD, the most toxic of all the dioxin and furan isomers, is assigned an arbitrary value of 1.0 for a toxic equivalency factor.

Then, other dioxin and furan isomers are assigned toxic equivalency factors which are based on their relative toxicity compared with 2,3,7,8-T4CDD. Emission rates for each isomer are multiplied by their assigned factor and the products are summed to provide the toxic equivalency emission rate.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The MECP "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provided a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs. This document was replaced by "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", with the most recent version published on April 27, 2018, however the dioxin and furan toxicity equivalent calculation methodology remains the same.

Tables 44 to 49 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 50 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using half the detection limit for those compounds not detected.

The average dioxin, furan and dioxin-like PCBs toxicity equivalent emission data, calculated using the WHO toxicity equivalence factors and half the detection limit (Table 50 in Appendix 1 and Appendix 2) is summarized below. Per the MECP standards and guidelines referenced above, dioxin, furan and dioxin-like PCB toxicity equivalent emission data calculated using the WHO toxicity equivalence factors and half the detection limit are used for dispersion modelling analysis for comparison with the point of impingement criteria discussed in Section 8.

Total Dioxin and Furan Isomer and	Boiler No. 1	Boiler No. 2
PBCs Emission Parameter	BH Outlet	BH Outlet
Actual Conc. (pg TEQ/m³)	20.4	4.12
Dry Reference Conc. (pg TEQ/Rm <sup>3</sup> )*	35.0	7.02
Dry Adjusted Conc. (pg TEQ/Rm <sup>3</sup> )**	27.8	5.55
Wet Reference Conc. (pg TEQ/Rm <sup>3</sup> )*	29.3	5.92
Emission Rate (ng TEQ/s)	0.52	0.11

<sup>\*</sup> at 25°C and 1 atmosphere

The average dioxin and furan dry adjusted toxicity equivalent concentration, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit (Table 46B in Appendix 1 and Appendix 2) is summarized below. Dioxin and furan toxicity equivalent emission data for the BH Outlet, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit, is used for comparison with the in-stack emission limit specified in the ECA.

Dioxin and Furan Isomer	Boiler No. 1	Boiler No. 2
Emission Parameter	BH Outlet	BH Outlet
Dry Adjusted Conc. (pg TEQ/Rm <sup>3</sup> )*	<28.7	<7.26

<sup>\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The dioxin and furan dry adjusted TEQ concentration at the BH Outlet of each Boiler was well below the maximum in-stack emission limit stated in the ECA of 60 pgTEQ/Rm<sup>3</sup>, adjusted to 11% oxygen.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



## 7.9.2 Chlorobenzene and Chlorophenol Emission Data

As with dioxins and furans, chlorobenzenes and chlorophenols are groups of compounds that have different molecular structures and may also have different numbers of chlorine atoms in the basic molecule. Chlorobenzenes have the structure of the benzene molecule except that between one and six chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Benzene has the molecular formula  $C_6H_6$ . Chlorobenzene congener groups have the molecular formulae  $C_6H_5Cl$ ,  $C_6H_4Cl_2$ ,  $C_6H_3Cl_3$ ,  $C_6H_2Cl_4$ ,  $C_6HCl_5$  and  $C_6Cl_6$ . Chlorophenols have the structure of the phenol molecule except that between one and five chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Phenol has the molecular formula  $C_6H_5OH$ . Chlorophenol congener groups have the molecular formulae  $C_6H_4ClOH$ ,  $C_6H_3Cl_2OH$ ,  $C_6H_2Cl_3OH$ ,  $C_6HCl_4OH$  and  $C_6Cl_5OH$ .

Chlorobenzene congener and isomer analytical results and emission data are given in Table 51 to Table 59 for the BH Outlet.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limit.

The average total chlorobenzene emission data is presented below:

Chlorobenzenes Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet		
Actual Conc. (ng/m³)	<626	<300		
Dry Reference Conc. (ng/Rm <sup>3</sup> )*	<1069	<512		
Dry Adjusted Conc. (ng/Rm <sup>3</sup> )**	<850	<404		
Wet Reference Conc. (ng/Rm <sup>3</sup> )*	<895	<431		
Emission Rate (µg/s)	<15.9	<7.73		

<sup>\*</sup> at 25°C and 1 atmosphere

Blank sampling train and laboratory blank analytical results for chlorobenzenes are given in Table 60. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorobenzene emission data.

Chlorophenol congener and isomer analytical results and emission data is given in Table 61 to Table 69 for the BH Outlet of each Boiler.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the detection limits (<DL).

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The average total chlorophenol emission data is presented below:

Chlorophenol Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m³)	<132	<147
Dry Reference Conc. (ng/Rm <sup>3</sup> )*	<226	<250
Dry Adjusted Conc. (ng/Rm <sup>3</sup> )**	<180	<198
Wet Reference Conc. (ng/Rm³)*	<189	<211
Emission Rate (μg/s)	<3.35	<3.77

at 25°C and 1 atmosphere

Blank sampling train and laboratory blank analytical results for chlorophenols are given in Table 70. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorophenol emission data.

#### 7.9.3 Polycyclic Aromatic Hydrocarbon Emission Data

The SVOC samples from the BH Outlet sampling location on each Boiler were also analyzed for select polycyclic aromatic hydrocarbon (PAH) compounds.

Analytical results and PAH emission data for the tests performed are provided in Table 71, 72 and Table 73 for Test No. 1, Test No. 2 and Test No. 3, respectively. PAH actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Tables 74 to 78, respectively. A summary of the average emission data is given in Table 79.

The average total PAH emission data is presented below:

Total PAH Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (ng/m³)	<229	<190
Dry Reference Conc. (ng/Rm <sup>3</sup> )*	<391	<324
Dry Adjusted Conc. (ng/Rm <sup>3</sup> )**	<311	<256
Wet Reference Conc. (ng/Rm³)*	<328	<273
Emission Rate (μg/s)	<5.80	<4.89

<sup>\*</sup> at 25°C and 1 atmosphere

Table 80 summarizes the lab blank and blank train PAH analyses. The blank train sample analyses were not subtracted from the test train sample analyses for the purposes of emission rate calculations.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



## 7.10 Aldehydes

Acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is presented in Table 81.

Average acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

	Acetaldehyde		Formal	dehyde	Acrolein	
Aldehydes	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Emission Parameter	BH Outlet					
Actual Conc. (μg/m³)	25.3	37.8	26.8	32.2	<1.40	<1.86
Dry Reference Conc. (μg/Rm³)*	43.4	65.1	46.1	55.3	<2.40	<3.20
Dry Adjusted Conc. (μg/Rm³)**	34.5	51.4	36.6	43.7	<1.90	<2.52
Wet Reference Conc. (μg/Rm <sup>3</sup> )*	36.3	54.6	38.5	46.4	<2.01	<2.68
Emission Rate (mg/s)	0.64	0.99	0.68	0.84	<0.035	<0.049

<sup>\*</sup> at 25°C and 1 atmosphere

Acrolein was not detected in any of the test samples or in the blank samples in quantities greater than the reported detection limit. Acetaldehyde and formaldehyde were detected in both blank samples in quantities greater than the detection limit and in quantities similar to the test samples.

## 7.11 Volatile Organic Emission Data

Three forty minute test runs were completed at each BH Outlet for volatile organic compounds using SLO-VOST. One backup pair of tubes was collected for each Boiler and archived in case a sample was lost during the analytical extraction process.

Volatile organic analysis data for the tests is provided in Table 82, 83 and Table 84 for Test No. 1, Test No. 2 and Test No. 3, respectively. The average test results of volatile organic actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Table 85 to 89, respectively. The average volatile organic emission data is summarized in Table 90.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



The average total VOC emission data collected from the VOST sampling train is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (μg/m³)	<215	<261
Dry Reference Conc. (μg/Rm³)*	<373	<448
Dry Adjusted Conc. (μg/Rm³)**	<293	<354
Wet Reference Conc. (μg/Rm³)*	<310	<376
Emission Rate (mg/s)	<5.51	<6.76

<sup>\*</sup> at 25°C and 1 atmosphere

The average total VOC emission data, including acetaldehyde, formaldehyde and acrolein, per the list provided in Schedule D of the ECA is presented below:

VOC Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Dry Reference Conc. (μg/Rm³)*	<465	<572
Dry Adjusted Conc. (μg/Rm³)**	<366	<452
Emission Rate (mg/s)	<6.87	<8.65

at 25°C and 1 atmosphere

Analysis of blank adsorbent tubes is provided in Table 91. The field blank tubes were taken to the test site and uncapped in order to expose the tubes to the ambient environment at the sampling location. Test sample analyses were not blank corrected during the calculation of the emission data.

## 8. DISPERSION MODELLING

The emission data measured during the testing program was used to assess emissions from the main stack against the point of impingement criteria detailed in Ontario Regulation 419/05 or the applicable MECP guideline.

Dispersion modelling was completed using the CALPUFF model (using Version 6.263 as requested by the MECP) by Golder Associates. The dispersion modelling results are detailed in Appendix 27. Golder Associates can provide the dispersion modelling zip files upon request.

The predicted ground level Point of Impingement (POI) concentrations, calculated based on the average total emission rate, for each contaminant included in the November 2020 emission testing program was well below the applicable standard, guideline or upper risk threshold. The contaminant with the highest predicted concentration relative to the standard was nitrogen oxides (6% of the 1-hour standard and 2% of the 24-hour standard with meteorological anomaly removal), all other contaminants were less than 1% of the relevant standard with meteorological anomaly removal.

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>\*\*</sup> at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume



#### 9. FACILITY PROCESS DATA

Continuous Emission Monitoring (CEM) data was supplied by DYEC personnel for the emission test program. The 1-hour CEM System data was provided for the following process parameters at the BH Outlet sampling locations:

- Hydrogen Chloride (mg/Rm³, adjusted to 11% oxygen)
- Nitrogen Oxides (mg/Rm³, adjusted to 11% oxygen)
- Sulphur Dioxide (mg/Rm³, adjusted to 11% oxygen)
- Carbon Monoxide (mg/Rm³, adjusted to 11% oxygen)
- Oxygen (% volume, dry)
- Total Hydrocarbons (mg/Rm³, adjusted to 11% oxygen)

DYEC provided 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs during each isokinetic test day at each Boiler. DYEC CEMS data was provided from November 9, 2020 at 00:00 to November 12, 2020 at 23:00 for each Boiler. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data for the isokinetic test days at each unit to compare to the in-stack limit stated in the ECA.

The combustion gas concentrations, expressed as 1-hour average concentrations, 4-hour rolling average and 24-hour rolling average where applicable, at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 28.

1-minute CEM data provided by DYEC was used to calculate the average oxygen, carbon dioxide and carbon monoxide concentrations for each isokinetic test period. The average oxygen, carbon dioxide and carbon monoxide concentrations were used to calculate the molecular weight of the gas stream. The average oxygen concentrations were also used to adjust the dry reference concentration data to 11% oxygen. The 1-minute data for the isokinetic test periods has been retained by ORTECH and can be provided upon request.





The facility process data was also supplied by DYEC personnel for each test day. Hourly process data has been retained by Covanta and can be provided upon request. The process data is summarized below:

	Total Power	Combu	Fuel sted** <sup>3</sup> /d)	Avg. Con Zone <sup>-</sup>	Гетр.		am les/d)	Combus	SW sted*** ies/d)	lnj. l	eagent Rate rs/d)		Inj. Rate /d)		nj. Rate :/d)
Test Date	Output* (MWh/d)	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Nov 9/20	392	0	0	1230	1312	808	808	192	199	531	801	134	126	4393	4242
Nov 10/20	391	0	0	1226	1300	807	804	202	203	522	828	133	126	4208	4262
Nov 11/20	389	23	0	1235	1316	803	804	204	202	516	882	131	126	4182	4205
Nov 12/20	390	0	0	1227	1314	806	805	200	205	458	755	134	126	4167	4224
Average	391	6	0	1230	1311	806	805	199	202	507	816	133	126	4237	4233

<sup>\*</sup> Gross turbine output

<sup>\*\*</sup> Auxiliary fuel was not combusted during the conduct of reference test runs to demonstrate ECA compliance

<sup>\*\*\*</sup> Calculated by crane scales.



#### 10. CONCLUSIONS

The main conclusions which can be drawn from the present emission testing program are:

- During the stack test periods the facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation. Testing was conducted at a steam production rate of greater than 803 tonnes of steam per day for each Boiler. The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes of steam per hour or 807.4 tonnes per day for each Boiler).
- The in-stack concentrations of the components listed in the ECA were all below the concentration limits provided in the ECA.
- Using CALPUFF dispersion modelling techniques (using Version 6.263 as requested by the MECP), the predicted maximum point of impingement concentrations, based on the average test results for both boilers, show DYEC to be operating well below the current standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MECP criteria including guidelines and upper risk thresholds.

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. Emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter as the results from compliance source testing. Emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a CEMS.

The July 2020 relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Quench Inlet and BH Outlet of each Boiler prior to the compliance testing program. Since the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the isokinetic test days at each unit was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA.

Total hydrocarbon concentration data was measured by ORTECH on November 9, 2020 at the Quench Inlet and BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was well below the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.



The average results for the tests conducted at Boiler No. 1, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1230	-
Steam (tonnes/day)*	-	-	-	806	-
MSW Combusted (tonnes/day)*	-	-	-	199	-
NO <sub>x</sub> Reagent Injection Rate (liters/day)*	-	-	-	507	-
Carbon Injection (kg/day)*	-	-	-	133	-
Lime Injection (kg/day)*	-	-	-	4237	-
Filterable Particulate (mg/Rm³) (1)	3.35	4.07	0.36	2.60	9
PM <sub>10</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.77	<5.15	<4.08	<4.67	-
PM <sub>2.5</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<3.90	<4.95	<3.94	<4.26	-
Hydrogen Fluoride (mg/Rm³) (1)	<0.097	<0.10	<0.11	<0.10	-
Ammonia (mg/Rm³) (1)	0.55	0.67	0.61	0.61	-
Cadmium (μg/Rm³) (1)	0.093	0.075	0.058	0.075	7
Lead (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	0.48	0.34	0.29	0.37	50
Mercury (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	0.55	0.35	0.13	0.34	15
Antimony (μg/Rm³) <sup>(1)</sup>	0.092	0.046	<0.040	<0.059	-
Arsenic (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	<0.046	<0.045	<0.040	<0.044	-
Barium (μg/Rm³) <sup>(1)</sup>	1.55	1.38	1.81	1.58	-
Beryllium (μg/Rm³) <sup>(1)</sup>	<0.046	<0.045	<0.040	<0.044	-
Chromium (μg/Rm³) <sup>(1)</sup>	1.41	1.00	0.65	1.02	-
Cobalt (μg/Rm³) <sup>(1)</sup>	<0.046	<0.045	0.069	<0.053	-
Copper (µg/Rm³) (1)	5.25	5.22	5.16	5.21	-
Molybdenum (μg/Rm³) <sup>(1)</sup>	5.60	5.34	4.79	5.24	-
Nickel (μg/Rm³) <sup>(1)</sup>	1.31	2.34	0.97	1.54	-
Selenium (μg/Rm³) <sup>(1)</sup>	1.33	1.84	<0.20	<1.12	-
Silver (μg/Rm³) <sup>(1)</sup>	<0.046	<0.045	<0.040	<0.044	-
Thallium (μg/Rm³) <sup>(1)</sup>	0.22	0.091	<0.040	<0.12	-
Vanadium (μg/Rm³) <sup>(1)</sup>	<0.023	<0.023	<0.020	<0.022	-
Zinc (μg/Rm³) <sup>(1)</sup>	8.23	5.17	4.52	5.97	-
Dioxins and Furans (pg TEQ/Rm <sup>3</sup> ) (3)	<31.2	<31.0	<23.8	<28.7	60
Total Chlorobenzenes (ng/Rm³) (1)	<761	<942	<848	<850	-
Total Chlorophenols (ng/Rm³) (1)	<178	<185	<175	<180	-
Total PAHs (ng/Rm <sup>3</sup> ) <sup>(1)</sup>	<200	<515	<219	<311	-
VOCs (μg/Rm³) <sup>(1)</sup>	<308	<267	<305	<293	-
Aldehydes (μg/Rm³) <sup>(1)</sup>	<79.9	<60.5	<78.5	<73.0	-
Total VOCs (µg/Rm <sup>3</sup> ) (1) (4)	<388	<328	<384	<366	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	0.9	0.2	0.3	0.5	50

<sup>\*</sup> based on process data provided by Covanta

<sup>(1)</sup> dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(2)</sup> dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

<sup>(3)</sup> calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(4)</sup> Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).



The average results for the tests conducted at Boiler No. 2, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Test No. 1	Test No. 2	Test No. 3	Average	In-Stack Limit
Total Power Output (MWh/day)*	-	-	-	391	-
Average Combustion Zone Temp. (°C)*	-	-	-	1311	-
Steam (tonnes/day)*	-	-	-	805	-
MSW Combusted (tonnes/day)*	-	-	-	202	-
NO <sub>x</sub> Reagent Injection Rate (liters/day)*	-	-	-	816	-
Carbon Injection (kg/day)*	-	-	-	126	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm³) (1)	2.72	0.76	2.52	2.00	9
PM <sub>10</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.96	<5.40	<4.68	<5.01	-
PM <sub>2.5</sub> with Condensable (mg/Rm <sup>3</sup> ) (1)	<4.89	<5.27	<4.54	<4.90	-
Hydrogen Fluoride (mg/Rm³) (1)	<0.10	<0.10	<0.10	<0.10	-
Ammonia (mg/Rm³) (1)	0.73	0.65	0.60	0.66	-
Cadmium (µg/Rm³) (1)	0.054	0.034	0.078	0.056	7
Lead (µg/Rm³) (1)	0.34	0.32	0.36	0.34	50
Mercury (μg/Rm³) <sup>(1)</sup>	0.058	< 0.033	<0.045	<0.045	15
Antimony (μg/Rm³) (1)	<0.038	0.051	<0.045	<0.044	-
Arsenic (μg/Rm³) <sup>(1)</sup>	<0.038	<0.045	<0.045	<0.042	-
Barium (μg/Rm³) <sup>(1)</sup>	0.22	1.93	2.18	1.44	-
Beryllium (μg/Rm³) <sup>(1)</sup>	<0.038	<0.045	<0.045	<0.042	-
Chromium (μg/Rm³) <sup>(1)</sup>	0.75	0.85	0.74	0.78	-
Cobalt (µg/Rm³) (1)	<0.038	<0.045	0.066	<0.050	-
Copper (µg/Rm³) (1)	5.00	5.11	5.14	5.09	-
Molybdenum (μg/Rm³) <sup>(1)</sup>	4.55	5.33	5.20	5.03	-
Nickel (μg/Rm <sup>3</sup> ) <sup>(1)</sup>	0.66	0.83	1.11	0.87	-
Selenium (μg/Rm³) <sup>(1)</sup>	<0.19	0.68	<0.22	< 0.37	-
Silver (μg/Rm³) <sup>(1)</sup>	<0.038	<0.045	<0.045	<0.042	-
Thallium (μg/Rm³) <sup>(1)</sup>	<0.038	0.058	0.16	<0.084	-
Vanadium (μg/Rm³) <sup>(1)</sup>	<0.019	<0.022	0.061	<0.034	-
Zinc (μg/Rm³) <sup>(1)</sup>	3.75	5.36	5.67	4.93	-
Dioxins and Furans (pg TEQ/Rm <sup>3</sup> ) (3)	<6.90	<8.31	<6.59	<7.26	60
Total Chlorobenzenes (ng/Rm³) (1)	<440	<436	<337	<404	-
Total Chlorophenols (ng/Rm³) (1)	<206	<173	<215	<198	-
Total PAHs (ng/Rm <sup>3</sup> ) <sup>(1)</sup>	<229	<311	<227	<256	-
VOCs (μg/Rm³) (1)	<317	<400	<345	<354	-
Aldehydes (μg/Rm³) <sup>(1)</sup>	<110	<81.1	<102	<97.7	-
Total VOCs (μg/Rm <sup>3</sup> ) (1) (4)	<427	<481	<447	<452	-
Quench Inlet Organic Matter (THC) (ppm, dry) (2)	1.6	1.0	0.6	1.1	50

<sup>\*</sup> based on process data provided by Covanta

<sup>(1)</sup> dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(2)</sup> dry basis as equivalent methane (average of each 60 minute test with data recorded in 1-minute intervals)

<sup>(3)</sup> calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

<sup>(4)</sup> Includes all components from the volatile organic compounds test list in the ECA (i.e. Volatile Organic Sampling Train and Aldehyde Sampling train components).



A summary of the minimum, average and maximum concentrations for the combustion gases measured by the DYEC CEMS with in-stack limits listed in the ECA is provided below for the two units.

Boiler No.	Parameter	Minimum	Average	Maximum	In-Stack Limit
	Carbon Monoxide (mg/Rm³) (1)	7.8	11.4	16.8	40
Doilor No. 1	Hydrogen Chloride (mg/Rm <sup>3</sup> ) (2)	3.4	3.8	4.4	9
Boiler No. 1	Nitrogen Oxides (mg/Rm <sup>3</sup> ) (2)	109	110	110	121
	Sulphur Dioxide (mg/Rm <sup>3</sup> ) (2)	0	0.1	0.5	35
	Carbon Monoxide (mg/Rm³) (1)	10.8	14.1	20.8	40
Poilor No. 2	Hydrogen Chloride (mg/Rm <sup>3</sup> ) (2)	2.8	3.2	3.7	9
Boiler No. 2	Nitrogen Oxides (mg/Rm <sup>3</sup> ) (2)	110	110	111	121
	Sulphur Dioxide (mg/Rm <sup>3</sup> ) (2)	0	0.1	0.5	35

- (1) 4-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume
- (2) 24-hour average measured by DYEC CEMS, dry at 25°C and 1 atmosphere adjusted to 11% oxygen by volume



## **APPENDIX 1**

Boiler No. 1 BH Outlet Data Tables (92 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1
Isokinetic Sampling Train Test Schedules

## **Particulate and Metals Trains**

Test	Test Date	Samplin	Sampling Time*		
Number		Start	Finish	min	
1	November 9, 2020	9:37	12:44	180	
2	November 9, 2020	13:29	16:44	180	
3	November 10, 2020	15:04	18:13	180	

## **Particle Size Distribution Trains**

Test	Test Date	Samplin	Sampling Time* min	
Number	Start			
1	November 10, 2020	8:09	10:13	120
2	November 10, 2020	10:58	12:59	120
3	November 10, 2020	13:42	15:45	120

## **Acid Gases Trains**

Test	Test Date	Samplin	Sampling Time*	
Number		Start	Finish	min
1	November 9, 2020	9:31	10:31	60
2	November 9, 2020	11:44	12:44	60
3	November 9, 2020	13:09	14:09	60

## **Semi-Volatile Organic Compounds Trains**

Test Date	Samplin	Sampling Time*	
	Start	Finish	min
November 11, 2020	8:23	12:30	240
November 11, 2020	13:27	18:26	240
November 12, 2020	8:20	12:32	240
	November 11, 2020 November 11, 2020	November 11, 2020 8:23 November 11, 2020 13:27	Start         Finish           November 11, 2020         8:23         12:30           November 11, 2020         13:27         18:26

<sup>\*</sup> Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1
Organic Compounds Test Schedules

## **Acrolein and Aldehydes Trains**

Test	Test Date	Samplin	Sampling Time	
Number		Start	Finish	min
_				
1	November 11, 2020	11:38	12:38	60
2	November 11, 2020	12:42	13:42	60
3	November 11, 2020	13:45	15:35	60

## **Volatile Organic Compounds Trains**

Test	Test Date	Samplin	Sampling Time	
Number		Start	Finish	min
_				
1	November 11, 2020	8:19	8:59	40
2	November 11, 2020	9:04	9:44	40
3	November 11, 2020	9:48	10:28	40
4	November 11, 2020	10:34	11:14	40

## **Total Hydrocarbons Trains**

Sampling	Test	Test Date	Sampling Period		Sampling Time
Location	Number		Start	Finish	min ·
BH Outlet	1	November 9, 2020	14:52	15:52	60
BH Outlet	2	November 9, 2020	15:58	16:58	60
BH Outlet	3	November 9, 2020	17:04	18:04	60
Quench Inlet	1	November 9, 2020	10:10	11:10	60
Quench Inlet	2	November 9, 2020	11:17	12:17	60
Quench Inlet	3	November 9, 2020	12:23	13:23	60

# TABLE 3 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Stack Gas Sampling Parameters

## **Particulate and Metals Trains**

Test No.	Pitot Tube	,		Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.851	0.999	6.38	3.521	97.5
2	0.851	0.999	6.38	3.600	98.3
3	0.848	1.004	6.73	3.969	101.2

## **Particle Size Distribution Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.848	0.992	4.51	1.176	95.7
2	0.848	0.992	4.51	1.180	101.7
3	0.848	0.992	4.51	1.167	99.2

## **Acid Gases Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.848	1.004	6.73	1.338	100.5
2	0.848	1.004	6.73	1.296	100.0
3	0.848	1.004	6.73	1.322	101.5

## **Semi-Volatile Organic Compounds Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.849	1.004	6.73	5.135	99.7
2	0.849	1.004	6.73	5.077	99.0
3	0.849	1.004	6.73	5.162	99.6

<sup>\*</sup> Dry at 25°C and 1 atmosphere

## TABLE 4 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Stack Gas Physical Parameters

## **Particulate and Metals Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	141	14.6	17.4	-2.22	99.3	10.7	8.74
2	142	15.8	17.9	-2.22	99.1	10.7	8.75
3	141	16.6	17.5	-2.33	98.0	10.8	8.39
Average	141	15.7	17.6	-2.26	98.8	10.7	8.63

## **Particle Size Distribution Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	16.7	18.3	-2.33	98.4	10.9	8.36
2	140	16.1	17.1	-2.33	98.3	11.0	8.37
3	141	16.6	17.6	-2.33	98.1	10.8	8.45
Average	141	16.5	17.7	-2.33	98.3	10.9	8.39

## Acid Gases Trains \*\*

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	14.4	17.2	-2.22	99.4	10.8	8.73
2	142	15.8	17.0	-2.22	99.3	10.8	8.59
3	143	17.6	17.6	-2.22	99.1	11.0	8.30
Average	142	15.9	17.3	-2.22	99.3	10.9	8.54

## **Semi-Volatile Organics Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	16.6	17.3	-2.37	97.6	10.8	8.34
2	139	16.2	17.1	-2.37	97.7	10.8	8.49
3	138	15.9	17.0	-2.51	98.7	11.0	8.49
Average	139	16.2	17.1	-2.42	98.0	10.9	8.44

<sup>\*</sup> Dry basis, measured by the DYEC CEMS

<sup>\*\*</sup> Sampling was conducted isokinetically on a single traverse in the duct.

## TABLE 5 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Stack Gas Volumetric Flowrates

## **Particulate and Metals Trains**

Test No.	Actual Flowrate	Dry Reference Flowrate	Dry Adjusted Flowrate	Wet Reference Flowrate
	m³/s	Rm³/s *	Rm³/s **	Rm³/s*
1	25.6	15.4	19.0	18.1
2	26.5	15.7	19.2	18.6
3	25.9	15.1	19.0	18.1
Average	26.0	15.4	19.1	18.2

## **Particle Size Distribution Trains**

Test No.	Actual Flowrate m³/s	Dry Reference Flowrate Rm³/s *	Dry Adjusted Flowrate Rm³/s **	Wet Reference Flowrate Rm³/s*
1	27.1	15.7	19.9	18.9
2	25.3	14.9	18.9	17.7
3	26.0	15.1	19.0	18.1
Average	26.1	15.2	19.2	18.2

## Acid Gases Trains \*\*\*

Test No.	Actual Flowrate m³/s	Dry Reference Flowrate Rm³/s *	Dry Adjusted Flowrate Rm³/s **	Wet Reference Flowrate Rm³/s*	
1	25.3	15.3	18.9	17.9	
2	25.2	14.9	18.6	17.7	
3	26.0	15.0	19.1	18.2	
Average	25.5	15.1	18.8	18.0	

## **Semi-Volatile Organics Trains**

Test No.	Actual Flowrate	Dry Reference Flowrate	Dry Adjusted Flowrate	Wet Reference Flowrate
	m³/s	Rm³/s *	Rm³/s **	Rm³/s*
1	25.6	14.8	18.8	17.8
2	25.3	14.8	18.5	17.6
3	25.2	14.9	18.7	17.8
Average	25.3	14.8	18.7	17.7

- \* At 25°C and 1 atmosphere
- \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
- \*\*\* Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Particulate Emission Data

Test	Partic	ulate Colle	cted	Dry Gas	·	Particulate		Particulate	
No.	Probe Rinse	Main Filter	Total	Volume Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
	mg	mg	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	14.4	0.1	14.5	2 521	2.40	4.12	2.25	2.52	60.6
1				3.521	2.48	4.12	3.35	3.52	63.6
2	17.7	0.3	18.0	3.600	2.96	5.00	4.07	4.21	78.3
3	1.6	0.2	1.8	3.969	0.26	0.45	0.36	0.38	6.83
Average					1.90	3.19	2.60	2.70	49.6
Blank	0.6	0.6							

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 7 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet PM<sub>2.5</sub> and PM<sub>10</sub> Emission Data

## $PM_{2.5}$

	Total	Dry Volume			Emission		
Test	Collected	Sampled	Actual	<b>Dry Reference</b>	<b>Dry Adjusted</b>	Wet Reference	Rate
No. mg	Rm <sup>3</sup> *	mg/m³	mg/Rm <sup>3</sup> *	mg/Rm <sup>3</sup> **	mg/Rm³*	mg/s	
1	<0.5	1.176	<0.25	<0.43	<0.34	<0.35	<6.68
2	<0.2	1.180	<0.10	<0.17	<0.13	<0.14	<2.53
3	<0.3	1.167	<0.15	<0.26	<0.20	<0.21	<3.88
Average			<0.17	<0.28	<0.22	<0.24	<4.36
Blank	<0.2	,					

## PM<sub>10</sub>

	Total	Dry Volume			Emission		
Test	Collected	Sampled	Actual	<b>Dry Reference</b>	<b>Dry Adjusted</b>	Wet Reference	Rate
No.	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	<1.8	1.176	<0.89	<1.53	<1.21	<1.27	<24.0
2	<0.5	1.180	<0.25	< 0.42	< 0.33	<0.36	<6.31
3	<0.5	1.167	<0.25	<0.43	<0.34	<0.36	<6.47
Average			<0.46	<0.79	<0.63	<0.66	<12.3
Blank	<0.3						

<sup>\*</sup> At 25 °C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Condensable Particulate Emission Data

## **Inorganic Condensable Particulate**

	Total	Dry Volume	Inor	ganic Condensable P	articulate Concen	tration	Emission
Test	Collected	Sampled	Actual	<b>Dry Reference</b>	Dry Adjusted	Wet Reference	Rate
No.	mg	Rm³*	mg/m³	mg/Rm³*	mg/Rm <sup>3</sup> **	mg/Rm³*	mg/s
1	3.5	1.176	1.72	2.98	2.35	2.47	46.7
2	4.0	1.180	2.00	3.39	2.68	2.85	50.5
3	3.6	1.167	1.79	3.08	2.45	2.57	46.6
Average			1.84	3.15	2.49	2.63	47.9
Blank	1.4						

## **Organic Condensable Particulate**

Total	Dry Volume	Org	Emission			
Collected	Sampled	Actual	Dry Reference	<b>Dry Adjusted</b>	Wet Reference	Rate
No. mg	Rm³*	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1.8	1.176	0.89	1.53	1.21	1.27	24.0
3.2	1.180	1.60	2.71	2.14	2.28	40.4
1.9	1.167	0.95	1.63	1.29	1.36	24.6
		1.14	1.96	1.55	1.64	29.7
0.5						
	1.8 3.2 1.9	Collected mg         Sampled Rm³*           1.8         1.176           3.2         1.180           1.9         1.167	Collected mg         Sampled Rm³*         Actual mg/m³           1.8         1.176         0.89           3.2         1.180         1.60           1.9         1.167         0.95           1.14	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*           1.8         1.176         0.89         1.53           3.2         1.180         1.60         2.71           1.9         1.167         0.95         1.63           1.14         1.96	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³**           1.8         1.176         0.89         1.53         1.21           3.2         1.180         1.60         2.71         2.14           1.9         1.167         0.95         1.63         1.29           1.14         1.96         1.55	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³**         Wet Reference mg/Rm³*           1.8         1.176         0.89         1.53         1.21         1.27           3.2         1.180         1.60         2.71         2.14         2.28           1.9         1.167         0.95         1.63         1.29         1.36           1.14         1.96         1.55         1.64

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

## TABLE 9 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Halides and Ammonia Emission Data

## Hydrogen Chloride

ted Samp Rm 6 1.33	3* mg/m <sup>3</sup>			Wet Reference mg/Rm <sup>3</sup> *	Emission Rate mg/s
			* mg/Rm <sup>3</sup> **	mg/Rm³*	mg/s
6 1.33	38 295				
		4.90	3.99	4.18	75.7
6 1.29	3.14	5.22	4.25	4.45	80.5
1 1.32	22 2.73	4.62	3.77	3.89	72.3
	2.94	4.91	4.00	4.18	76.2
57					
	1 1.32 57	2.94	2.94 4.91	2.94 4.91 4.00	2.94 4.91 4.00 4.18

## Hydrogen Fluoride

	HF	Dry Volume	Hydrogen Fluoride Concentration			HF	
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm <sup>3</sup> *	mg/Rm³**	mg/Rm³*	mg/s
1	<0.160	1.338	<0.072	<0.12	<0.097	<0.10	<1.85
2	< 0.161	1.296	<0.075	<0.12	< 0.10	<0.11	<1.92
3	<0.176	1.322	<0.079	<0.13	<0.11	<0.11	<2.08
Average			<0.075	<0.13	<0.10	<0.11	<1.95
Blank	<0.107						

## **Ammonia**

	Ammonia	Dry Volume	Ammonia Concentration			Ammonia	
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	mg	Rm³*	mg/m³	mg/Rm³*	mg/Rm <sup>3</sup> **	mg/Rm³*	mg/s
1	0.911	1.338	0.41	0.68	0.55	0.58	10.5
2	1.06	1.296	0.49	0.82	0.67	0.70	12.6
3	0.986	1.322	0.44	0.75	0.61	0.63	11.7
Average			0.45	0.75	0.61	0.64	11.6
Blank	<0.288						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1
Combustion Gas Analyses

## Data measured by the DYEC CEMS from November 9 to November 12, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.97	8.48	9.51
BH Outlet	Carbon Monoxide (mg/Rm <sup>3</sup> , 1 hr Avg) *	6	11	26
BH Outlet	Carbon Monoxide (mg/Rm³, 4 hr Avg) *	7.8	11.4	16.8
BH Outlet	Sulphur Dioxide (mg/Rm³, 1 hr Avg) *	0	0.1	6.0
BH Outlet	Sulphur Dioxide (mg/Rm <sup>3</sup> , 24 hr Avg) *	0	0.1	0.5
BH Outlet	Nitrogen Oxides (mg/Rm³, 1 hr Avg) *	98	110	118
BH Outlet	Nitrogen Oxides (mg/Rm³, 24 hr Avg) *	109	110	110
BH Outlet	Hydrogen Chloride (mg/Rm³, 1 hr Avg) *	1	4	7
, BH Outlet	Hydrogen Chloride (mg/Rm³, 24 hr Avg) *	3.4	3.8	4.4
BH Outlet	Total Hydrocarbons (mg/Rm³, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	9	9

## Data measured by the ORTECH CEMS on November 9, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	4.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	3.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.7	5.6
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.5	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.3	0.9	4.6
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.2	1.3
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.1	0.3	2.5
Average	-	Total Hydrocarbons (ppm dry, 1-min Avg)		0.5	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.4	1.0	2.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.2	0.4
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0.1	0.3	0.7
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		0.5	

Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	μg	μg	μg
Antimony	0.40	<0.1	0.40
Arsenic	<1	<0.2	<0.20
Barium	5.48	1.22	6.70
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.25	0.15	0.40
Chromium	5.34	0.74	6.08
Cobalt	<0.2	<0.1	<0.20
Copper	6.98	15.7	22.7
Lead	1.23	0.84	2.07
Mercury *	<0.015	2.38	2.38
Molybdenum	24.2	<0.1	24.2
Nickel	4.83	0.85	5.68
Selenium	<2	5.75	5.75
Silver	<0.2	<0.1	<0.20
Thallium	0.97	<0.05	0.97
Vanadium	<1	<0.1	<0.10
Zinc	25.2	10.4	35.6
Total			<114

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	μg	μg	μg
			·
Antimony	0.21	<0.1	0.21
Arsenic	<1	<0.2	<0.20
Barium	5.07	1.01	6.08
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.17	0.16	0.33
Chromium	3.85	0.58	4.43
Cobalt	<0.2	<0.1	<0.20
Copper	6.68	16.4	23.1
Lead	0.96	0.55	1.51
Mercury *	<0.015	1.55	1.55
Molybdenum	23.6	<0.1	23.6
Nickel	3.40	6.95	10.4
Selenium	<2	8.13	8.13
Silver	<0.2	<0.1	<0.20
Thallium	0.40	<0.05	0.40
Vanadium	<1	<0.1	<0.10
Zinc	16.8	6.05	22.9
Total			<103

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	μg	μg	μg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	8.07	1.00	9.07
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.23	0.060	0.29
Chromium	2.76	0.49	3.25
Cobalt	0.35	<0.1	0.35
Copper	6.16	19.7	25.9
Lead	1.01	0.46	1.47
Mercury *	<0.015	0.64	0.64
Molybdenum	24.0	<0.1	24.0
Nickel	3.84	1.01	4.85
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	17.0	5.66	22.7
Total			<94.5

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 1

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	0.40	0.068	0.11	0.092	0.096	0.0017
Arsenic	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Barium	6.70	1.15	1.90	1.55	1.62	0.029
Beryllium	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Cadmium	0.40	0.069	0.11	0.093	0.098	0.0018
Chromium	6.08	1.04	1.73	1.41	1.47	0.027
Cobalt	<0.20	<0.034	<0.057	<0.046	<0.048	<0.00088
Copper	22.7	3.88	6.44	5.25	5.50	0.099
Lead	2.07	0.35	0.59	0.48	0.50	0.0091
Mercury	2.38	0.41	0.68	0.55	0.58	0.010
Molybdenum	24.2	4.14	6.87	5.60	5.87	0.11
Nickel	5.68	0.97	1.61	1.31	1.38	0.025
Selenium	5.75	0.98	1.63	1.33	1.39	0.025
Silver	<0.20	< 0.034	<0.057	<0.046	<0.048	<0.00088
Thallium	0.97	0.17	0.28	0.22	0.24	0.0043
Vanadium	<0.10	<0.017	<0.028	<0.023	<0.024	<0.00044
Zinc	35.6	6.09	10.1	8.23	8.63	0.16
Total	<114	<19.5	<32.3	<26.3	<27.6	<0.50

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	3.521
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	15.4
Dry Adjusted Flowrate (Rm <sup>3</sup> /s**):	19.0
Wet Reference Flowrate (Rm³/s*) :	18.1

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	0.21	0.034	0.057	0.046	0.048	0.00089
Arsenic	<0.20	<0.033	<0.056	<0.045	< 0.047	<0.00087
Barium	6.08	1.00	1.69	1.38	1.42	0.026
Beryllium	<0.20	< 0.033	<0.056	<0.045	< 0.047	<0.00087
Cadmium	0.33	0.054	0.092	0.075	0.077	0.0014
Chromium	4.43	0.73	1.23	1.00	1.04	0.019
Cobalt	<0.20	< 0.033	<0.056	< 0.045	< 0.047	<0.00087
Copper	23.1	3.79	6.41	5.22	5.40	0.10
Lead	1.51	0.25	0.42	0.34	0.35	0.0066
Mercury	1.55	0.25	0.43	0.35	0.36	0.0067
Molybdenum	23.6	3.87	6.56	5.34	5.52	0.10
Nickel	10.4	1.70	2.88	2.34	2.42	0.045
Selenium	8.13	1.33	2.26	1.84	1.90	0.035
Silver	<0.20	<0.033	<0.056	<0.045	<0.047	<0.00087
Thallium	0.40	0.066	0.11	0.091	0.094	0.0018
Vanadium	< 0.10	<0.016	<0.028	<0.023	<0.023	< 0.00043
Zinc	22.9	3.75	6.35	5.17	5.34	0.099
Total	<103	<17.0	<28.7	<23.4	<24.2	<0.45

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	3.600
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**):	19.2
Wet Reference Flowrate (Rm³/s*):	18.6

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 3

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	<0.20	<0.029	<0.050	<0.040	<0.042	<0.00076
Arsenic	<0.20	<0.029	<0.050	<0.040	< 0.042	<0.00076
Barium	9.07	1.33	2.29	1.81	1.91	0.034
Beryllium	<0.20	< 0.029	<0.050	<0.040	< 0.042	< 0.00076
Cadmium	0.29	0.043	0.074	0.058	0.061	0.0011
Chromium	3.25	0.48	0.82	0.65	0.68	0.012
Cobalt	0.35	0.051	0.087	0.069	0.072	0.0013
Copper	25.9	3.79	6.52	5.16	5.43	0.098
Lead	1.47	0.22	0.37	0.29	0.31	0.0056
Mercury	0.64	0.094	0.16	0.13	0.14	0.0024
Molybdenum	24.0	3.52	6.05	4.79	5.04	0.091
Nickel	4.85	0.71	1.22	0.97	1.02	0.018
Selenium	<1.00	<0.15	<0.25	<0.20	<0.21	<0.0038
Silver	<0.20	< 0.029	<0.050	<0.040	<0.042	<0.00076
Thallium	<0.20	< 0.029	<0.050	<0.040	<0.042	<0.00076
Vanadium	< 0.10	<0.015	<0.025	<0.020	<0.021	<0.00038
Zinc	22.7	3.32	5.71	4.52	4.76	0.086
Total	<94.5	<13.9	<23.8	<18.9	<19.9	<0.36

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	3.969	
Actual Flowrate (m³/s) :	25.9	
Dry Reference Flowrate (Rm³/s*) :	15.1	
Dry Adjusted Flowrate (Rm³/s**) :	19.0	
Wet Reference Flowrate (Rm³/s*) :	18.1	

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal		Actual Concentration						
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation			
	μg/m³	μg/m³	μg/m³	μg/m³	%			
Antimony	0.068	0.034	<0.029	<0.044	48.5			
Arsenic	< 0.034	<0.033	<0.029	<0.032	7.9			
Barium	1.15	1.00	1.33	1.16	14.3			
Beryllium	< 0.034	<0.033	< 0.029	< 0.032	7.9			
Cadmium	0.069	0.054	0.043	0.055	23.6			
Chromium	1.04	0.73	0.48	0.75	37.7			
Cobalt	< 0.034	<0.033	0.051	< 0.039	25.2			
Copper	3.88	3.79	3.79	3.82	1.4			
Lead	0.35	0.25	0.22	0.27	26.8			
Mercury	0.41	0.25	0.094	0.25	62.0			
Molybdenum	4.14	3.87	3.52	3.84	8.1			
Nickel	0.97	1.70	0.71	1.13	45.4			
Selenium	0.98	1.33	<0.15	<0.82	74.3			
Silver	< 0.034	< 0.033	<0.029	< 0.032	7.9			
Thallium	0.17	0.066	<0.029	<0.087	81.1			
Vanadium	< 0.017	< 0.016	<0.015	< 0.016	7.9			
Zinc	6.09	3.75	3.32	4.39	34.0			
Total	<19.5	<17.0	<13.9	<16.8	16.8			

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal		Dry Reference Concentration						
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation			
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%			
A A:	0.11	0.057	0.050					
Antimony	0.11	0.057	<0.050	<0.073	46.7			
Arsenic	<0.057	<0.056	<0.050	<0.054	6.3			
Barium	1.90	1.69	2.29	1.96	15.4			
Beryllium	<0.057	<0.056	<0.050	<0.054	6.3			
Cadmium	0.11	0.092	0.074	0.093	21.9			
Chromium	1.73	1.23	0.82	1.26	36.0			
Cobalt	<0.057	<0.056	0.087	<0.066	26.7			
Copper	6.44	6.41	6.52	6.46	0.8			
Lead	0.59	0.42	0.37	0.46	25.0			
Mercury	0.68	0.43	0.16	0.42	60.7			
Molybdenum	6.87	6.56	6.05	6.49	6.4			
Nickel	1.61	2.88	1.22	1.90	45.4			
Selenium	1.63	2.26	<0.25	<1.38	74.3			
Silver	<0.057	<0.056	<0.050	< 0.054	6.3			
Thallium	0.28	0.11	<0.050	<0.15	79.7			
Vanadium	<0.028	<0.028	<0.025	<0.027	6.3			
Zinc	10.1	6.35	5.71	7.39	32.2			
Total	<32.3	<28.7	<23.8	<28.3	15.1			

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal		Coefficient			
	Test No. 1 μg/Rm³**	Test No. 2 μg/Rm³**	Test No. 3 μg/Rm³**	Average μg/Rm³**	of Variation %
Antimony	0.092	0.046	<0.040	<0.059	47.7
Arsenic	< 0.046	<0.045	<0.040	<0.039	47.7 7.8
Barium	1.55	1.38	1.81	1.58	7.8 13.8
Beryllium	< 0.046	<0.045	<0.040	< 0.044	7.8
Cadmium	0.093	0.075	0.058	0.075	23.1
Chromium	1.41	1.00	0.65	1.02	37.1
Cobalt	<0.046	<0.045	0.069	< 0.053	24.9
Copper	5.25	5.22	5.16	5.21	0.9
Lead	0.48	0.34	0.29	0.37	26.1
Mercury	0.55	0.35	0.13	0.34	61.5
Molybdenum	5.60	5.34	4.79	5.24	7.9
Nickel	1.31	2.34	0.97	1.54	46.4
Selenium	1.33	1.84	<0.20	<1.12	74.8
Silver	<0.046	<0.045	<0.040	<0.044	7.8
Thallium	0.22	0.091	< 0.040	< 0.12	80.3
Vanadium	<0.023	<0.023	<0.020	<0.022	7.8
Zinc	8.23	5.17	4.52	5.97	33.2
Total	<26.3	<23.4	<18.9	<22.9	16.5

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal		Wet Reference Concentration							
	Test No. 1	Test No. 2	Test No. 3 Average		of Variation				
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%				
Antimony	0.096	0.048	<0.042	<0.062	47.9				
Arsenic	<0.048	<0.047	<0.042	<0.046	7.3				
Barium	1.62	1.42	1.91	1.65	14.7				
Beryllium	<0.048	<0.047	< 0.042	<0.046	7.3				
Cadmium	0.098	0.077	0.061	0.079	23.1				
Chromium	1.47	1.04	0.68	1.06	37.2				
Cobalt	<0.048	<0.047	0.072	<0.056	25.7				
Copper	5.50	5.40	5.43	5.44	0.9				
Lead	0.50	0.35	0.31	0.39	26.2				
Mercury	0.58	0.36	0.14	0.36	61.6				
Molybdenum	5.87	5.52	5.04	5.48	7.6				
Nickel	1.38	2.42	1.02	1.61	45.4				
Selenium	1.39	1.90	<0.21	<1.17	74.3				
Silver	<0.048	<0.047	< 0.042	< 0.046	7.3				
Thallium	0.24	0.094	< 0.042	< 0.12	80.7				
Vanadium	<0.024	<0.023	<0.021	<0.023	7.3				
Zinc	8.63	5.34	4.76	6.24	33.4				
Total	<27.6	<24.2	<19.9	<23.9	16.2				

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Rates

Metal	***************************************	Emission Rate					
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %		
Antimony	0.0017	0.00089	<0.00076	<0.0011	47.1		
Arsenic	<0.0017	<0.00089	<0.00076				
				<0.00084	7.9		
Barium	0.029	0.026	0.034	0.030	13.4		
Beryllium	<0.00088	<0.00087	<0.00076	<0.00084	7.9		
Cadmium	0.0018	0.0014	0.0011	0.0014	22.9		
Chromium	0.027	0.019	0.012	0.019	36.8		
Cobalt	<0.00088	<0.00087	0.0013	< 0.0010	24.7		
Copper	0.099	0.10	0.098	0.099	1.1		
Lead	0.0091	0.0066	0.0056	0.0071	25.7		
Mercury	0.010	0.0067	0.0024	0.0065	61.1		
Molybdenum	0.11	0.10	0.091	0.10	7.9		
Nickel	0.025	0.045	0.018	0.029	47.1		
Selenium	0.025	0.035	<0.0038	<0.021	75.1		
Silver	<0.00088	<0.00087	<0.00076	<0.00084	7.9		
Thallium	0.0043	0.0018	<0.00076	< 0.0023	79.8		
Vanadium	<0.00044	< 0.00043	<0.00038	<0.00042	7.9		
Zinc	0.16	0.099	0.086	0.11	32.7		
Total	<0.50	<0.45	<0.36	<0.44	16.3		

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	<0.044	<0.073	<0.059	<0.062	<0.0011
Arsenic	<0.032	<0.054	<0.044	<0.046	<0.00084
Barium	1.16	1.96	1.58	1.65	0.030
Beryllium	<0.032	<0.054	<0.044	<0.046	<0.00084
Cadmium	0.055	0.093	0.075	0.079	0.0014
Chromium	0.75	1.26	1.02	1.06	0.019
Cobalt	< 0.039	<0.066	<0.053	<0.056	<0.0010
Copper	3.82	6.46	5.21	5.44	0.099
Lead	0.27	0.46	0.37	0.39	0.0071
Mercury	0.25	0.42	0.34	0.36	0.0065
Molybdenum	3.84	6.49	5.24	5.48	0.10
Nickel	1.13	1.90	1.54	1.61	0.029
Selenium	<0.82	<1.38	<1.12	<1.17	<0.021
Silver	<0.032	<0.054	< 0.044	<0.046	<0.00084
Thallium	<0.087	<0.15	<0.12	<0.12	<0.0023
Vanadium	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	4.39	7.39	5.97	6.24	0.11
Total	<16.8	<28.3	<22.9	<23.9	<0.44

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter	Impingers	Total
	<b>Hydrofluoric Acid Digest</b>	& Rinses	Collected
	μg	μg	μg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	7.18	0.78	7.96
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	< 0.10
Chromium	2.44	0.36	2.80
Cobalt	<0.2	<0.1	<0.20
Copper	6.07	9.78	15.9
Lead	<0.5	0.42	0.42
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.3	<0.1	23.3
Nickel	2.30	0.28	2.58
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<61.5

<sup>\*</sup> Includes the permanganate impingers.

**Note**: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

# TABLE 24 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Dioxin and Furan Congener Group Emission Data

### in and Furan Congener Group Emission D Test No. 1

#### **Dioxins**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	436	0.049	0.085	0.067	0.071	1.26
Pentachlorodibenzo-p-dioxins	1700	0.19	0.33	0.26	0.28	4.90
Hexachlorodibenzo-p-dioxins	4780	0.54	0.93	0.73	0.77	13.8
Heptachlorodibenzo-p-dioxins	4350	0.49	0.85	0.67	0.70	12.5
Octachlorodibenzo-p-dioxin	1370	0.15	0.27	0.21	0.22	3.95
Total	12636	1.42	2.46	1.94	2.05	36.4

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	299	0.034	0.058	0.046	0.048	0.90
Pentachlorodibenzofurans	299 810	0.034	0.058	0.046	0.048	0.86 2.33
Hexachlorodibenzofurans	1220	0.14	0.10	0.12	0.13	2.55 3.52
Heptachlorodibenzofurans	981	0.11	0.19	0.15	0.16	2.83
Octachlorodibenzofuran	363	0.041	0.071	0.056	0.059	1.05
Total	3673	0.41	0.72	0.56	0.59	10.6

Dry Gas Volume Sampled (Rm³*):	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 25 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Dioxin and Furan Congener Group Emission Data

#### Test No. 2

#### **Dioxins**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	324	0.037	0.064	0.051	0.054	0.94
Pentachlorodibenzo-p-dioxins	1700	0.20	0.33	0.27	0.28	4.96
Hexachlorodibenzo-p-dioxins	4400	0.51	0.87	0.69	0.73	12.8
Heptachlorodibenzo-p-dioxins	4050	0.47	0.80	0.64	0.67	11.8
Octachlorodibenzo-p-dioxin	1260	0.15	0.25	0.20	0.21	3.67
Total	11734	1.35	2.31	1.85	1.94	34.2

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
TOWNS AND THE STATE OF THE STAT	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	289	0.033	0.057	0.046	0.048	0.84
Pentachlorodibenzofurans	797	0.092	0.16	0.13	0.13	2.32
Hexachlorodibenzofurans	1200	0.14	0.24	0.19	0.20	3.50
Heptachlorodibenzofurans	973	0.11	0.19	0.15	0.16	2.84
Octachlorodibenzofuran	330	0.038	0.065	0.052	0.055	0.96
Total	3589	0.41	0.71	0.57	0.59	10.5

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet

### Dioxin and Furan Congener Group Emission Data Test No. 3

#### **Dioxins**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	158	0.018	0.031	0.024	0.026	0.46
Pentachlorodibenzo-p-dioxins	1340	0.15	0.26	0.21	0.22	3.87
Hexachlorodibenzo-p-dioxins	3590	0.41	0.70	0.55	0.58	10.4
Heptachlorodibenzo-p-dioxins	3310	0.38	0.64	0.51	0.54	9.55
Octachlorodibenzo-p-dioxin	1040	0.12	0.20	0.16	0.17	3.00
Total	9438	1.08	1.83	1.46	1.53	27.2

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	132	0.015	0.026	0.020	0.021	0.38
Pentachlorodibenzofurans	578	0.066	0.11	0.089	0.094	1.67
Hexachlorodibenzofurans	928	0.11	0.18	0.14	0.15	2.68
Heptachlorodibenzofurans	794	0.091	0.15	0.12	0.13	2.29
Octachlorodibenzofuran	313	0.036	0.061	0.048	0.051	0.90
Total	2745	0.31	0.53	0.42	0.45	7.92

Dry Gas Volume Sampled (Rm³*):	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*):	14.9
Dry Adjusted Flowrate (Rm³/s**):	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.049	0.037	0.018	0.035	44.9
Pentachlorodibenzo-p-dioxins	0.19	0.037	0.15	0.033	12.9
Hexachlorodibenzo-p-dioxins	0.54	0.51	0.41	0.49	13.6
Heptachlorodibenzo-p-dioxins	0.49	0.47	0.38	0.45	13.1
Octachlorodibenzo-p-dioxin	0.15	0.15	0.12	0.14	13.1
Total	1.42	1.35	1.08	1.29	14.0

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.034	0.033	0.015	0.027	38.8
Pentachlorodibenzofurans	0.091	0.092	0.066	0.083	17.6
Hexachlorodibenzofurans	0.14	0.14	0.11	0.13	14.3
Heptachlorodibenzofurans	0.11	0.11	0.091	0.10	11.3
Octachlorodibenzofuran	0.041	0.038	0.036	0.038	6.6
Total	0.41	0.41	0.31	0.38	15.0

TABLE 28

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dioxin and Furan Congener Group Dry Reference Concentrations

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.085	0.064	0.031	0.060	45.8
Pentachlorodibenzo-p-dioxins	0.33	0.33	0.26	0.31	13.7
Hexachlorodibenzo-p-dioxins	0.93	0.87	0.70	0.83	14.6
Heptachlorodibenzo-p-dioxins	0.85	0.80	0.64	0.76	14.1
Octachlorodibenzo-p-dioxin	0.27	0.25	0.20	0.24	14.1
Total	2.46	2.31	1.83	2.20	15.0

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.058	0.057	0.026	0.047	39.4
Pentachlorodibenzofurans	0.16	0.16	0.11	0.14	18.4
Hexachlorodibenzofurans	0.24	0.24	0.18	0.22	15.2
Heptachlorodibenzofurans	0.19	0.19	0.15	0.18	12.1
Octachlorodibenzofuran	0.071	0.065	0.061	0.065	7.7
Total	0.72	0.71	0.53	0.65	15.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 29

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dioxin and Furan Congener Group Dry Adjusted Concentrations

Congener		Coefficient			
Group	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
Tetrachlorodibenzo-p-dioxins	0.067	0.051	0.024	0.047	45.2
Pentachlorodibenzo-p-dioxins	0.26	0.27	0.21	0.25	13.6
Hexachlorodibenzo-p-dioxins	0.73	0.69	0.55	0.66	14.2
Heptachlorodibenzo-p-dioxins	0.67	0.64	0.51	0.61	13.7
Octachlorodibenzo-p-dioxin	0.21	0.20	0.16	0.19	13.7
Total	1.94	1.85	1.46	1.75	14.6

Congener Group		Coefficient			
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
Tetrachlorodibenzofurans	0.046	0.046	0.020	0.037	39.2
Pentachlorodibenzofurans	0.12	0.13	0.089	0.11	18.2
Hexachlorodibenzofurans	0.19	0.19	0.14	0.17	15.0
Heptachlorodibenzofurans	0.15	0.15	0.12	0.14	11.9
Octachlorodibenzofuran	0.056	0.052	0.048	0.052	7.1
Total	0.56	0.57	0.42	0.52	15.7

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dioxin and Furan Congener Group Wet Reference Concentrations

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tatrachlaradihanna n diavina	0.071	0.054	0.000	0.050	45.5
Tetrachlorodibenzo-p-dioxins	0.071	0.054	0.026	0.050	45.5
Pentachlorodibenzo-p-dioxins	0.28	0.28	0.22	0.26	13.7
Hexachlorodibenzo-p-dioxins	0.77	0.73	0.58	0.69	14.4
Heptachlorodibenzo-p-dioxins	0.70	0.67	0.54	0.64	13.9
Octachlorodibenzo-p-dioxin	0.22	0.21	0.17	0.20	13.9
Total	2.05	1.94	1.53	1.84	14.8

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.048	0.048	0.021	0.020	20.4
Pentachlorodibenzofurans			0.021	0.039	39.4
	0.13	0.13	0.094	0.12	18.4
Hexachlorodibenzofurans	0.20	0.20	0.15	0.18	15.1
Heptachlorodibenzofurans	0.16	0.16	0.13	0.15	12.1
Octachlorodibenzofuran	0.059	0.055	0.051	0.055	7.3
Total	0.59	0.59	0.45	0.54	15.8

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Congener	Emission Rate Coeff					
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	ng/s	ng/s	ng/s	ng/s	%	
Tetrachlorodibenzo-p-dioxins	1.26	0.94	0.46	0.89	45.6	
Pentachlorodibenzo-p-dioxins	4.90	4.96	3.87	4.57	13.4	
Hexachlorodibenzo-p-dioxins	13.8	12.8	10.4	12.3	14.3	
Heptachlorodibenzo-p-dioxins	12.5	11.8	9.55	11.3	13.8	
Octachlorodibenzo-p-dioxin	3.95	3.67	3.00	3.54	13.7	
Total	36.4	34.2	27.2	32.6	14.7	

Congener		Emission Rate					
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation		
	ng/s	ng/s	ng/s	ng/s	%		
Tetrachlorodibenzofurans	0.86	0.84	0.38	0.70	39.2		
Pentachlorodibenzofurans	2.33	2.32	1.67	2.11	18.1		
Hexachlorodibenzofurans	3.52	3.50	2.68	3.23	14.8		
Heptachlorodibenzofurans	2.83	2.84	2.29	2.65	11.8		
Octachlorodibenzofuran	1.05	0.96	0.90	0.97	7.4		
Total	10.6	10.5	7.92	9.66	15.6		

TABLE 32

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Summary of Dioxin and Furan Congener Group Emission Data

Congener Group	Actual Concentration	Dry Reference Concentration		Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.035	0.060	0.047	0.050	0.89
Pentachlorodibenzo-p-dioxins	0.18	0.31	0.25	0.26	4.57
Hexachlorodibenzo-p-dioxins	0.49	0.83	0.66	0.69	12.3
Heptachlorodibenzo-p-dioxins	0.45	0.76	0.61	0.64	11.3
Octachlorodibenzo-p-dioxin	0.14	0.24	0.19	0.20	3.54
Total	1.29	2.20	1.75	1.84	32.6

Congener Group	Actual Concentration	Dry Reference Concentration		Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	0.027	0.047	0.037	0.039	0.70
Pentachlorodibenzofurans	0.083	0.14	0.11	0.12	2.11
Hexachlorodibenzofurans	0.13	0.22	0.17	0.18	3.23
Heptachlorodibenzofurans	0.10	0.18	0.14	0.15	2.65
Octachlorodibenzofuran	0.038	0.065	0.052	0.055	0.97
Total	0.38	0.65	0.52	0.54	9.66

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Blank Dioxin and Furan Congener Group Analyses

Blank Train	Laboratory Blank
pg	pg
<4.3	<3.1
<4.4	<3.1
<4.0	<3.4
47.9	<3.2
177	133
<238	<146
	7rain pg <4.3 <4.4 <4.0 47.9 177

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<3.3	<1.9
Pentachlorodibenzofurans	<2.6	<2.0
Hexachlorodibenzofurans	3.54	<3.3
Heptachlorodibenzofurans	<7.4	<9.5
Octachlorodibenzofuran	<19	31.5
Total	<35.8	<48.2

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.2	<0.47	<0.82	<0.64	<0.68	<0.012
12378-pentachlorodibenzo-p-dioxin	<34	<3.83	<6.62	<5.21	<5.51	<0.098
123478-hexachlorodibenzo-p-dioxin	117	13.2	22.8	17.9	18.9	0.34
123678-hexachlorodibenzo-p-dioxin	331	37.3	64.5	50.7	53.6	0.95
123789-hexachlorodibenzo-p-dioxin	146	16.4	28.4	22.4	23.6	0.42
1234678-heptachlorodibenzo-p-dioxin	2100	236	409	322	340	6.05
Octachlorodibenzo-p-dioxin	1370	154	267	210	222	3.95
2378-tetrachlorodibenzofuran	7.87	0.89	1.53	1.21	1.27	0.023
12378-pentachlorodibenzofuran	22.8	2.57	4.44	3.50	3.69	0.066
23478-pentachlorodibenzofuran	78.6	8.85	15.3	12.0	12.7	0.23
123478-hexachlorodibenzofuran	102	11.5	19.9	15.6	16.5	0.29
123678-hexachlorodibenzofuran	116	13.1	22.6	17.8	18.8	0.33
234678-hexachlorodibenzofuran	230	25.9	44.8	35.3	37.2	0.66
123789-hexachlorodibenzofuran	<61	<6.87	<11.9	<9.35	<9.88	<0.18
1234678-heptachlorodibenzofuran	682	76.8	133	105	110	1.97
1234789-heptachlorodibenzofuran	117	13.2	22.8	17.9	18.9	0.34
Octachlorodibenzofuran	363	40.9	70.7	55.7	58.8	1.05
PCB 81	<27	<3.04	<5.26	<4.14	<4.37	<0.078
PCB 77	66.9	7.53	13.0	10.3	10.8	0.19
PCB 123	<27	<3.04	<5.26	<4.14	<4.37	<0.078
PCB 118	859	96.7	167	132	139	2.48
PCB 114	30.6	3.45	5.96	4.69	4.95	0.088
PCB 105	251	28.3	48.9	38.5	40.6	0.72
PCB 126	<25	<2.81	<4.87	<3.83	<4.05	< 0.072
PCB 167	27.2	3.06	5.30	4.17	4.40	0.078
PCB 156/157	79.8	8.98	15.5	12.2	12.9	0.23
PCB 169	31.4	3.54	6.11	4.81	5.08	0.091
PCB 189	37.4	4.21	7.28	5.73	6.06	0.11
Total Dioxins & Furans Only	<5882	<662	<1146	<902	<952	<17.0
Total PCBs Only	<1462	<165	<285	<224	<237	<4.21
Total Dioxins & Furans and PCBs	<7345	<827	<1430	<1126	<1189	<21.2

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.5	<0.29	<0.49	<0.39	<0.41	<0.0073
12378-pentachlorodibenzo-p-dioxin	33.8	3.89	6.66	5.33	5.60	0.099
123478-hexachlorodibenzo-p-dioxin	107	12.3	21.1	16.9	17.7	0.31
123678-hexachlorodibenzo-p-dioxin	321	37.0	63.2	50.6	53.2	0.94
123789-hexachlorodibenzo-p-dioxin	152	17.5	29.9	24.0	25.2	0.44
1234678-heptachlorodibenzo-p-dioxin	1840	212	362	290	305	5.36
Octachlorodibenzo-p-dioxin	1260	145	248	199	209	3.67
2378-tetrachlorodibenzofuran	18.7	2.15	3.68	2.95	3.10	0.055
12378-pentachlorodibenzofuran	31.2	3.59	6.15	4.92	5.17	0.091
23478-pentachlorodibenzofuran	79.6	9.17	15.7	12.5	13.2	0.23
123478-hexachlorodibenzofuran	105	12.1	20.7	16.5	17.4	0.31
123678-hexachlorodibenzofuran	119	13.7	23.4	18.8	19.7	0.35
234678-hexachlorodibenzofuran	202	23.3	39.8	31.8	33.5	0.59
123789-hexachlorodibenzofuran	63.1	7.27	12.4	9.94	10.5	0.18
1234678-heptachlorodibenzofuran	633	72.9	125	99.7	105	1.85
1234789-heptachlorodibenzofuran	<99	<11.4	<19.5	<15.6	<16.4	< 0.29
Octachlorodibenzofuran	330	38.0	65.0	52.0	54.7	0.96
PCB 81	<26	<3.00	<5.12	<4.10	<4.31	<0.076
PCB 77	213	24.5	42.0	33.6	35.3	0.62
PCB 123	135	15.6	26.6	21.3	22.4	0.39
PCB 118	6370	734	1255	1004	1055	18.6
PCB 114	181	20.9	35.7	28.5	30.0	0.53
PCB 105	2070	239	408	326	343	6.03
PCB 126	<35	<4.03	<6.89	<5.52	<5.80	< 0.10
PCB 167	85.8	9.89	16.9	13.5	14.2	0.25
PCB 156/157	330	38.0	65.0	52.0	54.7	0.96
PCB 169	32.5	3.74	6.40	5.12	5.38	0.095
PCB 189	42.6	4.91	8.39	6.71	7.06	0.12
Total Dioxins & Furans Only	<5397	<622	<1063	<850	<894	<15.7
Total PCBs Only	<9521	<1097	<1875	<1500	<1577	<27.8
Total Dioxins & Furans and PCBs	<14918	<1719	<2938	<2351	<2471	<43.5

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*):	17.6

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission. Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.2	<0.48	<0.81	<0.65	<0.68	<0.012
12378-pentachlorodibenzo-p-dioxin	32.1	3.68	6.22	4.95	5.21	0.093
123478-hexachlorodibenzo-p-dioxin	81.9	9.38	15.9	12.6	13.3	0.24
123678-hexachlorodibenzo-p-dioxin	252	28.9	48.8	38.9	40.9	0.73
123789-hexachlorodibenzo-p-dioxin	106	12.1	20.5	16.4	17.2	0.31
1234678-heptachlorodibenzo-p-dioxin	1590	182	308	245	258	4.59
Octachlorodibenzo-p-dioxin	1040	119	201	161	169	3.00
2378-tetrachlorodibenzofuran	<5.6	<0.64	<1.08	<0.86	<0.91	<0.016
12378-pentachlorodibenzofuran	22.6	2.59	4.38	3.49	3.66	0.065
23478-pentachlorodibenzofuran	54.9	6.29	10.6	8.47	8.90	0.16
123478-hexachlorodibenzofuran	74.0	8.48	14.3	11.4	12.0	0.21
123678-hexachlorodibenzofuran	91.3	10.5	17.7	14.1	14.8	0.26
234678-hexachlorodibenzofuran	165	18.9	32.0	25.5	26.8	0.48
123789-hexachlorodibenzofuran	47.6	5.45	9.22	7.35	7.72	0.14
1234678-heptachlorodibenzofuran	513	58.8	99.4	79.2	83.2	1.48
1234789-heptachlorodibenzofuran	<77	<8.82	<14.9	<11.9	<12.5	<0.22
Octachlorodibenzofuran	313	35.9	60.6	48.3	50.8	0.90
PCB 81	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 77	<63	<7.22	<12.2	<9.72	<10.2	<0.18
PCB 123	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 118	1010	116	196	156	164	2.92
PCB 114	<22	<2.52	<4.26	<3.40	<3.57	< 0.064
PCB 105 ·	331	37.9	64.1	51.1	53.7	0.96
PCB 126	<27	<3.09	<5.23	<4.17	<4.38	<0.078
PCB 167	<17	<1.95	<3.29	<2.62	<2.76	< 0.049
PCB 156/157	55.0	6.30	10.7	8.49	8.92	0.16
PCB 169	<23	<2.63	<4.46	<3.55	<3.73	< 0.066
PCB 189	24.3	2.78	4.71	3.75	3.94	0.070
Total Dioxins & Furans Only	<4470	<512	<866	<690	<725	<12.9
Total PCBs Only	<1626	<186	<315	<251	<264	<4.69
Total Dioxins & Furans and PCBs	<6097	<698	<1181	<941	<989	<17.6

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**):	18.7
Wet Reference Flowrate (Rm³/s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific		Coefficient				
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	pg/m³	pg/m³	pg/m³	pg/m³	%	
2378-tetrachlorodibenzo-p-dioxin	<0.47	<0.29	<0.48	<0.41	26.4	
12378-pentachlorodibenzo-p-dioxin	<3.83	3.89	3.68	<3.80	2.9	
123478-hexachlorodibenzo-p-dioxin	13.2	12.3	9.38	11.6	17.1	
123678-hexachlorodibenzo-p-dioxin	37.3	37.0	28.9	34.4	13.9	
123789-hexachlorodibenzo-p-dioxin	16.4	17.5	12.1	15.4	18.5	
1234678-heptachlorodibenzo-p-dioxin	236	212	182	210	12.9	
Octachlorodibenzo-p-dioxin	154	145	119	140	13.1	
2378-tetrachlorodibenzofuran	0.89	2.15	<0.64	<1.23	66.2	
12378-pentachlorodibenzofuran	2.57	3.59	2.59	2.92	20.1	
23478-pentachlorodibenzofuran	8.85	9.17	6.29	8.10	19.5	
123478-hexachlorodibenzofuran	11.5	12.1	8.48	10.7	18.1	
123678-hexachlorodibenzofuran	13.1	13.7	10.5	12.4	13.9	
234678-hexachlorodibenzofuran	25.9	23.3	18.9	22.7	15.6	
123789-hexachlorodibenzofuran	<6.87	7.27	5.45	<6.53	14.6	
1234678-heptachlorodibenzofuran	76.8	72.9	58.8	69.5	13.7	
1234789-heptachlorodibenzofuran	13.2	<11.4	<8.82	<11.1	19.7	
Octachlorodibenzofuran	40.9	38.0	35.9	38.2	6.6	
PCB 81	<3.04	<3.00	<3.09	<3.04	1.6	
PCB 77	7.53	24.5	<7.22	<13.1	75.7	
PCB 123	<3.04	15.6	<3.09	<7.23	99.7	
PCB 118	96.7	734	116	315	115	
PCB 114	3.45	20.9	<2.52	<8.94	116	
PCB 105	28.3	239	37.9	102	117	
PCB 126	<2.81	<4.03	<3.09	<3.31	19.3	
PCB 167	3.06	9.89	<1.95	<4.97	86.6	
PCB 156/157	8.98	38.0	6.30	17.8	99.0	
PCB 169	3.54	3.74	<2.63	<3.30	17.8	
PCB 189	4.21	4.91	2.78	3.97	27.3	
Total Dioxins & Furans Only	<662	<622	<512	<599	13.0	
Total PCBs Only	<165	<1097	<186	<483	110	
Total Dioxins & Furans and PCBs	<827	<1719	<698	<1081	51.4	

TABLE 38

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific	E	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.82	<0.49	<0.81	<0.71	26.4
12378-pentachlorodibenzo-p-dioxin	<6.62	6.66	6.22	<6.50	3.7
123478-hexachlorodibenzo-p-dioxin	22.8	21.1	15.9	19.9	18.1
123678-hexachlorodibenzo-p-dioxin	64.5	63.2	48.8	58.8	14.8
123789-hexachlorodibenzo-p-dioxin	28.4	29.9	20.5	26.3	19.2
1234678-heptachlorodibenzo-p-dioxin	409	362	308	360	14.0
Octachlorodibenzo-p-dioxin	267	248	201	239	14.1
2378-tetrachlorodibenzofuran	1.53	3.68	<1.08	<2.10	66.1
12378-pentachlorodibenzofuran	4.44	6.15	4.38	4.99	20.1
23478-pentachlorodibenzofuran	15.3	15.7	10.6	13.9	20.3
123478-hexachlorodibenzofuran	19.9	20.7	14.3	18.3	18.9
123678-hexachlorodibenzofuran	22.6	23.4	17.7	21.2	14.6
234678-hexachlorodibenzofuran	44.8	39.8	32.0	38.8	16.6
123789-hexachlorodibenzofuran	<11.9	12.4	9.22	<11.2	15.3
1234678-heptachlorodibenzofuran	133	125	99.4	119	14.7
1234789-heptachlorodibenzofuran	22.8	<19.5	<14.9	<19.1	20.7
Octachlorodibenzofuran	70.7	65.0	60.6	65.4	7.7
PCB 81	<5.26	<5.12	<5.23	<5.20	1.4
PCB 77	13.0	42.0	<12.2	<22.4	75.7
PCB 123	<5.26	26.6	<5.23	<12.4	99.7
PCB 118	167	1255	196	539	115
PCB 114	5.96	35.7	<4.26	<15.3	115
PCB 105	48.9	408	64.1	174	117
PCB 126	<4.87	<6.89	<5.23	<5.66	19.1
PCB 167	5.30	16.9	<3.29	<8.50	86.5
PCB 156/157	15.5	65.0	10.7	30.4	98.9
PCB 169	6.11	6.40	<4.46	<5.66	18.6
PCB 189	7.28	8.39	4.71	6.79	27.8
Total Dioxins & Furans Only	<1146	<1063	<866	<1025	14.0
Total PCBs Only	<285	<1875	<315	<825	110
Total Dioxins & Furans and PCBs	<1430	<2938	<1181	<1850	51.4

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 39

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific	1	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.64	<0.39	<0.65	<0.56	25.9
12378-pentachlorodibenzo-p-dioxin	<5.21	5.33	4.95	<5.16	3.7
123478-hexachlorodibenzo-p-dioxin	17.9	16.9	12.6	15.8	17.7
123678-hexachlorodibenzo-p-dioxin	50.7	50.6	38.9	46.7	14.5
123789-hexachlorodibenzo-p-dioxin	22.4	24.0	16.4	20.9	19.2
1234678-heptachlorodibenzo-p-dioxin	322	290	245	286	13.4
Octachlorodibenzo-p-dioxin	210	199	161	190	13.7
2378-tetrachlorodibenzofuran	1.21	2.95	<0.86	<1.67	66.8
12378-pentachlorodibenzofuran	3.50	4.92	3.49	3.97	20.7
23478-pentachlorodibenzofuran	12.0	12.5	8.47	11.0	20.1
123478-hexachlorodibenzofuran	15.6	16.5	11.4	14.5	18.8
123678-hexachlorodibenzofuran	17.8	18.8	14.1	16.9	14.6
234678-hexachlorodibenzofuran	35.3	31.8	25 <i>.</i> 5	30.9	16.1
123789-hexachlorodibenzofuran	<9.35	9.94	7.35	<8.88	15.3
1234678-heptachlorodibenzofuran	105	99.7	79.2	94.5	14.3
1234789-heptachlorodibenzofuran	17.9	<15.6	<11.9	<15.1	20.2
Octachlorodibenzofuran	55.7	52.0	48.3	52.0	7.1
PCB 81	<4.14	<4.10	<4.17	<4.13	0.9
PCB 77	10.3	33.6	<9.72	<17.8	76.3
PCB 123	<4.14	21.3	<4.17	<9.86	100
PCB 118	132	1004	156	430	115
PCB 114	4.69	28.5	<3.40	<12.2	116
PCB 105	38.5	326	51.1	139	117
PCB 126	<3.83	<5.52	<4.17	<4.51	19.8
PCB 167	4.17	13.5	<2.62	<6.77	87.1
PCB 156/157	12.2	52.0	8.49	24.2	99.5
PCB 169	4.81	5.12	<3.55	<4.50	18.5
PCB 189	5.73	6.71	3.75	5.40	27.9
Total Dioxins & Furans Only	<902	<850	<690	<814	13.6
Total PCBs Only	<224	<1500	<251	<658	111
Total Dioxins & Furans and PCBs	<1126	<2351	<941	<1473	52.0

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Isomer	Test No. 1 pg/Rm³*	Test No. 2	Test No. 3	Average	of Variation
The statement for a summand some statement	pg/Rm³*				o. ranation
		pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.68	<0.41	<0.68	<0.59	26.0
12378-pentachlorodibenzo-p-dioxin	<5.51	5.60	5.21	<5.44	3.8
123478-hexachlorodibenzo-p-dioxin	18.9	17.7	13.3	16.6	17.9
123678-hexachlorodibenzo-p-dioxin	53.6	53.2	40.9	49.2	14.7
123789-hexachlorodibenzo-p-dioxin	23.6	25.2	17.2	22.0	19.3
1234678-heptachlorodibenzo-p-dioxin	340	305	258	301	13.7
Octachlorodibenzo-p-dioxin	222	209	169	200	13.9
2378-tetrachlorodibenzofuran	1.27	3.10	<0.91	<1.76	66.6
12378-pentachlorodibenzofuran	3.69	5.17	3.66	4.17	20.6
23478-pentachlorodibenzofuran	12.7	13.2	8.90	11.6	20.3
123478-hexachlorodibenzofuran	16.5	17.4	12.0	15.3	18.9
123678-hexachlorodibenzofuran	18.8	19.7	14.8	17.8	14.7
234678-hexachlorodibenzofuran	37.2	33.5	26.8	32.5	16.3
123789-hexachlorodibenzofuran	<9.88	10.5	7.72	<9.35	15.4
1234678-heptachlorodibenzofuran	110	105	83.2	99.5	14.5
1234789-heptachlorodibenzofuran	18.9	<16.4	<12.5	<15.9	20.4
Octachlorodibenzofuran	58.8	54.7	50.8	54.7	7.3
PCB 81	<4.37	<4.31	<4.38	<4.35	0.9
PCB 77	10.8	35.3	<10.2	<18.8	76.1
PCB 123	<4.37	22.4	<4.38	<10.4	100
PCB 118	139	1055	164	453	115
PCB 114	4.95	30.0	<3.57	<12.8	116
PCB 105	40.6	343	53.7	146	117
PCB 126	<4.05	<5.80	<4.38	<4.74	19.6
PCB 167	4.40	14.2	<2.76	<7.12	86.9
PCB 156/157	12.9	54.7	8.92	25.5	99.3
PCB 169	5.08	5.38	<3.73	<4.73	18.6
PCB 189	6.06	7.06	3.94	5.68	28.0
Total Dioxins & Furans Only	<952	<894	<725	<857	13.8
Total PCBs Only	<237	<1577	<264	<692	111
Total Dioxins & Furans and PCBs	<1189	<2471	<989	<1550	51.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific		Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.012	<0.0073	<0.012	<0.011	26.5
12378-pentachlorodibenzo-p-dioxin	<0.098	0.099	0.093	<0.096	3.4
123478-hexachlorodibenzo-p-dioxin	0.34	0.31	0.24	0.30	17.8
123678-hexachlorodibenzo-p-dioxin	0.95	0.94	0.73	0.87	14.4
123789-hexachlorodibenzo-p-dioxin	0.42	0.44	0.31	0.39	18.9
1234678-heptachlorodibenzo-p-dioxin	6.05	5.36	4.59	5.34	13.7
Octachlorodibenzo-p-dioxin	3.95	3.67	3.00	3.54	13.7
2378-tetrachlorodibenzofuran	0.023	0.055	<0.016	<0.031	65.9
12378-pentachlorodibenzofuran	0.066	0.091	0.065	0.074	19.9
23478-pentachlorodibenzofuran	0.23	0.23	0.16	0.21	19.9
123478-hexachlorodibenzofuran	0.29	0.31	0.21	0.27	18.5
123678-hexachlorodibenzofuran	0.33	0.35	0.26	0.31	14.3
234678-hexachlorodibenzofuran	0.66	0.59	0.48	0.58	16.3
123789-hexachlorodibenzofuran	<0.18	0.18	0.14	<0.17	15.0
1234678-heptachlorodibenzofuran	1.97	1.85	1.48	1.76	14.3
1234789-heptachlorodibenzofuran	0.34	<0.29	<0.22	<0.28	20.4
Octachlorodibenzofuran	1.05	0.96	0.90	0.97	7.4
PCB 81	<0.078	<0.076	<0.078	<0.077	1.6
PCB 77	0.19	0.62	< 0.18	<0.33	75.5
PCB 123	<0.078	0.39	<0.078	<0.18	99.5
PCB 118	2.48	18.6	2.92	7.99	115
PCB 114	0.088	0.53	<0.064	<0.23	115
PCB 105	0.72	6.03	0.96	2.57	117
PCB 126	< 0.072	<0.10	<0.078	< 0.084	18.9
PCB 167	0.078	0.25	< 0.049	< 0.13	86.3
PCB 156/157	0.23	0.96	0.16	0.45	98.7
PCB 169	0.091	0.095	<0.066	<0.084	18.2
PCB 189	0.11	0.12	0.070	0.10	27.5
Total Dioxins & Furans Only	<17.0	<15.7	<12.9	<15.2	13.7
Total PCBs Only	<4.21	<27.8	<4.69	<12.2	110
Total Dioxins & Furans and PCBs	<21.2	<43.5	<17.6	<27.4	51.2

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Concentration	Concentration	Concentration	Concentration	Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.41	<0.71	<0.56	<0.59	<0.011
12378-pentachlorodibenzo-p-dioxin	<3.80	<6.50	<5.16	<5.44	<0.096
123478-hexachlorodibenzo-p-dioxin	11.6	19.9	15.8	16.6	0.30
123678-hexachlorodibenzo-p-dioxin	34.4	58.8	46.7	49.2	0.87
123789-hexachlorodibenzo-p-dioxin	15.4	26.3	20.9	22.0	0.39
1234678-heptachlorodibenzo-p-dioxin	210	360	286	301	5.34
Octachlorodibenzo-p-dioxin	140	239	190	200	3.54
2378-tetrachlorodibenzofuran	<1.23	<2.10	<1.67	<1.76	<0.031
12378-pentachlorodibenzofuran	2.92	4.99	3.97	4.17	0.074
23478-pentachlorodibenzofuran	8.10	13.9	11.0	11.6	0.21
123478-hexachlorodibenzofuran	10.7	18.3	14.5	15.3	0.27
123678-hexachlorodibenzofuran	12.4	21.2	16.9	17.8	0.31
234678-hexachlorodibenzofuran	22.7	38.8	30.9	32.5	0.58
123789-hexachlorodibenzofuran	<6.53	<11.2	<8.88	<9.35	<0.17
1234678-heptachlorodibenzofuran	69.5	119	94.5	99.5	1.76
1234789-heptachlorodibenzofuran	<11.1	<19.1	<15.1	<15.9	<0.28
Octachlorodibenzofuran	38.2	65.4	52.0	54.7	0.97
PCB 81	<3.04	<5.20	<4.13	<4.35	<0.077
PCB 77	<13.1	<22.4	<17.8	<18.8	< 0.33
PCB 123	<7.23	<12.4	<9.86	<10.4	<0.18
PCB 118	315	539	430	453	7.99
PCB 114	<8.94	<15.3	<12.2	<12.8	<0.23
PCB 105	102	174	139	146	2.57
PCB 126	<3.31	<5.66	<4.51	<4.74	<0.084
PCB 167	<4.97	<8.50	<6.77	<7.12	<0.13
PCB 156/157	17.8	30.4	24.2	25.5	0.45
PCB 169	<3.30	<5.66	<4.50	<4.73	<0.084
PCB 189	3.97	6.79	5.40	5.68	0.10
Total Dioxins & Furans Only	<599	<1025	<814	<857	<15.2
Total PCBs Only	<483	<825	<658	<692	<12.2
Total Dioxins & Furans and PCBs	<1081	<1850	<1473	<1550	<27.4

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific	Blank	Laboratory
Isomer	Train	Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<4.3	<3.1
12378-pentachlorodibenzo-p-dioxin	<4.4	<3.1
123478-hexachlorodibenzo-p-dioxin	<4.0	<3.4
123678-hexachlorodibenzo-p-dioxin	<3.5	<3.3
123789-hexachlorodibenzo-p-dioxin	<3.8	<3.3
1234678-heptachlorodibenzo-p-dioxin	47.9	<15
Octachlorodibenzo-p-dioxin	177	133
2378-tetrachlorodibenzofuran	<3.3	<1.9
12378-pentachlorodibenzofuran	<2.6	<2.0
23478-pentachlorodibenzofuran	<2.4	<1.9
123478-hexachlorodibenzofuran	<2.2	<2.7
123678-hexachlorodibenzofuran	<2.1	<2.6
234678-hexachlorodibenzofuran	<2.3	<2.9
123789-hexachlorodibenzofuran	<2.7	<3.3
1234678-heptachlorodibenzofuran	<9.8	<7.4
1234789-heptachlorodibenzofuran	<7.4	<9.5
Octachlorodibenzofuran	<19	31.5
PCB 81	<22	<12
PCB 77	<23	<12
PCB 123	<27	<14
PCB 118	61.5	18.3
PCB 114	<21	<14
PCB 105	<21	<14
PCB 126	<24	<17
PCB 167	<13	<11
PCB 156/157	<19	<16
PCB 169	<15	<13
PCB 189	<11	<10
Total Dioxins & Furans Only	<298.7	<229.9
Total PCBs Only	<258	<151
Total Dioxins & Furans and PCBs	<556	<381

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific	Toxicity		Actual Cor	centration	
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/m³	pg TEQ/m³	pg TEQ/m³	pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.47	<0.29	<0.48	<0.41
12378-pentachlorodibenzo-p-dioxin	1.00000	<3.83	3.89	3.68	<3.80
123478-hexachlorodibenzo-p-dioxin	0.10000	1.32	1.23	0.94	1.16
123678-hexachlorodibenzo-p-dioxin	0.10000	3.73	3.70	2.89	3.44
123789-hexachlorodibenzo-p-dioxin	0.10000	1.64	1.75	1.21	1.54
1234678-heptachlorodibenzo-p-dioxin	0.01000	2.36	2.12	1.82	2.10
Octachlorodibenzo-p-dioxin	0.00030	0.046	0.044	0.036	0.042
2378-tetrachlorodibenzofuran	0.10000	0.089	0.22	<0.064	<0.12
12378-pentachlorodibenzofuran	0.03000	0.077	0.11	0.078	0.088
23478-pentachlorodibenzofuran	0.30000	2.65	2.75	1.89	2.43
123478-hexachlorodibenzofuran	0.10000	1.15	1.21	0.85	1.07
123678-hexachlorodibenzofuran	0.10000	1.31	1.37	1.05	1.24
234678-hexachlorodibenzofuran	0.10000	2.59	2.33	1.89	2.27
123789-hexachlorodibenzofuran	0.10000	< 0.69	0.73	0.55	<0.65
1234678-heptachlorodibenzofuran	0.01000	0.77	0.73	0.59	0.69
1234789-heptachlorodibenzofuran	0.01000	0.13	<0.11	<0.088	<0.11
Octachlorodibenzofuran	0.00030	0.01	0.011	0.011	0.011
PCB 81	0.00030	<0.00091	<0.00090	<0.00093	<0.00091
PCB 77	0.00010	0.00075	0.0025	<0.00072	< 0.0013
PCB 123	0.00003	<0.000091	0.00047	< 0.000093	< 0.00022
PCB 118	0.00003	0.0029	0.022	0.0035	0.0095
PCB 114	0.00003	0.00010	0.00063	<0.000076	<0.00027
PCB 105	0.00003	0.00085	0.0072	0.0011	0.0030
PCB 126	0.10000	<0.28	< 0.40	<0.31	<0.33
PCB 167	0.00003	0.000092	0.00030	<0.00058	< 0.00015
PCB 156/157	0.00003	0.00027	0.0011	0.00019	0.00053
PCB 169	0.03000	0.11	0.11	<0.079	<0.099
PCB 189	0.00003	0.00013	0.00015	0.000084	0.00012
Total Dioxins & Furans Only		<22.9	<22.6	<18.1	<21.2
Total PCBs Only		<0.39	<0.55	<0.40	<0.45
Total Dioxins & Furans and PCBs		<23.3	<23.1	<18.5	<21.6

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific	Toxicity				
Isomer	Equivalency	Test No. 1	Test No. 2	Concentration Test No. 3	Average
	Factor	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.82	<0.49	<0.81	<0.71
12378-pentachlorodibenzo-p-dioxin	1.00000	<6.62	6.66	6.22	<6.50
123478-hexachlorodibenzo-p-dioxin	0.10000	2.28	2.11	1.59	1.99
123678-hexachlorodibenzo-p-dioxin	0.10000	6.45	6.32	4.88	5.88
123789-hexachlorodibenzo-p-dioxin	0.10000	2.84	2.99	2.05	2.63
1234678-heptachlorodibenzo-p-dioxin	0.01000	4.09	3.62	3.08	3.60
Octachlorodibenzo-p-dioxin	0.00030	0.080	0.074	0.060	0.072
2378-tetrachlorodibenzofuran	0.10000	0.15	0.37	<0.11	<0.21
12378-pentachlorodibenzofuran	0.03000	0.13	0.18	0.13	0.15
23478-pentachlorodibenzofuran	0.30000	4.59	4.70	3.19	4.16
123478-hexachlorodibenzofuran	0.10000	1.99	2.07	1.43	1.83
123678-hexachlorodibenzofuran	0.10000	2.26	2.34	1.77	2.12
234678-hexachlorodibenzofuran	0.10000	4.48	3.98	3.20	3.88
123789-hexachlorodibenzofuran	0.10000	<1.19	1.24	0.92	<1.12
1234678-heptachlorodibenzofuran	0.01000	1.33	1.25	0.99	1.19
1234789-heptachlorodibenzofuran	0.01000	0.23	<0.19	<0.15	<0.19
Octachlorodibenzofuran	0.00030	0.021	0.019	0.018	0.020
PCB 81	0.00030	<0.0016	<0.0015	<0.0016	<0.0016
PCB 77	0.00010	0.0013	0.0042	<0.0012	<0.0022
PCB 123	0.00003	<0.00016	0.00080	<0.00016	<0.00037
PCB 118	0.00003	0.0050	0.038	0.0059	0.016
PCB 114	0.00003	0.00018	0.0011	< 0.00013	<0.00046
PCB 105	0.00003	0.0015	0.012	0.0019	0.0052
PCB 126	0.10000	< 0.49	< 0.69	<0.52	<0.57
PCB 167	0.00003	0.00016	0.00051	<0.000099	<0.00025
PCB 156/157	0.00003	0.00047	0.0019	0.00032	0.00091
PCB 169	0.03000	0.18	0.19	<0.13	<0.17
PCB 189	0.00003	0.00022	0.00025	0.00014	0.00020
Total Dioxins & Furans Only		<39.5	<38.6	<30.6	<36.3
Total PCBs Only		<0.68	<0.94	< 0.67	<0.76
Total Dioxins & Furans and PCBs		<40.2	<39.6	<31.3	<37.0

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific	Toxicity		Dry Adjusted	Concentration	
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/Rm³*	pg TEQ/Rm³*	pg TEQ/Rm³*	pg TEQ/Rm <sup>3</sup> *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.64	<0.39	<0.65	<0.56
12378-pentachlorodibenzo-p-dioxin	1.00000	<5.21	5.33	4.95	<5.16
123478-hexachlorodibenzo-p-dioxin	0.10000	1.79	1.69	1.26	1.58
123678-hexachlorodibenzo-p-dioxin	0.10000	5.07	5.06	3.89	4.67
123789-hexachlorodibenzo-p-dioxin	0.10000	2.24	2.40	1.64	2.09
1234678-heptachlorodibenzo-p-dioxin	0.01000	3.22	2.90	2.45	2.86
Octachlorodibenzo-p-dioxin	0.00030	0.063	0.060	0.048	0.057
2378-tetrachlorodibenzofuran	0.10000	0.12	0.29	<0.086	<0.17
12378-pentachlorodibenzofuran	0.03000	0.10	0.15	0.10	0.12
23478-pentachlorodibenzofuran	0.30000	3.61	3.76	2.54	3.31
123478-hexachlorodibenzofuran	0.10000	1.56	1.65	1.14	1.45
123678-hexachlorodibenzofuran	0.10000	1.78	1.88	1.41	1.69
234678-hexachlorodibenzofuran	0.10000	3.53	3.18	2.55	3.09
123789-hexachlorodibenzofuran	0.10000	< 0.94	0.99	0.73	<0.89
1234678-heptachlorodibenzofuran	0.01000	1.05	1.00	0.79	0.94
1234789-heptachlorodibenzofuran	0.01000	0.18	< 0.16	<0.12	<0.15
Octachlorodibenzofuran	0.00030	0.017	0.016	0.014	0.016
PCB 81	0.00030	<0.0012	<0.0012	<0.0013	<0.0012
PCB 77	0.00010	0.0010	0.0034	<0.00097	<0.0018
PCB 123	0.00003	<0.00012	0.00064	< 0.00013	< 0.00030
PCB 118	0.00003	0.0040	0.030	0.0047	0.013
PCB 114	0.00003	0.00014	0.00086	<0.00010	< 0.00037
PCB 105	0.00003	0.0012	0.0098	0.0015	0.0042
PCB 126	0.10000	<0.38	<0.55	< 0.42	<0.45
PCB 167	0.00003	0.00013	0.00041	<0.00079	<0.00020
PCB 156/157	0.00003	0.00037	0.0016	0.00025	0.00073
PCB 169	0.03000	0.14	0.15	<0.11	<0.13
PCB 189	0.00003	0.00017	0.00020	0.00011	0.00016
Total Dioxins & Furans Only		<31.1	<30.9	<24.4	<28.8
Total PCBs Only		<0.54	<0.75	< 0.53	< 0.61
Total Dioxins & Furans and PCBs		<31.7	<31.7	<24.9	<29.4

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 46B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific	Toxicity		Dry Adjusted (	Concentration	
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm³*	pg TEQ/Rm <sup>3*</sup>	pg TEQ/Rm <sup>3</sup> *
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.64	<0.39	<0.65	<0.56
12378-pentachlorodibenzo-p-dioxin	0.500	<2.61	2.66	2.48	<2.58
123478-hexachlorodibenzo-p-dioxin	0.100	1.79	1.69	1.26	1.58
123678-hexachlorodibenzo-p-dioxin	0.100	5.07	5.06	3.89	4.67
123789-hexachlorodibenzo-p-dioxin	0.100	2.24	2.40	1.64	2.09
1234678-heptachlorodibenzo-p-dioxin	0.010	3.22	2.90	2.45	2.86
Octachlorodibenzo-p-dioxin	0.001	0.21	0.20	0.16	0.19
2378-tetrachlorodibenzofuran	0.100	0.12	0.29	<0.086	<0.17
12378-pentachlorodibenzofuran	0.050	0.17	0.25	0.17	0.20
23478-pentachlorodibenzofuran	0.500	6.02	6.27	4.24	5.51
123478-hexachlorodibenzofuran	0.100	1.56	1.65	1.14	1.45
123678-hexachlorodibenzofuran	0.100	1.78	1.88	1.41	1.69
234678-hexachlorodibenzofuran	0.100	3.53	3.18	2.55	3.09
123789-hexachlorodibenzofuran	0.100	<0.94	0.99	0.73	<0.89
1234678-heptachlorodibenzofuran	0.010	1.05	1.00	0.79	0.94
1234789-heptachlorodibenzofuran	0.010	0.18	<0.16	<0.12	<0.15
Octachlorodibenzofuran	0.001	0.056	0.052	0.048	0.052
Total Dioxins & Furans		<31.2	<31.0	<23.8	<28.7
In-Stack Emission Limit					60

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific	Toxicity		Wet Reference	Concentration	
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/Rm³*	pg TEQ/Rm³*	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.68	<0.41	<0.68	<0.59
12378-pentachlorodibenzo-p-dioxin	1.00000	<5.51	5.60	5.21	<5.44
123478-hexachlorodibenzo-p-dioxin	0.10000	1.89	1.77	1.33	1.66
123678-hexachlorodibenzo-p-dioxin	0.10000	5.36	5.32	4.09	4.92
123789-hexachlorodibenzo-p-dioxin	0.10000	2.36	2.52	1.72	2.20
1234678-heptachlorodibenzo-p-dioxin	0.01000	3.40	3.05	2.58	3.01
Octachlorodibenzo-p-dioxin	0.00030	0.067	0.063	0.051	0.060
2378-tetrachlorodibenzofuran	0.10000	0.13	0.31	<0.091	<0.18
12378-pentachlorodibenzofuran	0.03000	0.11	0.16	0.11	0.13
23478-pentachlorodibenzofuran	0.30000	3.82	3.96	2.67	3.48
123478-hexachlorodibenzofuran	0.10000	1.65	1.74	1.20	1.53
123678-hexachlorodibenzofuran	0.10000	1.88	1.97	1.48	1.78
234678-hexachlorodibenzofuran	0.10000	3.72	3.35	2.68	3.25
123789-hexachlorodibenzofuran	0.10000	<0.99	1.05	0.77	<0.93
1234678-heptachlorodibenzofuran	0.01000	1.10	1.05	0.83	0.99
1234789-heptachlorodibenzofuran	0.01000	0.19	<0.16	<0.12	<0.16
Octachlorodibenzofuran	0.00030	0.018	0.016	0.015	0.016
PCB 81	0.00030	<0.0013	<0.0013	<0.0013	<0.0013
PCB 77	0.00010	0.0011	0.0035	<0.0010	< 0.0019
PCB 123	0.00003	< 0.00013	0.00067	< 0.00013	<0.00031
PCB 118	0.00003	0.0042	0.032	0.0049	0.014
PCB 114	0.00003	0.00015	0.00090	< 0.00011	< 0.00039
PCB 105	0.00003	0.0012	0.010	0.0016	0.0044
PCB 126	0.10000	<0.40	<0.58	<0.44	< 0.47
PCB 167	0.00003	0.00013	0.00043	<0.000083	<0.00021
PCB 156/157	0.00003	0.00039	0.0016	0.00027	0.00076
PCB 169	0.03000	0.15	0.16	<0.11	<0.14
PCB 189	0.00003	0.00018	0.00021	0.00012	0.00017
Total Dioxins & Furans Only		<32.9	<32.5	<25.6	<30.3
Total PCBs Only		<0.57	<0.79	<0.56	<0.64
Total Dioxins & Furans and PCBs		<33.4	<33.3	<26.2	<31.0

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific	Toxicity	Emission Rate				
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average	
	Factor	ng TEQ/s	ng TEQ/s	ng TEQ/s	ng TEQ/s	
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.012	<0.0073	<0.012	<0.011	
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.098	0.099	0.093	<0.096	
123478-hexachlorodibenzo-p-dioxin	0.10000	0.034	0.031	0.024	0.030	
123678-hexachlorodibenzo-p-dioxin	0.10000	0.095	0.094	0.073	0.087	
123789-hexachlorodibenzo-p-dioxin	0.10000	0.042	0.044	0.031	0.039	
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.061	0.054	0.046	0.053	
Octachlorodibenzo-p-dioxin	0.00030	0.0012	0.0011	0.00090	0.0011	
2378-tetrachlorodibenzofuran	0.10000	0.0023	0.0055	<0.0016	<0.0031	
12378-pentachlorodibenzofuran	0.03000	0.0020	0.0027	0.0020	0.0022	
23478-pentachlorodibenzofuran	0.30000	0.068	0.070	0.048	0.062	
123478-hexachlorodibenzofuran	0.10000	0.029	0.031	0.021	0.027	
123678-hexachlorodibenzofuran	0.10000	0.033	0.035	0.026	0.031	
234678-hexachlorodibenzofuran	0.10000	0.066	0.059	0.048	0.058	
123789-hexachlorodibenzofuran	0.10000	<0.018	0.018	0.014	<0.017	
1234678-heptachlorodibenzofuran	0.01000	0.020	0.018	0.015	0.018	
1234789-heptachlorodibenzofuran	0.01000	0.0034	<0.0029	<0.0022	<0.0028	
Octachlorodibenzofuran	0.00030	0.00031	0.00029	0.00027	0.00029	
PCB 81	0.00030	<0.000023	<0.000023	<0.000023	<0.000023	
PCB 77	0.00010	0.000019	0.000062	<0.000018	<0.000033	
PCB 123	0.00003	<0.0000023	0.000012	<0.0000023	<0.0000055	
PCB 118	0.00003	0.000074	0.00056	0.000087	0.00024	
PCB 114	0.00003	0.0000026	0.000016	<0.0000019	<0.0000068	
PCB 105	0.00003	0.000022	0.00018	0.000029	0.000077	
PCB 126	0.10000	<0.0072	<0.010	<0.0078	<0.0084	
PCB 167	0.00003	0.0000024	0.0000075	<0.000015	<0.000038	
PCB 156/157	0.00003	0.0000069	0.000029	0.0000048	0.000014	
PCB 169	0.03000	0.0027	0.0028	<0.0020	<0.0025	
PCB 189	0.00003	0.0000032	0.0000037	0.0000021	0.0000030	
Total Dioxins & Furans Only		<0.59	<0.57	<0.46	<0.54	
Total PCBs Only		<0.010	< 0.014	<0.010	<0.011	
Total Dioxins & Furans and PCBs		<0.60	<0.59	<0.47	<0.55	

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission	
isomer	Concentration	Concentration	Concentration	Concentration	Rate	
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm <sup>3</sup> **	pg TEQ/Rm <sup>3</sup> *	ng TEQ/s	
   2378-tetrachlorodibenzo-p-dioxin	<0.41	<0.71	<0.56	<0.59	<0.011	
12378-pentachlorodibenzo-p-dioxin	<3.80	<6.50	<5.16	<5.44	< 0.096	
123478-hexachlorodibenzo-p-dioxin	1.16	1.99	1.58	1.66	0.030	
123678-hexachlorodibenzo-p-dioxin	3.44	5.88	4.67	4.92	0.087	
123789-hexachlorodibenzo-p-dioxin	1.54	2.63	2.09	2.20	0.039	
1234678-heptachlorodibenzo-p-dioxin	2.10	3.60	2.86	3.01	0.053	
Octachlorodibenzo-p-dioxin	0.042	0.072	0.057	0.060	0.0011	
2378-tetrachlorodibenzofuran	<0.12	<0.21	<0.17	<0.18	<0.0031	
12378-pentachlorodibenzofuran	0.088	0.15	0.12	0.13	0.0022	
23478-pentachlorodibenzofuran	2.43	4.16	3.31	3.48	0.062	
123478-hexachlorodibenzofuran	1.07	1.83	1.45	1.53	0.027	
123678-hexachlorodibenzofuran	1.24	2.12	1.69	1.78	0.031	
234678-hexachlorodibenzofuran	2.27	3.88	3.09	3.25	0.058	
123789-hexachlorodibenzofuran	<0.65	<1.12	<0.89	<0.93	<0.017	
1234678-heptachlorodibenzofuran	0.69	1.19	0.94	0.99	0.018	
1234789-heptachlorodibenzofuran	< 0.11	<0.19	<0.15	<0.16	<0.0028	
Octachlorodibenzofuran	0.011	0.020	0.016	0.016	0.00029	
PCB 81	<0.00091	<0.0016	<0.0012	<0.0013	<0.000023	
PCB 77	< 0.0013	<0.0022	<0.0018	<0.0019	< 0.000033	
PCB 123	<0.00022	< 0.00037	<0.00030	<0.00031	<0.0000055	
PCB 118	0.0095	0.016	0.013	0.014	0.00024	
PCB 114	<0.00027	<0.00046	< 0.00037	<0.00039	<0.0000068	
PCB 105	0.0030	0.0052	0.0042	0.0044	0.000077	
PCB 126	<0.33	<0.57	<0.45	<0.47	<0.0084	
PCB 167	< 0.00015	<0.00025	<0.00020	<0.00021	<0.000038	
PCB 156/157	0.00053	0.00091	0.00073	0.00076	0.000014	
PCB 169	<0.099	<0.17	<0.13	<0.14	< 0.0025	
PCB 189	0.00012	0.00020	0.00016	0.00017	0.0000030	
Total Dioxins & Furans Only	<21.2	<36.3	<28.8	<30.3	<0.54	
Total PCBs Only	< 0.45	<0.76	<0.61	<0.64	<0.011	
Total Dioxíns & Furans and PCBs	<21.6	<37.0	<29.4	<31.0	<0.55	

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 50

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Summary of Dioxin and Furan Toxicity Equivalent Emission Data

Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
isomei					
	pg TEQ/m³	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3**</sup>	pg TEQ/Rm <sup>3</sup> *	ng TEQ/s
   2378-tetrachlorodibenzo-p-dioxin	0.21	0.35	0.28	0.30	0.0053
12378-pentachlorodibenzo-p-dioxin	3.16	5.40	4.30	4.52	0.080
123478-hexachlorodibenzo-p-dioxin	1.16	1.99	1.58	1.66	0.030
123678-hexachlorodibenzo-p-dioxin	3.44	5.88	4.67	4.92	0.087
123789-hexachlorodibenzo-p-dioxin	1.54	2.63	2.09	2.20	0.039
1234678-heptachlorodibenzo-p-dioxin	2.10	3.60	2.86	3.01	0.053
Octachlorodibenzo-p-dioxin	0.042	0.072	0.057	0.060	0.0011
2378-tetrachlorodibenzofuran	0.11	0.19	0.15	0.16	0.0028
12378-pentachlorodibenzofuran	0.088	0.15	0.12	0.13	0.0022
23478-pentachlorodibenzofuran	2.43	4.16	3.31	3.48	0.062
123478-hexachlorodibenzofuran	1.07	1.83	1.45	1.53	0.027
123678-hexachlorodibenzofuran	1.24	2.12	1.69	1.78	0.031
234678-hexachlorodibenzofuran	2.27	3.88	3.09	3.25	0.058
123789-hexachlorodibenzofuran	0.54	0.92	0.73	0.77	0.014
1234678-heptachlorodibenzofuran	0.69	1.19	0.94	0.99	0.018
1234789-heptachlorodibenzofuran	0.078	0.13	0.11	0.11	0.0020
Octachlorodibenzofuran	0.011	0.020	0.016	0.016	0.00029
PCB 81	0.00046	0.00078	0.00062	0.00065	0.000012
PCB 77	0.0012	0.0020	0.0016	0.0017	0.000030
PCB 123	0.00019	0.00032	0.00025	0.00027	0.0000047
PCB 118	0.0095	0.016	0.013	0.014	0.00024
PCB 114	0.00026	0.00044	0.00035	0.00037	0.0000065
PCB 105	0.0030	0.0052	0.0042	0.0044	0.000077
PCB 126	0.17	0.28	0.23	0.24	0.0042
PCB 167	0.00014	0.00024	0.00019	0.00020	0.0000035
PCB 156/157	0.00053	0.00091	0.00073	0.00076	0.000014
PCB 169	0.086	0.15	0.12	0.12	0.0022
PCB 189	0.00012	0.00020	0.00016	0.00017	0.0000030
Total Dioxins & Furans Only	20.2	34.5	27.4	28.9	0.51
Total PCBs Only	0.27	0.46	0.36	0.38	0.0068
Total Dioxins & Furans and PCBs	20.4	35.0	27.8	29.3	0.52

<sup>\*</sup> At 25°C and 1 atmosphere

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	3120	351	608	478	505	8.99
1,3-Dichlorobenzene	588	66.2	115	90.1	95.2	1.69
1,4-Dichlorobenzene	419	47.2	81.6	64.2	67.8	1.21
1,2-Dichlorobenzene	485	54.6	94.4	74.4	78.5	1.40
Total Dichlorobenzene	1492	168	291	229	242	4.30
1,3,5-trichlorobenzene	64.6	7.27	12.6	9.90	10.5	0.19
1,2,4-trichlorobenzene	164	18.5	31.9	25.1	26.6	0.47
1,2,3-trichlorobenzene	49.7	5.60	9.68	7.62	8.05	0.14
Total Trichlorobenzene	278	31.3	54.2	42.7	45.1	0.80
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	37.3	4.20	7.26	5.72	6.04	0.11
1,2,3,4-tetrachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total Tetrachlorobenzene	<49.3	<5.55	<9.60	<7.56	<7.98	<0.14
Pentachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Hexachlorobenzene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total Chlorobenzenes	<4964	<559	<967	<761	<804	<14.3

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm <sup>3</sup> /s**):	18.8
Wet Reference Flowrate (Rm³/s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	4210	485	829	663	697	12.3
1,3-Dichlorobenzene	564	65.0	111	88.9	93.4	1.64
1,4-Dichlorobenzene	360	41.5	70.9	56.7	59.6	1.05
1,2-Dichlorobenzene	474	54.6	93.4	74.7	78.5	1.38
Total Dichlorobenzene	1398	161	275	220	232	4.08
1,3,5-trichlorobenzene	65.0	7.49	12.8	10.2	10.8	0.19
1,2,4-trichlorobenzene	179	20.6	35.3	28.2	29.6	0.52
1,2,3-trichlorobenzene	51.4	5.92	10.1	8.10	8.51	0.15
Total Trichlorobenzene	295	34.0	58.2	46.5	48.9	0.86
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	36.5	4.21	7.19	5.75	6.05	0.11
1,2,3,4-tetrachlorobenzene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Total Tetrachlorobenzene	<48.5	<5.59	<9.55	<7.64	<8.03	<0.14
Pentachlorobenzene	13.2	1.52	2.60	2.08	2.19	0.038
Hexachlorobenzene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Total Chlorobenzenes	<5977	<689	<1177	<942	<990	<17.4

Dry Gas Volume Sampled (Rm³*):	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	3240	371	628	500	525	9.35
1,3-Dichlorobenzene	722	82.7	140	111	117	2.08
1,4-Dichlorobenzene	443	50.7	85.8	68.4	71.8	1.28
1,2-Dichlorobenzene	586	67.1	114	90.5	95.0	1.69
Total Dichlorobenzene	1751	201	339	270	284	5.05
1,3,5-trichlorobenzene	82.1	9.40	15.9	12.7	13.3	0.24
1,2,4-trichlorobenzene	281	32.2	54.4	43.4	45.6	0.81
1,2,3-trichlorobenzene	59.0	6.76	11.4	9.11	9.57	0.17
Total Trichlorobenzene	422	48.3	81.8	65.2	68.4	1.22
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	43.4	4.97	8.41	6.70	7.04	0.13
1,2,3,4-tetrachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total Tetrachlorobenzene	<55.4	<6.35	<10.7	<8.55	<8.98	<0.16
Pentachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Hexachlorobenzene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total Chlorobenzenes	<5493	<629	<1064	<848	<891	<15.9

Dry Gas Volume Sampled (Rm³*):	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**):	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific		Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	351	485	371	402	17.9
1,3-Dichlorobenzene	66.2	65.0	82.7	71.3	13.9
1,4-Dichlorobenzene	47.2	41.5	50.7	46.5	10.1
1,2-Dichlorobenzene	54.6	54.6	67.1	58.8	12.3
Total Dichlorobenzene	168	161	201	177	11.9
1,3,5-trichlorobenzene	7.27	7.49	9.40	8.06	14.6
1,2,4-trichlorobenzene	18.5	20.6	32.2	23.8	31.1
1,2,3-trichlorobenzene	5.60	5.92	6.76	6.09	9.8
Total Trichlorobenzene	31.3	34.0	48.3	37.9	24.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.20	4.21	4.97	4.46	10.0
1,2,3,4-tetrachlorobenzene	<1.35	<1.38	<1.37	<1.37	1.2
Total Tetrachlorobenzene	<5.55	<5.59	<6.35	<5.83	7.7
Pentachlorobenzene	<1.35	1.52	<1.37	<1.42	6.5
Hexachlorobenzene	<1.35	<1.38	<1.37	<1.37	1.2
Total Chlorobenzenes	<559	<689	<629	<626	10.4

TABLE 55

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Dry Reference Concentrations for Chlorobenzenes

Specific	Dry Reference Concentration				Coefficient
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	608	829	628	688	17.8
1,3-Dichlorobenzene	115	111	140	122	12.9
1,4-Dichlorobenzene	81.6	70.9	85.8	79.4	9.7
1,2-Dichlorobenzene	94.4	93.4	114	100	11.3
Total Dichlorobenzene	291	275	339	302	11.1
1,3,5-trichlorobenzene	12.6	12.8	15.9	13.8	13.5
1,2,4-trichlorobenzene	31.9	35.3	54.4	40.5	30.0
1,2,3-trichlorobenzene	9.68	10.1	11.4	10.4	8.7
Total Trichlorobenzene	54.2	58.2	81.8	64.7	23.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	7.26	7.19	8.41	7.62	9.0
1,2,3,4-tetrachlorobenzene	<2.34	<2.36	<2.32	<2.34	0.8
Total Tetrachlorobenzene	<9.60	<9.55	<10.7	<9.96	6.7
Pentachlorobenzene	<2.34	2.60	<2.32	<2.42	6.4
Hexachlorobenzene	<2.34	<2.36	<2.32	<2.34	0.8
Total Chlorobenzenes	<967	<1177	<1064	<1069	9.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific		Dry Adjusted Concentration				
Isomer	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %	
Monochlorobenzene	478	663	500	547	18.5	
1,3-Dichlorobenzene	90.1	88.9	111	96.8	13.1	
1,4-Dichlorobenzene	64.2	56.7	68.4	63.1	9.4	
1,2-Dichlorobenzene	74.4	74.7	90.5	79.8	11.5	
Total Dichlorobenzene	229	220	270	240	11.2	
1,3,5-trichlorobenzene	9.90	10.2	12.7	10.9	13.8	
1,2,4-trichlorobenzene	25.1	28.2	43.4	32.2	30.3	
1,2,3-trichlorobenzene	7.62	8.10	9.11	8.28	9.2	
Total Trichlorobenzene	42.7	46.5	65.2	51.5	23.4	
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	5.72	5.75	6.70	6.06	9.2	
1,2,3,4-tetrachlorobenzene	<1.84	<1.89	<1.85	<1.86	1.4	
Total Tetrachlorobenzene	<7.56	<7.64	<8.55	<7.92	7.0	
Pentachlorobenzene	<1.84	2.08	<1.85	<1.92	7.0	
Hexachlorobenzene	<1.84	<1.89	<1.85	<1.86	1.4	
Total Chlorobenzenes	<761	<942	<848	<850	10.6	

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific	W	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	505	697	525	576	18.3
1,3-Dichlorobenzene	95.2	93.4	117	102	12.9
1,4-Dichlorobenzene	67.8	59.6	71.8	66.4	9.4
1,2-Dichlorobenzene	78.5	78.5	95.0	84.0	11.3
Total Dichlorobenzene	242	232	284	252	11.0
1,3,5-trichlorobenzene	10.5	10.8	13.3	11.5	13.6
1,2,4-trichlorobenzene	26.6	29.6	45.6	33.9	30.1
1,2,3-trichlorobenzene	8.05	8.51	9.57	8.71	8.9
Total Trichlorobenzene	45.1	48.9	68.4	54.1	23.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.04	6.05	7.04	6.37	9.0
1,2,3,4-tetrachlorobenzene	<1.94	<1.99	<1.95	<1.96	1.3
Total Tetrachlorobenzene	<7.98	<8.03	<8.98	<8.33	6.8
Pentachlorobenzene	<1.94	2.19	<1.95	<2.03	6.9
Hexachlorobenzene	<1.94	<1.99	<1.95	<1.96	1.3
Total Chlorobenzenes	<804	<990	<891	<895	10.4

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 58

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Emission Rates for Chlorobenzenes

Specific		Emission Rate				
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	μg/s	μg/s	μg/s	μg/s	%	
Monochlorobenzene	8.99	12.3	9.35	10.2	17.6	
1,3-Dichlorobenzene	1.69	1.64	2.08	1.81	13.3	
1,4-Dichlorobenzene	1.21	1.05	1.28	1.18	10.0	
1,2-Dichlorobenzene	1.40	1.38	1.69	1.49	11.7	
Total Dichlorobenzene	4.30	4.08	5.05	4.48	11.5	
1,3,5-trichlorobenzene	0.19	0.19	0.24	0.20	13.9	
1,2,4-trichlorobenzene	0.47	0.52	0.81	0.60	30.4	
1,2,3-trichlorobenzene	0.14	0.15	0.17	0.15	9.1	
Total Trichlorobenzene	0.80	0.86	1.22	0.96	23.4	
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.11	0.11	0.13	0.11	9.4	
1,2,3,4-tetrachlorobenzene	<0.035	<0.035	<0.035	< 0.035	0.6	
Total Tetrachlorobenzene	<0.14	<0.14	<0.16	<0.15	7.1	
Pentachlorobenzene	<0.035	0.038	<0.035	<0.036	6.2	
Hexachlorobenzene	<0.035	<0.035	<0.035	<0.035	0.6	
Total Chlorobenzenes	<14.3	<17.4	<15.9	<15.9	9.8	

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
isome.	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	402	688	547	576	10.2
1,3-Dichlorobenzene	71.3	122	96.8	102	1.81
1,4-Dichlorobenzene	46.5	79.4	63.1	66.4	1.18
1,2-Dichlorobenzene	58.8	100	79.8	84.0	1.49
Total Dichlorobenzene	177	302	240	252	4.48
1,3,5-trichlorobenzene	8.06	13.8	10.9	11.5	0.20
1,2,4-trichlorobenzene	23.8	40.5	32.2	33.9	0.60
1,2,3-trichlorobenzene	6.09	10.4	8.28	8.71	0.15
Total Trichlorobenzene	37.9	64.7	51.5	54.1	0.96
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.46	7.62	6.06	6.37	0.11
1,2,3,4-tetrachlorobenzene	<1.37	<2.34	<1.86	<1.96	<0.035
Total Tetrachlorobenzene	<5.83	<9.96	<7.92	<8.33	<0.15
Pentachlorobenzene	<1.42	<2.42	<1.92	<2.03	<0.036
Hexachlorobenzene	<1.37	<2.34	<1.86	<1.96	<0.035
Total Chlorobenzenes	<626	<1069	<850	<895	<15.9

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
Monochlorobenzene	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<132	<132

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	-CO	-6.76	-44 7			
3-monochlorophenol	<60 <60	<6.76	<11.7	<9.20	<9.72	<0.17
,		<6.76	<11.7	<9.20	<9.72	<0.17
4-monochlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Monochlorophenols	<180	<20.3	<35.1	<27.6	<29.1	<0.52
2,6-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,4 & 2,5-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,5-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,4-dichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Dichlorophenols	<300	<33.8	<58.4	<46.0	<48.6	<0.86
2,4,6-trichlorophenol	200	22.5	38.9	30.7	32.4	0.58
2,3,6-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,4,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,4-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
3,4,5-trichlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Trichlorophenols	<500	<56.3	<97.4	<76.7	<81.0	<1.44
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Tetrachlorophenols	<120	<13.5	<23.4	<18.4	<19.4	<0.35
Pentachlorophenol	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Total Chlorophenols	<1160	<131	<226	<178	<188	<3.34

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm <sup>3</sup> /s**):	18.8
Wet Reference Flowrate (Rm <sup>3</sup> /s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2	-60	-6.04				
2-monochlorophenol	<60 -60	<6.91	<11.8	<9.45	<9.94	<0.17
3-monochlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
4-monochlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Monochlorophenols	<180	<20.7	<35.5	<28.4	<29.8	<0.52
2,6-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,4 & 2,5-dichlorophenol	76.1	8.77	15.0	12.0	12.6	0.22
3,5-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
3,4-dichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Dichlorophenols	<316	<36.4	<62.3	<49.8	<52.4	<0.92
2,4,6-trichlorophenol	201	23.2	39.6	31.7	33.3	0.59
2,3,6-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,4,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,4-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
3,4,5-trichlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Trichlorophenols	<501	<57.7	<98.7	<78.9	<83.0	<1.46
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Tetrachlorophenols	<120	<13.8	<23.6	<18.9	<19.9	<0.35
Pentachlorophenol	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Total Chlorophenols	<1177	<136	<232	<185	<195	<3.43

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.5
Wet Reference Flowrate (Rm <sup>3</sup> /s*):	17.6

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
4-monochlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Monochlorophenols	<180	<20.6	<34.9	<27.8	<29.2	<0.52
2,6-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,4 & 2,5-dichlorophenol	65.6	7.51	12.7	10.1	10.6	0.19
3,5-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3,4-dichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Dichlorophenols	<306	<35.0	<59.2	<47.2	<49.6	<0.88
2,4,6-trichlorophenol	171	19.6	33.1	26.4	27.7	0.49
2,3,6-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,4,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	< 0.17
2,3,4-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
3,4,5-trichlorophenol	<60	<6.87	<11.6	<9.26	<9.73	< 0.17
Total Trichlorophenols	<471	<53.9	<91.2	<72.7	<76.4	<1.36
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
2,3,4,5-tetrachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Tetrachlorophenols	<120	<13.7	<23.2	<18.5	<19.5	<0.35
Pentachlorophenol	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Total Chlorophenols	<1137	<130	<220	<175	<184	<3.28

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*):	14.9
Dry Adjusted Flowrate (Rm³/s**):	18.7
Wet Reference Flowrate (Rm³/s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific			Coefficient		
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
3-monochlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
4-monochlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Monochlorophenols	<20.3	<20.7	<20.6	<20.5	1.2
2,6-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,4 & 2,5-dichlorophenol	<6.76	8.77	7.51	<7.68	13.2
3,5-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
3,4-dichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Dichlorophenols	<33.8	<36.4	<35.0	<35.1	3.8
2,4,6-trichlorophenol	22.5	23.2	19.6	21.8	8.8
2,3,6-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,4,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,4-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
3,4,5-trichlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Trichlorophenols	<56.3	<57.7	<53.9	<56.0	3.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
2,3,4,5-tetrachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Tetrachlorophenols	<13.5	<13.8	<13.7	<13.7	1.2
Pentachlorophenol	<6.76	<6.91	<6.87	<6.85	1.2
Total Chlorophenols	<131	<136	<130	<132	2.3

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific		Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
4-monochlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Monochlorophenols	<35.1	<35.5	<34.9	<35.1	0.8
2,6-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,4 & 2,5-dichlorophenol	<11.7	15.0	12.7	<13.1	12.9
3,5-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3,4-dichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Dichlorophenols	<58.4	<62.3	<59.2	<60.0	3.4
2,4,6-trichlorophenol	38.9	39.6	33.1	37.2	9.6
2,3,6-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,4,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,4-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
3,4,5-trichlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Trichlorophenols	<97.4	<98.7	<91.2	<95.8	4.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
2,3,4,5-tetrachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Tetrachlorophenols	<23.4	<23.6	<23.2	<23.4	0.8
Pentachlorophenol	<11.7	<11.8	<11.6	<11.7	0.8
Total Chlorophenols	<226	<232	<220	<226	2.6

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific	****	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
4-monochlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Monochlorophenols	<27.6	<28.4	<27.8	<27.9	1.4
2,6-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,4 & 2,5-dichlorophenol	<9.20	12.0	10.1	<10.4	13.6
3,5-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3,4-dichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Dichlorophenols	<46.0	<49.8	<47.2	<47.7	4.1
2,4,6-trichlorophenol	30.7	31.7	26.4	29.6	9.5
2,3,6-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,4,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,4-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
3,4,5-trichlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Trichlorophenols	<76.7	<78.9	<72.7	<76.1	4.1
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
2,3,4,5-tetrachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Tetrachlorophenols	<18.4	<18.9	<18.5	<18.6	1.4
Pentachlorophenol	<9.20	<9.45	<9.26	<9.30	1.4
Total Chlorophenols	<178	<185	<175	<180	2.9

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific	1	Concentration	Coefficient		
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
4-monochlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Monochlorophenols	<29.1	<29.8	<29.2	<29.4	1.3
2,6-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,4 & 2,5-dichlorophenol	<9.72	12.6	10.6	<11.0	13.4
3,5-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3,4-dichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Dichlorophenols	<48.6	<52.4	<49.6	<50.2	3.9
2,4,6-trichlorophenol	32.4	33.3	27.7	31.1	9.6
2,3,6-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,4,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,4-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
3,4,5-trichlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Trichlorophenols	<81.0	<83.0	<76.4	<80.1	4.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
2,3,4,5-tetrachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Tetrachlorophenols	<19.4	<19.9	<19.5	<19.6	1.3
Pentachlorophenol	<9.72	<9.94	<9.73	<9.79	1.3
Total Chlorophenols	<188	<195	<184	<189	2.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific		Emission Rate				
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	μg/s	μg/s	μg/s	μg/s	%%	
2-monochlorophenol	<0.17	<0.17	<0.17	<0.17	0.6	
3-monochlorophenol	<0.17	<0.17	<0.17			
4-monochlorophenol				< 0.17	0.6	
· ·	<0.17	<0.17	<0.17	<0.17	0.6	
Total Monochlorophenols	<0.52	<0.52	<0.52	<0.52	0.6	
2,6-dichlorophenol	<0.17	<0.17	<0.17	<0.17	0.6	
2,4 & 2,5-dichlorophenol	< 0.17	0.22	0.19	< 0.19	12.8	
3,5-dichlorophenol	< 0.17	<0.17	< 0.17	<0.17	0.6	
2,3-dichlorophenol	<0.17	<0.17	<0.17	< 0.17	0.6	
3,4-dichlorophenol	< 0.17	<0.17	< 0.17	<0.17	0.6	
Total Dichlorophenols	<0.86	<0.92	<0.88	<0.89	3.3	
2,4,6-trichlorophenol	0.58	0.59	0.49	0.55	9.2	
2,3,6-trichlorophenol	< 0.17	<0.17	< 0.17	<0.17	0.6	
2,3,5-trichlorophenol	< 0.17	<0.17	< 0.17	<0.17	0.6	
2,4,5-trichlorophenol	< 0.17	<0.17	< 0.17	< 0.17	0.6	
2,3,4-trichlorophenol	< 0.17	<0.17	<0.17	<0.17	0.6	
3,4,5-trichlorophenol	< 0.17	<0.17	<0.17	< 0.17	0.6	
Total Trichlorophenols	<1.44	<1.46	<1.36	<1.42	3.8	
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6	
2,3,4,5-tetrachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6	
Total Tetrachlorophenols	<0.35	<0.35	<0.35	<0.35	0.6	
Pentachlorophenol	<0.17	<0.17	<0.17	<0.17	0.6	
Total Chlorophenols	<3.34	<3.43	<3.28	<3.35	2.3	

TABLE 69

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Concentration	Concentration	Concentration	Concentration	Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
4-monochlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Monochlorophenols	<20.5	<35.1	<27.9	<29.4	<0.52
2,6-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,4 & 2,5-dichlorophenol	<7.68	<13.1	<10.4	<11.0	<0.19
3,5-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3,4-dichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Dichlorophenols	<35.1	<60.0	<47.7	<50.2	<0.89
2,4,6-trichlorophenol	21.8	37.2	29.6	31.1	0.55
2,3,6-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,4,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,4-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
3,4,5-trichlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Trichlorophenols	<56.0	<95.8	<76.1	<80.1	<1.42
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
2,3,4,5-tetrachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Tetrachlorophenols	<13.7	<23.4	<18.6	<19.6	<0.35
Pentachlorophenol	<6.85	<11.7	<9.30	<9.79	<0.17
Total Chlorophenols	<132	<226	<180	<189	<3.35

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener	Lab Blank	Blank Train
Group	Total ng	Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Acenaphthylene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(a)Anthracene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(b)Fluoranthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(k)Fluoranthene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(a)fluorene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(b)fluorene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(g,h,i)Perylene	96.3	10.8	18.8	14.8	15.6	0.033
Benzo(a)Pyrene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Benzo(e)Pyrene	<12	<1.35	<2.34	<1.84		
Biphenyl	24.2	2.72	4.71	3.71	<1.94 3.92	< 0.035
2-Chloronaphthalene	<12	<1.35	4.71 <2.34	3.71 <1.84		0.070
Chrysene/Triphenylene	<12	<1.35	<2.34 <2.34	<1.84	<1.94	<0.035
Coronene	69.9	7.87	13.6	10.7	<1.94	<0.035
Dibenzo(a,c/a,h)Anthracene	<12	<1.35	<2.34		11.3	0.20
Dibenzo(a,e)pyrene	<60	<6.76	<2.34 <11.7	<1.84 <9.20	<1.94	<0.035
9,10-dimethylanthracene					<9.72	<0.17
7,12-Dimethylbenzo(a)anthracene	<12 <12	<1.35 <1.35	<2.34	<1.84	<1.94	<0.035
Fluoranthene	26.1	2.94	<2.34	<1.84	<1.94	<0.035
Fluorene			5.08	4.00	4.23	0.075
Indeno(1,2,3-cd)Pyrene	12.0	1.35	2.34	1.84	1.94	0.035
2-methylanthracene	13.0	1.46	2.53	1.99	2.10	0.037
3-Methylcholanthrene	22.0	2.48	4.28	3.37	3.56	0.063
	<60	<6.76	<11.7	<9.20	<9.72	<0.17
1-Methylnaphthalene	22.3	2.51	4.34	3.42	3.61	0.064
2-Methylnaphthalene	43.3	4.87	8.43	6.64	7.01	0.12
1-Methylphenanthrene	51.6	5.81	10.0	7.91	8.36	0.15
9-Methylphenanthrene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Naphthalene	207	23.3	40.3	31.7	33.5	0.60
Perylene	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Phenanthrene	76.9	8.66	15.0	11.8	12.5	0.22
Picene	<60	<6.76	<11.7	<9.20	<9.72	<0.17
Pyrene	32.2	3.63	6.27	4.94	5.21	0.093
Tetralin	188	21.2	36.6	28.8	30.4	0.54
m-terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
o-Terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
p-terphenyl	<12	<1.35	<2.34	<1.84	<1.94	<0.035
Total	<1305	<147	<254	<200	<211	<3.76

Dry Gas Volume Sampled (Rm³*) :	5.135
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 72 **Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet** Polycyclic Aromatic Hydrocarbon Emission Data Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	87.1	10.0	17.2	13.7	14.4	0.25
Acenaphthylene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Anthracene	<12	<1.38	<2.36	<1.89	<1.99	< 0.035
Benzo(a) Anthracene	<12	<1.38	<2.36	<1.89	<1.99	< 0.035
Benzo(b)Fluoranthene	<12	<1.38	<2.36	<1.89	<1.99	< 0.035
Benzo(k) Fluoranthene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(a)fluorene	<12	<1.38	<2.36	<1.89	<1.99	< 0.035
Benzo(b)fluorene	<12	<1.38	<2.36	<1.89	<1.99	< 0.035
Benzo(g,h,i)Perylene	24.4	2.81	4.81	3.84	4.04	0.071
Benzo(a)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Benzo(e)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Biphenyl	55 <del>9</del>	64.4	110	88.1	92.6	1.63
2-Chloronaphthalene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Chrysene/Triphenylene	21.9	2.52	4.31	3.45	3.63	0.064
Coronene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Dibenzo(a,c/a,h)Anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Dibenzo(a,e)pyrene	<60	<6.91	<11.8	<9.45	<9.94	<0.033
9,10-dimethylanthracene	26.7	3.08	5.26	4.21	4.42	0.078
7,12-Dimethylbenzo(a)anthracene	<12	<1.38	<2.36	<1.89	<1.99	<0.078
Fluoranthene	111	12.8	21.9	17.5	18.4	0.32
Fluorene	48.7	5.61	9.59	7.67	8.07	0.32
Indeno(1,2,3-cd)Pyrene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
2-methylanthracene	117	13.5	23.0	18.4	19.4	
3-Methylcholanthrene	<60	<6.91	<11.8	<9.45	19.4 <9.94	0.34
1-Methylnaphthalene	42.5	4.90	8.37			<0.17
2-Methylnaphthalene	42.5 85.7	4.90 9.87		6.70	7.04	0.12
1-Methylphenanthrene	43.6		16.9	13.5	14.2	0.25
9-Methylphenanthrene		5.02	8.59	6.87	7.22	0.13
	107	12.3	21.1	16.9	17.7	0.31
Naphthalene	524	60.4	103	82.6	86.8	1.53
Perylene	<12	<1.38	<2.36	<1.89	<1.99	<0.035
Phenanthrene	516	59.5	102	81.3	85.5	1.50
Picene	<60	<6.91	<11.8	<9.45	<9.94	<0.17
Pyrene	83.2	9.59	16.4	13.1	13.8	0.24
Tetralin	355	40.9	69.9	55.9	58.8	1.03
m-terphenyl	33.8	3.89	6.66	5.33	5.60	0.099
o-Terphenyl	56.5	6.51	11.1	8.90	9.36	0.16
p-terphenyl	16.5	1.90	3.25	2.60	2.73	0.048
Total	<3268	<376	<644	<515	<541	<9.53

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	5.077
Actual Flowrate (m³/s) :	25.3
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.5
Wet Reference Flowrate (Rm³/s*) :	17.6

<sup>\*</sup> At 25°C and 1 atmosphere

\*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

**TABLE 73 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet** Polycyclic Aromatic Hydrocarbon Emission Data Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Acenaphthylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)Anthracene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(b)Fluoranthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(k)Fluoranthene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)fluorene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(b)fluorene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(g,h,i)Perylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(a)Pyrene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Benzo(e)Pyrene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Biphenyl	24.1	2.76	4.67	3.72	3.91	0.033
2-Chloronaphthalene	<12	<1.37	<2.32	<1.85	<1.95	< 0.070
Chrysene/Triphenylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Coronene	<60	<6.87	<11.6	<9.26	<9.73	<0.035
Dibenzo(a,c/a,h)Anthracene	<12	<1.37	<2.32	<1.85	<9.73 <1.95	<0.17
Dibenzo(a,e)pyrene	<60	<6.87	<11.6	<9.26	<9.73	<0.035
9,10-dimethylanthracene	<12	<1.37	<2.32	<1.85		
7,12-Dimethylbenzo(a)anthracene	<12	<1.37	<2.32		<1.95	<0.035
Fluoranthene	13.9			<1.85	<1.95	<0.035
Fluorene	13.9 <12	1.59	2.69	2.15	2.25	0.040
Indeno(1,2,3-cd)Pyrene	<12	<1.37 <1.37	<2.32	<1.85	<1.95	< 0.035
			<2.32	<1.85	<1.95	<0.035
2-methylanthracene	21.1	2.42	4.09	3.26	3.42	0.061
3-Methylcholanthrene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
1-Methylnaphthalene	21.8	2.50	4.22	3.36	3.54	0.063
2-Methylnaphthalene	29.7	3.40	5.75	4.58	4.82	0.086
1-Methylphenanthrene	25.5	2.92	4.94	3.94	4.14	0.074
9-Methylphenanthrene	13.3	1.52	2.58	2.05	2.16	0.038
Naphthalene	200	22.9	38.7	30.9	32.4	0.58
Perylene	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Phenanthrene	59.5	6.82	11.5	9.18	9.65	0.17
Picene	<60	<6.87	<11.6	<9.26	<9.73	<0.17
Pyrene	12.8	1.47	2.48	1.98	2.08	0.037
Tetralin	496	56.8	96.1	76.6	80.4	1.43
m-terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
o-Terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
p-terphenyl	<12	<1.37	<2.32	<1.85	<1.95	<0.035
Total	<1422	<163	<275	<219	<231	<4.10

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	5.162
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.9
Dry Adjusted Flowrate (Rm³/s**):	18.7
Wet Reference Flowrate (Rm³/s*) :	17.8

\* At 25°C and 1 atmosphere

\*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 74

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound		Actual Cor	ncentration		Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	<u> </u>
Acenaphthene	<1.35	10.0	<1.37	<4.25	118
Acenaphthylene	<1.35	<1.38	<1.37	<1.37	1.2
Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(a)Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(b)Fluoranthene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(k)Fluoranthene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(a)fluorene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(b)fluorene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(g,h,i)Perylene	10.8	2.81	<1.37	<5.01	102
Benzo(a)Pyrene	<1.35	<1.38	<1.37	<1.37	1.2
Benzo(e)Pyrene	<1.35	<1.38	<1.37	<1.37	1.2
Biphenyl	2.72	64.4	2.76	23.3	153
2-Chloronaphthalene	<1.35	<1.38	<1.37	<1.37	1.2
Chrysene/Triphenylene	<1.35	2.52	<1.37	<1.75	38.3
Coronene	7.87	<6.91	<6.87	<7.22	7.8
Dibenzo(a,c/a,h)Anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Dibenzo(a,e)pyrene	<6.76	<6.91	<6.87	<6.85	1.2
9,10-dimethylanthracene	<1.35	3.08	<1.37	<1.93	51.2
7,12-Dimethylbenzo(a)anthracene	<1.35	<1.38	<1.37	<1.37	1.2
Fluoranthene	2.94	12.8	1.59	5.77	106
Fluorene	1.35	5.61	<1.37	<2.78	88.3
Indeno(1,2,3-cd)Pyrene	1.46	<1.38	<1.37	<1.41	3.5
2-methylanthracene	2.48	13.5	2.42	6.12	104
3-Methylcholanthrene	<6.76	<6.91	<6 <i>.</i> 87	<6.85	1.2
1-Methylnaphthalene	2.51	4.90	2.50	3.30	41.8
2-Methylnaphthalene	4.87	9.87	3.40	6.05	56.1
1-Methylphenanthrene	5.81	5.02	2.92	4.58	32.6
9-Methylphenanthrene	<1.35	12.3	1.52	<5.07	124
Naphthalene	23.3	60.4	22.9	35.5	60.6
Perylene	<1.35	<1.38	<1.37	<1.37	1.2
Phenanthrene	8.66	59.5	6.82	25.0	120
Picene	<6.76	<6.91	<6.87	<6.85	1.2
Pyrene	3.63	9.59	1.47	4.89	86.0
Tetralin	21.2	40.9	56.8	39.6	45.1
m-terphenyl	<1.35	3.89	<1.37	<2.21	66.2
o-Terphenyl	<1.35	6.51	<1.37	<3.08	96.5
p-terphenyl	<1.35	1.90	<1.37	<1.54	20.2
Total	<147	<376	<163	<229	56.0

TABLE 75

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound		Dry Reference Concentration				
	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%%	
Acenaphthene	<2.34	17.2	<2.32	<7.27	118	
Acenaphthylene	<2.34	<2.36	<2.32	<2.34	0.8	
Anthracene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(a)Anthracene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(b)Fluoranthene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(k)Fluoranthene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(a)fluorene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(b)fluorene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(g,h,i)Perylene	18.8	4.81	<2.32	<8.63	103	
Benzo(a)Pyrene	<2.34	<2.36	<2.32	<2.34	0.8	
Benzo(e)Pyrene	<2.34	<2.36	<2.32	<2.34	0.8	
Biphenyl	4.71	110	4.67	39.8	153	
2-Chloronaphthalene	<2.34	<2.36	<2.32	<2.34	0.8	
Chrysene/Triphenylene	<2.34	4.31	<2.32	<2.99	38.3	
Coronene	13.6	<11.8	<11.6	<12.4	8.9	
Dibenzo(a,c/a,h)Anthracene	<2.34	<2.36	<2.32	<2.34	0.8	
Dibenzo(a,e)pyrene	<11.7	<11.8	<11.6	<11.7	0.8	
9,10-dimethylanthracene	<2.34	5.26	<2.32	<3.31	51.1	
7,12-Dimethylbenzo(a)anthracene	<2.34	<2.36	<2.32	<2.34	0.8	
Fluoranthene	5.08	21.9	2.69	9.88	106	
Fluorene	2.34	9.59	<2.32	<4.75	88.2	
Indeno(1,2,3-cd)Pyrene	2.53	<2.36	<2.32	<2.41	4.6	
2-methylanthracene	4.28	23.0	4.09	10.5	104	
3-Methylcholanthrene	<11.7	<11.8	<11.6	<11.7	0.8	
1-Methylnaphthalene	4.34	8.37	4.22	5.65	41.8	
2-Methylnaphthalene	8.43	16.9	5.75	10.4	56.1	
1-Methylphenanthrene	10.0	8.59	4.94	7.86	33.5	
9-Methylphenanthrene	<2.34	21.1	2.58	<8.66	124	
Naphthalene	40.3	103	38.7	60.8	60.5	
Perylene	<2.34	<2.36	<2.32	<2.34	0.8	
Phenanthrene	15.0	102	11.5	42.7	120	
Picene	<11.7	<11.8	<11.6	<11.7	0.8	
Pyrene	6.27	16.4	2.48	8.38	85.8	
Tetralin	36.6	69.9	96.1	67.5	44.1	
m-terphenyl	<2.34	6.66	<2.32	<3.77	66.2	
o-Terphenyl	<2.34	11.1	<2.32	<5.26	96.5	
p-terphenyl	<2.34	3.25	<2.32	<2.64	20.1	
Total	<254	<644	<275	<391	56.0	

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.84	13.7	<1.85	<5.81	118
Acenaphthylene	<1.84	<1.89	<1.85	<1.86	1.4
Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(a)Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(b)Fluoranthene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(k)Fluoranthene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(a)fluorene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(b)fluorene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(g,h,i)Perylene	14.8	3.84	<1.85	<6.82	102
Benzo(a)Pyrene	<1.84	<1.89	<1.85	<1.86	1.4
Benzo(e)Pyrene	<1.84	<1.89	<1.85	<1.86	1.4
Biphenyl	3.71	88.1	3.72	31.8	153
2-Chloronaphthalene	<1.84	<1.89	<1.85	<1.86	1.4
Chrysene/Triphenylene	<1.84	3.45	<1.85	<2.38	38.9
Coronene	10.7	<9.45	<9.26	<9.81	8.1
Dibenzo(a,c/a,h)Anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Dibenzo(a,e)pyrene	<9.20	<9.45	<9.26	<9.30	1.4
9,10-dimethylanthracene	<1.84	4.21	<1.85	<2.63	51.8
7,12-Dimethylbenzo(a)anthracene	<1.84	<1.89	<1.85	<1.86	1.4
Fluoranthene	4.00	17.5	2.15	7.88	106
Fluorene	1.84	7.67	<1.85	<3.79	88.8
Indeno(1,2,3-cd)Pyrene	1.99	<1.89	<1.85	<1.91	3.8
2-methylanthracene	3.37	18.4	3.26	8.36	104
3-Methylcholanthrene	<9.20	<9.45	<9.26	<9.30	1.4
1-Methylnaphthalene	3.42	6.70	3.36	4.49	42.5
2-Methylnaphthalene	6.64	13.5	4.58	8.24	56.7
1-Methylphenanthrene	7.91	6.87	3.94	6.24	33.0
9-Methylphenanthrene	<1.84	16.9	2.05	<6.92	124
Naphthalene	31.7	82.6	30.9	48.4	61.2
Perylene	<1.84	<1.89	<1.85	<1.86	1.4
Phenanthrene	11.8	81.3	9.18	34.1	120
Picene	<9.20	<9.45	<9.26	<9.30	1.4
Pyrene	4.94	13.1	1.98	6.67	86.4
Tetralin	28.8	55.9	76.6	53.8	44.5
m-terphenyl	<1.84	5.33	<1.85	<3.01	66.8
o-Terphenyl	<1.84	8.90	<1.85	<4.20	97.0
p-terphenyl	<1.84	2.60	<1.85	<2.10	20.8
Total	<200	<515	<219	<311	56.7

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound			Coefficient		
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.94	14.4	<1.95	4C 11	110
Acenaphthylene	<1.94	<1.99	<1.95 <1.95	<6.11 <1.96	118
Anthracene	<1.94 <1.94	<1.99 <1.99			1.3
Benzo(a)Anthracene	<1.94 <1.94		<1.95	<1.96	1.3
Benzo(b)Fluoranthene	<1.94 <1.94	<1.99	<1.95 <1.95	<1.96	1.3
Benzo(k)Fluoranthene	<1.94 <1.94	<1.99		<1.96	1.3
Benzo(a)fluorene		<1.99	<1.95	<1.96	1.3
	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(b)fluorene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(g,h,i)Perylene	15.6	4.04	<1.95	<7.19	102
Benzo(a)Pyrene	<1.94	<1.99	<1.95	<1.96	1.3
Benzo(e)Pyrene	<1.94	<1.99	<1.95	<1.96	1.3
Biphenyl	3.92	92.6	3.91	33.5	153
2-Chloronaphthalene	<1.94	<1.99	<1.95	<1.96	1.3
Chrysene/Triphenylene	<1.94	3.63	<1.95	<2.51	38.8
Coronene	11.3	<9.94	<9.73	<10.3	8.4
Dibenzo(a,c/a,h)Anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Dibenzo(a,e)pyrene	<9.72	<9.94	<9.73	<9.79	1.3
9,10-dimethylanthracene	<1.94	4.42	<1.95	<2.77	51.6
7,12-Dimethylbenzo(a)anthracene	<1.94	<1.99	<1.95	<1.96	1.3
Fluoranthene	4.23	18.4	2.25	8.29	106
Fluorene	1.94	8.07	<1.95	<3.99	88.7
Indeno(1,2,3-cd)Pyrene	2.10	<1.99	<1.95	<2.01	4.1
2-methylanthracene	3.56	19.4	3.42	8.79	104
3-Methylcholanthrene	<9.72	<9.94	<9.73	<9.79	1.3
1-Methylnaphthalene	3.61	7.04	3.54	4.73	42.3
2-Methylnaphthalene	7.01	14.2	4.82	8.67	56.6
1-Methylphenanthrene	8.36	7.22	4.14	6.57	33.2
9-Methylphenanthrene	<1.94	17.7	2.16	<7.27	124
Naphthalene	33.5	86.8	32.4	50.9	61.0
Perylene	<1.94	<1.99	<1.95	<1.96	1.3
Phenanthrene	12.5	85.5	9.65	35.9	120
Picene	<9.72	<9.94	<9.73	<9.79	1.3
Pyrene	5.21	13.8	2.08	7.02	86.3
Tetralin	30.4	58.8	80.4	56.6	44.3
m-terphenyl	<1.94	5.60	<1.95	<3.16	66.7
o-Terphenyl	<1.94	9.36	<1.95	<4.42	96.9
p-terphenyl	<1.94	2.73	<1.95	<2.21	20.6
Total	<211	<541	<231	<328	56.5

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate Coeff					
·	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	μg/s	μg/s	μg/s	μg/s	%	
A						
Acenaphthene	<0.035	0.25	<0.035	<0.11	118	
Acenaphthylene	<0.035	<0.035	<0.035	<0.035	0.6	
Anthracene	<0.035	<0.035	<0.035	<0.035	0.6	
Benzo(a)Anthracene	<0.035	<0.035	<0.035	<0.035	0.6	
Benzo(b)Fluoranthene	<0.035	<0.035	<0.035	<0.035	0.6	
Benzo(k)Fluoranthene	<0.035	<0.035	<0.035	<0.035	0.6	
Benzo(a)fluorene	<0.035	<0.035	<0.035	<0.035	0.6	
Benzo(b)fluorene	< 0.035	<0.035	<0.035	<0.035	0.6	
Benzo(g,h,i)Perylene	0.28	0.071	<0.035	<0.13	103	
Benzo(a)Pyrene	< 0.035	<0.035	<0.035	<0.035	0.6	
Benzo(e)Pyrene	< 0.035	< 0.035	<0.035	< 0.035	0.6	
Biphenyl	0.070	1.63	0.070	0.59	153	
2-Chloronaphthalene	< 0.035	< 0.035	< 0.035	< 0.035	0.6	
Chrysene/Triphenylene	< 0.035	0.064	<0.035	< 0.044	38.0	
Coronene	0.20	< 0.17	<0.17	<0.18	8.7	
Dibenzo(a,c/a,h)Anthracene	< 0.035	<0.035	< 0.035	< 0.035	0.6	
Dibenzo(a,e)pyrene	< 0.17	<0.17	<0.17	< 0.17	0.6	
9,10-dimethylanthracene	<0.035	0.078	< 0.035	< 0.049	50.9	
7,12-Dimethylbenzo(a)anthracene	< 0.035	<0.035	< 0.035	<0.035	0.6	
Fluoranthene	0.075	0.32	0.040	0.15	106	
Fluorene	0.035	0.14	<0.035	<0.070	88.0	
Indeno(1,2,3-cd)Pyrene	0.037	<0.035	<0.035	<0.036	4.3	
2-methylanthracene	0.063	0.34	0.061	0.16	104	
3-Methylcholanthrene	<0.17	<0.17	<0.17	<0.17	0.6	
1-Methylnaphthalene	0.064	0.12	0.063	0.084	41.6	
2-Methylnaphthalene	0.12	0.25	0.086	0.15	55.9	
1-Methylphenanthrene	0.15	0.13	0.074	0.12	33.2	
9-Methylphenanthrene	<0.035	0.31	0.038	<0.13	124	
Naphthalene	0.60	1.53	0.58	0.90	60.3	
Perylene	<0.035	<0.035	<0.035	<0.035	0.6	
Phenanthrene	0.22	1.50	0.17	0.63	119	
Picene	<0.17	<0.17	<0.17	<0.17	0.6	
Pyrene	0.093	0.24	0.037	0.12	85.7	
Tetralin	0.54	1.03	1.43	1.00	85.7 44.5	
[m-terphenyl	<0.035	0.099	< 0.035	< 0.056	44.5 66.0	
o-Terphenyl	<0.035	0.16	<0.035	<0.056		
p-terphenyl	<0.035 <0.035				96.3	
i .	<b>\U.U3</b> 3	0.048	<0.035	<0.039	19.9	
Total	<3.76	<9.53	<4.10	<5.80	55.8	

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Concentration	Concentration	Concentration	Concentration	Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	<4.25	<7.27	<5.81	<6.11	<0.11
Acenaphthylene	<1.37	<2.34	<1.86	<1.96	<0.035
Anthracene	<1.37	<2.34	<1.86	<1.96	< 0.035
Benzo(a)Anthracene	<1.37	<2.34	<1.86	<1.96	< 0.035
Benzo(b)Fluoranthene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(k)Fluoranthene	<1.37	<2.34	<1.86	<1.96	< 0.035
Benzo(a)fluorene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(b)fluorene	<1.37	<2.34	<1.86	<1.96	<0.035
Benzo(g,h,i)Perylene	<5.01	<8.63	<6.82	<7.19	<0.13
Benzo(a)Pyrene	<1.37	<2.34	<1.86	<1.96	< 0.035
Benzo(e)Pyrene	<1.37	<2.34	<1.86	<1.96	<0.035
Biphenyl	23.3	39.8	31.8	33.5	0.59
2-Chloronaphthalene	<1.37	<2.34	<1.86	<1.96	< 0.035
Chrysene/Triphenylene	<1.75	<2.99	<2.38	<2.51	< 0.044
Coronene	<7.22	<12.4	<9.81	<10.3	<0.18
Dibenzo(a,c/a,h)Anthracene	<1.37	<2.34	<1.86	<1.96	<0.035
Dibenzo(a,e)pyrene	<6.85	<11.7	<9.30	<9.79	< 0.17
9,10-dimethylanthracene	<1.93	<3.31	<2.63	<2.77	<0.049
7,12-Dimethylbenzo(a)anthracene	<1.37	<2.34	<1.86	<1.96	<0.045
Fluoranthene	5.77	9.88	7.88	8.29	0.15
Fluorene	<2.78	<4.75	<3.79	<3.99	<0.070
Indeno(1,2,3-cd)Pyrene	<1.41	<2.41	<1.91	<2.01	<0.036
2-methylanthracene	6.12	10.5	8.36	8.79	0.16
3-Methylcholanthrene	<6.85	<11.7	<9.30	<9.79	<0.17
1-Methylnaphthalene	3.30	5.65	4.49	4.73	0.084
2-Methylnaphthalene	6.05	10.4	8.24	8.67	0.054
1-Methylphenanthrene	4.58	7.86	6.24	6.57	0.12
9-Methylphenanthrene	<5.07	<8.66	<6.92	<7.27	<0.13
Naphthalene	35.5	60.8	48.4	50.9	0.90
Perylene	<1.37	<2.34	<1.86	<1.96	<0.035
Phenanthrene	25.0	42.7	34.1	35.9	0.63
Picene	<6.85	<11.7	<9.30	<9.79	< 0.17
Pyrene	4.89	8.38	6.67	7.02	0.12
Tetralin	39.6	67.5	53.8	56.6	1.00
m-terphenyl	<2.21	<3.77	<3.01	<3.16	<0.056
o-Terphenyl	<3.08	<5.26	<4.20	<4.42	<0.078
p-terphenyl	<1.54	<2.64	<2.10	<2.21	<0.039
Total	<229	<391	<311	<328	<5.80

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank	Laboratory
• •	Train	Blank
	ng	ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a) Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	164	190
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
, Tetralin	181	276
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<957	<1078

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

## TABLE 81 Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Acetaldehyde, Formaldehyde and Acrolein Emission Data

## Acetaldehyde

	Total	Dry Volume		Acetaldehyde			
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	μg	Rm³*	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
1	2.02	0.0428	27.4	47.2	37.2	39.4	0.70
2	1.63	0.0451	21.1	36.1	28.8	30.3	0.53
3	1.78	0.0379	27.4	47.0	37.4	39.3	0.69
Average			25.3	43.4	34.5	36.3	0.64
Blank	1.09						

## Formaldehyde

	Total	Dry Volume		Formaldehyde	Concentration		Formaldehyde	
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>	
No. μg		Rm³*	µg/m³ µg/Rm³* µg/Rm³		μg/Rm³**	μg/Rm³*	mg/s	
1	2.22	0.0428	30.1	51.9	40.9	43.3	0.77	
2	1.69	0.0451	21.9	37.5	29.9	31.4	0.55	
3	1.85	0.0379	28.5	48.8	38.9	40.9	0.72	
Average			26.8	46.1	36.6	38.5	0.68	
Blank	1.27							

## Acrolein

	Total	Dry Volume		Acrolein Co	ncentration		Acrolein
Test	Collected	Sampled	Actual	Dry Reference	<b>Dry Adjusted</b>	Wet Reference	<b>Emission Rate</b>
No.	μg	Rm <sup>3</sup> *	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
1	<0.1	0.0428	<1.36	<2.34	<1.84	<1.95	<0.035
2	<0.1	0.0451	<1.30	<2.22	<1.77	<1.86	<0.033
3	<0.1	0.0379	<1.54	<2.64	<2.10	<2.21	<0.039
Average			<1.40	<2.40	<1.90	<2.01	<0.035
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

- \* At 25 °C and 1 atmosphere
- \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Acetone	1.25	30.3	52.4	41.3	43.6	0.78
Benzene	0.30	7.28	12.6	9.92	10.5	0.19
Bromodichloromethane	0.050	1.21	2.10	1.65	1.75	0.031
Bromoform	< 0.01	<0.24	< 0.42	<0.33	<0.35	<0.0062
Bromomethane	< 0.09	<2.18	<3.78	<2.98	<3.14	< 0.056
1,3-Butadiene	< 0.02	< 0.49	< 0.84	<0.66	<0.70	<0.012
2-Butanone	1.17	28.3	49.0	38.5	40.7	0.72
Carbon Tetrachloride	0.16	3.93	6.80	5.36	5.66	0.10
Chloroform	0.066	1.60	2.77	2.18	2.30	0.041
Cumene (Isopropylbenzene)	0.061	1.48	2.56	2.02	2.13	0.038
Dibromochloromethane	< 0.01	<0.24	< 0.42	<0.33	<0.35	<0.0062
Dichlorodifluoromethane	0.025	0.61	1.05	0.83	0.87	0.016
1,2-Dichloroethane	0.049	1.19	2.06	1.62	1.71	0.030
trans,1,2-Dichloroethene	0.027	0.66	1.13	0.89	0.94	0.017
1,1-Dichloroethene	< 0.01	<0.24	< 0.42	<0.33	<0.35	<0.0062
1,2-Dichloropropane	< 0.01	<0.24	< 0.42	<0.33	<0.35	< 0.0062
Ethylbenzene	0.42	10.2	17.7	13.9	14.7	0.26
Ethylene Dibromide	< 0.02	< 0.49	<0.84	<0.66	<0.70	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	0.44	10.6	18.3	14.4	15.2	0.27
Methylene Chloride	1.12	27.3	47.2	37.2	39.2	0.70
Styrene	0.23	5.56	9.62	7.57	8.00	0.14
Tetrachloroethene	<0.01	<0.24	< 0.42	<0.33	<0.35	<0.0062
Toluene	1.63	39.6	68.4	53.9	56.9	1.01
1,1,1-Trichloroethane	< 0.01	<0.24	<0.42	<0.33	<0.35	< 0.0062
Trichloroethene/1,1,2-Trichloroethene	< 0.01	<0.24	< 0.42	<0.33	<0.35	< 0.0062
Trichlorotrifluoroethane	< 0.02	< 0.49	< 0.84	<0.66	<0.70	<0.012
Trichlorofluoromethane	0.068	1.65	2.86	2.25	2.37	0.042
M&P-Xylene	1.39	33.8	58.5	46.1	48.7	0.87
O-Xylene	0.62	15.1	26.1	20.5	21.7	0.39
Vinyl Chloride	<0.02	<0.49	<0.84	<0.66	<0.70	<0.012
Total	<9.32	<226	<391	<308	<325	<5.79

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	0.0238
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.8
Wet Reference Flowrate (Rm³/s*):	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected	Actual	Dry Reference Concentration		Wet Reference	Emission Rate
		μg/m³	μg/Rm <sup>3</sup> *	μg/Rm <sup>3</sup> **	μg/Rm³*	
	μg	μg/m	μg/km *	μg/κm **	μg/κm *	mg/s
Acetone	1.20	26.2	45.4	35.7	37.7	0.67
Benzene	0.29	6.28	10.9	8.55	9.03	0.16
Bromodichloromethane	0.048	1.05	1.82	1.43	1.51	0.027
Bromoform	< 0.01	<0.22	<0.38	< 0.30	<0.31	<0.0056
Bromomethane	< 0.09	<1.97	<3.41	<2.68	<2.83	< 0.050
1,3-Butadiene	< 0.02	< 0.44	<0.76	< 0.60	< 0.63	< 0.011
2-Butanone	1.12	24.5	42.4	33.3	35.2	0.63
Carbon Tetrachloride	0.16	3.39	5.87	4.62	4.88	0.087
Chloroform	0.063	1.38	2.39	1.88	1.98	0.035
Cumene (Isopropylbenzene)	0.059	1.29	2.23	1.76	1.86	0.033
Dibromochloromethane	< 0.01	<0.22	<0.38	<0.30	< 0.31	<0.0056
Dichlorodifluoromethane	0.024	0.53	0.91	0.72	0.76	0.013
1,2-Dichloroethane	0.047	1.03	1.78	1.40	1.48	0.026
trans,1,2-Dichloroethene	0.026	0.57	0.98	0.77	0.82	0.015
1,1-Dichloroethene	< 0.01	<0.22	<0.38	< 0.30	< 0.31	<0.0056
1,2-Dichloropropane	< 0.01	<0.22	<0.38	< 0.30	<0.31	<0.0056
Ethylbenzene	0.40	8.84	15.3	12.0	12.7	0.23
Ethylene Dibromide	< 0.02	< 0.44	<0.76	< 0.60	< 0.63	< 0.011
Mesitylene (1,3,5-Trimethylbenzene)	0.42	9.15	15.8	12.5	13.2	0.23
Methylene Chloride	1.08	23.6	40.8	32.1	33.9	0.60
Styrene	0.22	4.82	8.33	6.56	6.92	0.12
Tetrachloroethene	< 0.01	<0.22	<0.38	< 0.30	<0.31	< 0.0056
Toluene	1.56	34.2	59.2	46.6	49.2	0.88
1,1,1-Trichloroethane	< 0.01	<0.22	<0.38	<0.30	<0.31	<0.0056
Trichloroethene/1,1,2-Trichloroethene	< 0.01	<0.22	<0.38	< 0.30	< 0.31	<0.0056
Trichlorotrifluoroethane	< 0.02	< 0.44	<0.76	<0.60	< 0.63	< 0.011
Trichlorofluoromethane	0.065	1.42	2.46	1.94	2.05	0.036
M&P-Xylene	1.34	29.3	50.6	39.8	42.1	0.75
O-Xylene	0.60	13.0	22.6	17.8	18.8	0.33
Vinyl Chloride	<0.02	<0.44	<0.76	<0.60	<0.63	<0.011
Total	<8.95	<196	<339	<267	<282	<5.01

Dry Gas Volume Sampled (Rm³*) :	0.0264
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total	Actual Concentration	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Conected		Concentration	Concentration		Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
_						
Acetone	1.34	30.1	52.1	41.0	43.3	0.77
Benzene	0.32	7.22	12.5	9.82	10.4	0.18
Bromodichloromethane	0.054	1.21	2.09	1.65	1.74	0.031
Bromoform	< 0.01	<0.22	< 0.39	< 0.31	<0.32	<0.0057
Bromomethane	< 0.09	<2.02	<3.49	<2.75	<2.90	<0.052
1,3-Butadiene	< 0.02	<0.45	<0.78	< 0.61	< 0.64	< 0.011
2-Butanone	1.26	28.1	48.6	38.3	40.4	0.72
Carbon Tetrachloride	0.17	3.90	6.74	5.31	5.61	0.10
Chloroform	0.071	1.59	2.75	2.17	2.29	0.041
Cumene (Isopropylbenzene)	0.066	1.48	2.56	2.01	2.13	0.038
Dibromochloromethane	<0.01	<0.22	< 0.39	< 0.31	<0.32	< 0.0057
Dichlorodifluoromethane	< 0.02	< 0.45	<0.78	< 0.61	< 0.64	< 0.011
1,2-Dichloroethane	0.053	1.19	2.05	1.62	1.71	0.030
trans,1,2-Dichloroethene	0.029	0.65	1.12	0.88	0.93	0.017
1,1-Dichloroethene	< 0.01	<0.22	< 0.39	< 0.31	<0.32	<0.0057
1,2-Dichloropropane	< 0.01	<0.22	< 0.39	<0.31	<0.32	<0.0057
Ethylbenzene	0.45	10.2	17.6	13.8	14.6	0.26
Ethylene Dibromide	<0.02	< 0.45	<0.78	< 0.61	< 0.64	< 0.011
Mesitylene (1,3,5-Trimethylbenzene)	0.47	10.5	18.2	14.3	15.1	0.27
Methylene Chloride	1.21	27.1	46.9	36.9	39.0	0.69
Styrene	0.25	5.53	9.57	7.54	7.96	0.14
Tetrachloroethene	< 0.01	<0.22	< 0.39	< 0.31	<0.32	<0.0057
Toluene	1.75	39.3	68.0	53.5	56.5	1.01
1,1,1-Trichloroethane	< 0.01	<0.22	<0.39	<0.31	<0.32	<0.0057
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.22	<0.39	<0.31	<0.32	< 0.0057
Trichlorotrifluoroethane	< 0.02	< 0.45	<0.78	<0.61	<0.64	<0.011
Trichlorofluoromethane	0.073	1.64	2.83	2.23	2.35	0.042
M&P-Xylene	1.50	33.6	58.1	45.8	48.3	0.86
O-Xylene	0.67	15.0	25.9	20.4	21.5	0.38
Vinyl Chloride	<0.02	<0.45	<0.78	<0.61	<0.64	<0.011
Total	<10.00	<224	<388	<305	<322	<5.74

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	0.0258
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*):	14.8
Dry Adjusted Flowrate (Rm³/s**):	18.8
Wet Reference Flowrate (Rm³/s*) :	17.8

<sup>\*</sup> At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/m³	μg/m³	μg/m³	μg/m³	%
Acetone	30.3	26.2	30.1	28.9	8.0
Benzene	7.28	6.28	7.22	6.93	8.1
Bromodichloromethane	1.21	1.05	1.21	1.16	8.0
Bromoform	< 0.24	<0.22	< 0.22	<0.23	5.5
Bromomethane	<2.18	<1.97	<2.02	<2.06	5.5
1,3-Butadiene	< 0.49	< 0.44	<0.45	< 0.46	5.5
2-Butanone	28.3	24.5	28.1	27.0	8.0
Carbon Tetrachloride	3.93	3.39	3.90	3.74	8.1
Chloroform	1.60	1.38	1.59	1.52	8.3
Cumene (Isopropylbenzene)	1.48	1.29	1.48	1.42	7.7
Dibromochloromethane	<0.24	<0.22	<0.22	<0.23	5.5
Dichlorodifluoromethane	0.61	0.53	<0.45	<0.53	15.1
1,2-Dichloroethane	1.19	1.03	1.19	1.14	8.1
trans,1,2-Dichloroethene	0.66	0.57	0.65	0.62	7.7
1,1-Dichloroethene	<0.24	<0.22	<0.22	<0.23	5.5
1,2-Dichloropropane	<0.24	<0.22	<0.22	<0.23	5.5
Ethylbenzene	10.2	8.84	10.2	9.74	8.0
Ethylene Dibromide	< 0.49	< 0.44	<0.45	<0.46	5.5
Mesitylene (1,3,5-Trimethylbenzene)	10.6	9.15	10.5	10.1	8.0
Methylene Chloride	27.3	23.6	27.1	26.0	8.0
Styrene	5.56	4.82	5.53	5.30	8.0
Tetrachloroethene	<0.24	<0.22	<0.22	<0.23	5.5
Toluene	39.6	34.2	39.3	37.7	8.0
1,1,1-Trichloroethane	< 0.24	<0.22	<0.22	<0.23	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.24	<0.22	<0.22	<0.23	5.5
Trichlorotrifluoroethane	< 0.49	< 0.44	<0.45	<0.46	5.5
Trichlorofluoromethane	1.65	1.42	1.64	1.57	8.1
M&P-Xylene	33.8	29.3	33.6	32.2	8.0
O-Xylene	15.1	13.0	15.0	14.4	8.0
Vinyl Chloride	<0.49	<0.44	<0.45	<0.46	5.5
Total	<226	<196	<224	<215	7.9

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Acetone	52.4	45.4	52.1	49.9	8.0
Benzene	12.6	10.9	12.5	12.0	8.1
Bromodichloromethane	2.10	1.82	2.09	2.00	8.0
Bromoform	< 0.42	<0.38	< 0.39	< 0.40	5.5
Bromomethane	<3.78	<3.41	<3.49	<3.56	5.5
1,3-Butadiene	< 0.84	<0.76	<0.78	<0.79	5.5
2-Butanone	49.0	42.4	48.6	46.7	8.0
Carbon Tetrachloride	6.80	5.87	6.74	6.47	8.1
Chloroform	2.77	2.39	2.75	2.64	8.3
Cumene (Isopropylbenzene)	2.56	2.23	2.56	2.45	7.7
Dibromochloromethane	< 0.42	<0.38	< 0.39	<0.40	5.5
Dichlorodifluoromethane	1.05	0.91	<0.78	< 0.91	15.1
1,2-Dichloroethane	2.06	1.78	2.05	1.96	8.1
trans, 1, 2-Dichloroethene	1.13	0.98	1.12	1.08	7.7
1,1-Dichloroethene	< 0.42	<0.38	<0.39	< 0.40	5.5
1,2-Dichloropropane	< 0.42	<0.38	< 0.39	< 0.40	5.5
Ethylbenzene	17.7	15.3	17.6	16.8	8.0
Ethylene Dibromide	< 0.84	<0.76	<0.78	<0.79	5.5
Mesitylene (1,3,5-Trimethylbenzene)	18.3	15.8	18.2	17.4	8.0
Methylene Chloride	47.2	40.8	46.9	45.0	8.0
Styrene	9.62	8.33	9.57	9.17	8.0
Tetrachloroethene	< 0.42	<0.38	<0.39	< 0.40	5.5
Toluene	68.4	59.2	68.0	65.2	8.0
1,1,1-Trichloroethane	< 0.42	<0.38	<0.39	<0.40	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.42	<0.38	<0.39	<0.40	5.5
Trichlorotrifluoroethane	<0.84	<0.76	<0.78	<0.79	5.5
Trichlorofluoromethane	2.86	2.46	2.83	2.72	8.1
M&P-Xylene	58.5	50.6	58.1	55.8	8.0
O-Xylene	26.1	22.6	25.9	24.8	8.0
Vinyl Chloride	<0.84	<0.76	<0.78	<0.79	5.5
Total	<391	<339	<388	<373	7.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 87

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 1 μg/Rm³*	Test No. 2 μg/Rm³*	Test No. 3 µg/Rm³*	Average μg/Rm³*	of Variation %
Benzene	9.92	8.55	9.82	9.43	8.1
Bromodichloromethane	1.65	1.43	1.65	1.58	8.0
Bromoform	<0.33	<0.30	<0.31	<0.31	5.5
Bromomethane	<2.98	<2.68	<2.75	<2.80	5.5
1,3-Butadiene	<0.66	<0.60	<0.61	<0.62	5.5
2-Butanone	38.5	33.3	38.3	36.7	8.0
Carbon Tetrachloride	5.36	4.62	5.31	5.09	8.1
Chloroform	2.18	1.88	2.17	2.08	8.3
Cumene (Isopropylbenzene)	2.02	1.76	2.01	1.93	7.7
Dibromochloromethane	< 0.33	<0.30	< 0.31	<0.31	5.5
Dichlorodifluoromethane	0.83	0.72	<0.61	<0.72	15.1
1,2-Dichloroethane	1.62	1.40	1.62	1.55	8.1
trans,1,2-Dichloroethene	0.89	0.77	0.88	0.85	7.7
1,1-Dichloroethene	< 0.33	<0.30	<0.31	<0.31	5.5
1,2-Dichloropropane	< 0.33	<0.30	<0.31	<0.31	5.5
Ethylbenzene	13.9	12.0	13.8	13.3	8.0
Ethylene Dibromide	< 0.66	<0.60	<0.61	<0.62	5.5
Mesitylene (1,3,5-Trimethylbenzene)	14.4	12.5	14.3	13.7	8.0
Methylene Chloride	37.2	32.1	36.9	35.4	8.0
Styrene	7.57	6.56	7.54	7.22	8.0
Tetrachloroethene	<0.33	<0.30	< 0.31	< 0.31	5.5
Toluene	53.9	46.6	53.5	51.3	8.0
1,1,1-Trichloroethane	< 0.33	<0.30	<0.31	<0.31	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.33	<0.30	<0.31	<0.31	5.5
Trichlorotrifluoroethane	< 0.66	<0.60	<0.61	<0.62	5.5
Trichlorofluoromethane	2.25	1.94	2.23	2.14	8.1
M&P-Xylene	46.1	39.8	45.8	43.9	8.0
O-Xylene	20.5	17.8	20.4	19.6	8.0
Vinyl Chloride	<0.66	<0.60	<0.61	<0.62	5.5
Total	<308	<267	<305	<293	7.9

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Volatile Organic Wet Reference Concentrations

Compound		Wet Referen	ce Concentration		Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Acetone	43.6	37.7	43.3	41.5	8.0
Benzene	10.5	9.03	10.4	9.96	8.1
Bromodichloromethane	1.75	1.51	1.74	1.67	8.0
Bromoform	<0.35	<0.31	<0.32	<0.33	5.5
Bromomethane	<3.14	<2.83	<2.90	<2.96	5.5
1,3-Butadiene	< 0.70	< 0.63	< 0.64	<0.66	5.5
2-Butanone	40.7	35.2	40.4	38.8	8.0
Carbon Tetrachloride	5.66	4.88	5.61	5.38	8.1
Chloroform	2.30	1.98	2.29	2.19	8.3
Cumene (Isopropylbenzene)	2.13	1.86	2.13	2.04	7.7
Dibromochloromethane	< 0.35	<0.31	<0.32	<0.33	5.5
Dichlorodifluoromethane	0.87	0.76	< 0.64	<0.76	15.1
1,2-Dichloroethane	1.71	1.48	1.71	1.63	8.1
trans,1,2-Dichloroethene	0.94	0.82	0.93	0.90	7.7
1,1-Dichloroethene	< 0.35	< 0.31	<0.32	<0.33	5.5
1,2-Dichloropropane	<0.35	<0.31	<0.32	<0.33	5.5
Ethylbenzene	14.7	12.7	14.6	14.0	8.0
Ethylene Dibromide	< 0.70	< 0.63	< 0.64	<0.66	5.5
Mesitylene (1,3,5-Trimethylbenzene)	15.2	13.2	15.1	14.5	8.0
Methylene Chloride	39.2	33.9	39.0	37.4	8.0
Styrene	8.00	6.92	7.96	7.63	8.0
Tetrachloroethene	<0.35	<0.31	<0.32	<0.33	5.5
Toluene	56.9	49.2	56.5	54.2	8.0
1,1,1-Trichloroethane	<0.35	<0.31	<0.32	<0.33	5.5
Trichloroethene/1,1,2-Trichloroethene	<0.35	<0.31	<0.32	<0.33	5.5
Trichlorotrifluoroethane	<0.70	< 0.63	<0.64	<0.66	5.5
Trichlorofluoromethane	2.37	2.05	2.35	2.26	8.1
M&P-Xylene	48.7	42.1	48.3	46.4	8.0
O-Xylene	21.7	18.8	21.5	20.7	8.0
Vinyl Chloride	<0.70	<0.63	<0.64	<0.66	5.5
Total	<325	<282	<322	<310	7.9

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound		Emis	sion Rate		Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	mg/s	mg/s	mg/s	mg/s	%
Acetone	0.78	0.67	0.77	0.74	8.0
Benzene	0.19	0.16	0.18	0.18	8.1
Bromodichloromethane	0.031	0.027	0.031	0.030	8.0
Bromoform	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Bromomethane	<0.056	< 0.050	<0.052	< 0.053	5.5
1,3-Butadiene	< 0.012	< 0.011	<0.011	< 0.012	5.5
2-Butanone	0.72	0.63	0.72	0.69	8.0
Carbon Tetrachloride	0.10	0.087	0.10	0.096	8.1
Chloroform	0.041	0.035	0.041	0.039	8.3
Cumene (Isopropylbenzene)	0.038	0.033	0.038	0.036	7.7
Dibromochloromethane	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Dichlorodifluoromethane	0.016	0.013	<0.011	< 0.013	15.1
1,2-Dichloroethane	0.030	0.026	0.030	0.029	8.1
trans,1,2-Dichloroethene	0.017	0.015	0.017	0.016	7.7
1,1-Dichloroethene	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
1,2-Dichloropropane	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Ethylbenzene	0.26	0.23	0.26	0.25	8.0
Ethylene Dibromide	< 0.012	< 0.011	<0.011	< 0.012	5.5
Mesitylene (1,3,5-Trimethylbenzene)	0.27	0.23	0.27	0.26	8.0
Methylene Chloride	0.70	0.60	0.69	0.67	8.0
Styrene	0.14	0.12	0.14	0.14	8.0
Tetrachloroethene	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Toluene	1.01	0.88	1.01	0.97	8.0
1,1,1-Trichloroethane	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Trichloroethene/1,1,2-Trichloroethene	< 0.0062	<0.0056	<0.0057	< 0.0059	5.5
Trichlorotrifluoroethane	< 0.012	< 0.011	<0.011	< 0.012	5.5
Trichlorofluoromethane	0.042	0.036	0.042	0.040	8.1
M&P-Xylene	0.87	0.75	0.86	0.83	8.0
O-Xylene	0.39	0.33	0.38	0.37	8.0
Vinyl Chloride	<0.012	<0.011	<0.011	<0.012	5.5
Total	<5.79	<5.01	<5.74	<5.51	7.9

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Concentration	Concentration	Concentration	Concentration	Rate
	μg/m³	μg/Rm³*	μg/Rm³*	μg/Rm³*	mg/s
Acetone	28.9	49.9	39.3	41.5	0.74
Benzene	6.93	12.0	9.43	9.96	0.18
Bromodichloromethane	1.16	2.00	1.58	1.67	0.030
Bromoform	< 0.23	< 0.40	< 0.31	< 0.33	<0.0059
Bromomethane	<2.06	<3.56	<2.80	<2.96	< 0.053
1,3-Butadiene	< 0.46	<0.79	< 0.62	<0.66	<0.012
2-Butanone	27.0	46.7	36.7	38.8	0.69
Carbon Tetrachloride	3.74	6.47	5.09	5.38	0.096
Chloroform	1.52	2.64	2.08	2.19	0.039
Cumene (Isopropylbenzene)	1.42	2.45	1.93	2.04	0.036
Dibromochloromethane	< 0.23	< 0.40	<0.31	<0.33	<0.0059
Dichlorodifluoromethane	<0.53	<0.91	<0.72	<0.76	< 0.013
1,2-Dichloroethane	1.14	1.96	1.55	1.63	0.029
trans,1,2-Dichloroethene	0.62	1.08	0.85	0.90	0.016
1,1-Dichloroethene	<0.23	< 0.40	<0.31	< 0.33	<0.0059
1,2-Dichloropropane	<0.23	< 0.40	< 0.31	< 0.33	<0.0059
Ethylbenzene	9.74	16.8	13.3	14.0	0.25
Ethylene Dibromide	< 0.46	<0.79	< 0.62	< 0.66	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	10.1	17.4	13.7	14.5	0.26
Methylene Chloride	26.0	45.0	35.4	37.4	0.67
Styrene	5.30	9.17	7.22	7.63	0.14
Tetrachloroethene	<0.23	<0.40	<0.31	<0.33	<0.0059
Toluene	37.7	65.2	51.3	54.2	0.97
1,1,1-Trichloroethane	<0.23	< 0.40	<0.31	<0.33	< 0.0059
Trichloroethene/1,1,2-Trichloroethene	<0.23	< 0.40	<0.31	<0.33	<0.0059
Trichlorotrifluoroethane	< 0.46	<0.79	<0.62	<0.66	< 0.012
Trichlorofluoromethane	1.57	2.72	2.14	2.26	0.040
M&P-Xylene	32.2	55.8	43.9	46.4	0.83
O-Xylene	14.4	24.8	19.6	20.7	0.37
Vinyl Chloride	<0.46	<0.79	<0.62	<0.66	<0.012
Total	<215	<373	<293	<310	<5.51

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Field Blank 2 Tube 11A/11B	Trip Blank Tube 12A/12B	Method Blank
	μg	μg	μg	μg
Acetone	0.15	0.11	0.13	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	< 0.01	<0.01	<0.01	<0.01
Bromoform	< 0.01	< 0.01	<0.01	< 0.01
Bromomethane	< 0.09	< 0.09	<0.09	<0.09
1,3-Butadiene	< 0.02	< 0.02	<0.02	<0.02
2-Butanone	< 0.01	<0.01	<0.01	< 0.01
Carbon Tetrachloride	< 0.01	<0.01	<0.01	<0.01
Chloroform	< 0.01	<0.01	<0.01	< 0.01
Cumene (Isopropylbenzene)	< 0.02	<0.02	<0.02	<0.02
Dibromochloromethane	< 0.01	< 0.01	<0.01	< 0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	< 0.01	< 0.01	<0.01	<0.01
trans,1,2-Dichloroethene	< 0.01	< 0.01	<0.01	<0.01
1,1-Dichloroethene	< 0.01	< 0.01	<0.01	<0.01
1,2-Dichloropropane	< 0.01	< 0.01	<0.01	<0.01
Ethylbenzene	< 0.01	< 0.01	< 0.01	<0.01
Ethylene Dibromide	< 0.02	< 0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	< 0.02	<0.02	<0.02	<0.02
Methylene Chloride	0.11	<0.1	<0.1	<0.1
Styrene -	< 0.02	< 0.02	<0.02	<0.02
Tetrachloroethene	< 0.01	< 0.01	<0.01	< 0.01
Toluene	< 0.05	< 0.05	<0.05	<0.05
1,1,1-Trichloroethane	< 0.01	< 0.01	<0.01	< 0.01
Trichloroethene/1,1,2-Trichloroethene	< 0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	< 0.02	< 0.02	<0.02	<0.02
Trichlorofluoromethane	< 0.02	<0.02	<0.02	<0.02
M&P-Xylene	< 0.03	< 0.03	<0.03	<0.03
O-Xylene	< 0.01	< 0.01	< 0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.82	<0.77	<0.79	<0.76

Note: "<" indicates that the analyte was not detected. Any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.



#### **APPENDIX 2**

Boiler No. 2 BH Outlet Data Tables (92 pages)

# TABLE 1 Covanta - Durham York Energy Centre Boiler No. 2 Isokinetic Sampling Train Test Schedules

#### **Particulate and Metals Trains**

Test	Test Date	Samplin	Sampling Time*	
Number	Start Finish		min	
1	November 9, 2020	17:02	20:08	180
2	November 10, 2020	7:59	11:05	180
3	November 10, 2020	11:36	14:43	180

#### **Particle Size Distribution Trains**

Test	Test Date		g Period	Sampling Time*	
Number		Start	Finish	min	
1	November 9, 2020	9:39	11:45	120	
2	November 9, 2020	12:54	14:55	120	
3	November 9, 2020	15:43	17:46	120	

### **Acid Gases Trains**

Test Date	Samplin	Sampling Time*	
	Start	Finish	min
November 10, 2020	8:00	9:00	60
November 10, 2020	9:40	10:40	60
November 10, 2020	11:08	12:08	60
	November 10, 2020 November 10, 2020	November 10, 2020 8:00 November 10, 2020 9:40	Start         Finish           November 10, 2020         8:00         9:00           November 10, 2020         9:40         10:40

# **Semi-Volatile Organic Compounds Trains**

Test Date		est Date Sampling Period		
Number		Start	Finish	min
1	November 11, 2020	8:22	12:32	240
2	November 11, 2020	13:28	17:35	240
3	November 12, 2020	8:13	12:30	240

<sup>\*</sup> Actual sampling time excluding leak-checks, traverse changes and process down time.

# TABLE 2 Covanta - Durham York Energy Centre Boiler No. 2 Organic Compounds Test Schedules

# **Acrolein and Aldehydes Trains**

Test	Test Date	Samplin	Sampling Time	
Number		Start	Finish	min
1	November 11, 2020	11:47	12:47	60
2	November 11, 2020	12:50	13:50	60
3	November 11, 2020	13:52	14:52	60

# **Volatile Organic Compounds Trains**

Test	Test Date	Test Date Sampling Pe		Sampling Time
Number		Start	Finish	min
1	November 11, 2020	8:20	9:00	40
2	November 11, 2020	9:05	9:45	40
3	November 11, 2020	9:50	10:30	40
4	November 11, 2020	10:36	11:16	40

# **Total Hydrocarbons Trains**

Sampling	Test	Test Date	Samplin	g Period	Sampling Time
Location	Number		Start	Finish	min
BH Outlet	1	November 9, 2020	14:52	15:52	60
BH Outlet	2	November 9, 2020	15:58	16:58	60
BH Outlet	3	November 9, 2020	17:04	18:04	60
Quench Inlet	1	November 9, 2020	10:10	11:10	60
Quench Inlet	2	November 9, 2020	11:17	12:17	60
Quench Inlet	3	November 9, 2020	12:23	13:23	60

# TABLE 3 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Stack Gas Sampling Parameters

### **Particulate and Metals Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.848	1.004	6.73	4.165	101.3
2	0.851	0.999	6.38	3.494	98.5
3	0.851	0.999	6.38	3.511	98.6

### **Particle Size Distribution Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Diameter Sampled	
	Coefficient	Factor	mm	Rm <sup>3</sup> *	%
1	0.848	0.992	4.51	1.185	103.0
2	0.848	0.992	4.51	1.181	103.1
3	0.848	0.992	4.51	1.174	94.4

#### **Acid Gases Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzle Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm³ *	%
1	0.848	1.004	6.73	1.319	100.9
2	0.848	1.004	6.73	1.324	100.8
3	0.848	1.004	6.73	1.320	99.6

# **Semi-Volatile Organic Compounds Trains**

Test No.	Pitot Tube	Dry Gas Meter	Nozzie Diameter	Gas Volume Sampled	Percentage of Isokineticity
	Coefficient	Factor	mm	Rm <sup>3</sup> *	%
1	0.851	0.999	6.38	4.590	97.3
2	0.851	0.999	6.38	4.662	97.3
3	0.851	0.999	6.38	4.448	96.7

<sup>\*</sup> Dry at 25°C and 1 atmosphere

# TABLE 4 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Stack Gas Physical Parameters

### **Particulate and Metals Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	16.2	18.2	-2.23	98.9	11.0	8.33
2	143	16.2	17.6	-2.40	98.3	11.1	8.20
3	142	15.6	17.6	-2.40	98.1	10.9	8.36
Average	142	16.0	17.8	-2.34	98.4	11.0	8.30

#### **Particle Size Distribution Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	142	14.9	16.5	-2.04	99.6	11.1	8.43
2	142	16.1	16.8	-2.04	99.3	11.1	8.17
3	142	15.9	18.4	-2.23	99.0	11.0	8.28
Average	142	15.6	17.2	-2.11	99.3	11.1	8.29

# Acid Gases Trains \*\*

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume	
°(	°C	%	m/s	kPa	kPa	% *	% *	
1	141	16.5	17.5	-2.40	98.3	11.2	7.90	
2	142	16.3	17.5	-2.40	98.3	11.1	8.28	
3	141	14.8	17.4	-2.40	98.2	10.7	8.66	
Average	141	15.9	17.5	-2.40	98.3	11.0	8.28	

# **Semi-Volatile Organics Trains**

Test No.	Gas Temp.	Moisture by Volume	Gas Velocity	Static Pressure	Absolute Pressure	Carbon Dioxide by Volume	Oxygen by Volume
	°C	%	m/s	kPa	kPa	% *	% *
1	140	15.8	17.5	-2.37	97.6	10.8	8.42
2	142	16.4	18.0	-2.37	97.7	10.9	8.33
3	142	14.4	16.6	-2.40	98.9	11.1	8.40
Average	141	15.5	17.4	-2.38	98.0	10.9	8.38

<sup>\*</sup> Dry basis, measured by the DYEC CEMS

<sup>\*\*</sup> Sampling was conducted isokinetically on a single traverse in the duct.

# TABLE 5 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Stack Gas Volumetric Flowrates

#### **Particulate and Metals Trains**

Test No.	Actual Flowrate	Dry Reference Flowrate	Dry Adjusted Flowrate	Wet Reference Flowrate
	m³/s	Rm³/s *	Rm³/s **	Rm³/s*
1	26.9	15.8	20.0	18.8
2	26.0	15.2	19.5	18.1
3	26.0	15.2	19.3	18.0
Average	26.3	15.4	19.6	18.3

#### **Particle Size Distribution Trains**

Test No.	Actual Flowrate	Dry Reference Flowrate	Dry Adjusted Flowrate	Wet Reference Flowrate
	m³/s	Rm³/s *	Rm³/s **	Rm³/s*
1	24.5	14.7	18.5	17.3
2	24.8	14.7	18.9	17.5
3	27.2	16.0	20.4	19.1
Average	25.5	15.1	19.3	18.0

# Acid Gases Trains \*\*\*

Test No.	Actual Flowrate m³/s	Dry Reference Flowrate Rm³/s *	Dry Adjusted Flowrate Rm³/s **	Wet Reference Flowrate Rm³/s*
1	25.8	15.1	19.8	18.0
2	25.9	15.1	19.3	18.1
3	25.7	15.3	18.9	17.9
Average	25.8	15.2	19.3	18.0

# **Semi-Volatile Organics Trains**

Test No.	Actual Flowrate	Dry Reference Flowrate	Dry Adjusted Wet Refe Flowrate Flowra		
	m³/s	Rm³/s *	Rm³/s **	Rm³/s*	
1	25.9	15.1	19.1	18.0	
2	26.5	15.4	19.5	18.4	
3	24.6	14.7	18.6	17.2	
Average	25.7	15.1	19.1	17.9	

- \* At 25°C and 1 atmosphere
- \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
- \*\*\* Sampling was conducted isokinetically on a single traverse in the duct. Volumetric flowrates from the corresponding particulate and metals tests were used to calculate emission data.

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Particulate Emission Data

Test	Partic	ulate Colle	cted	Dry Gas		Particulate	Concentration		Particulate
No.	Probe Rinse	Main Filter	Total	Volume Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
	mg	mg	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	14.1	0.3	14.4	4.165	2.03	3.46	2.72	2.90	54.6
2	2.6	0.8	3.4	3.494	0.57	0.97	0.76	0.82	14.8
3	10.5	0.7	11.2	3.511	1.87	3.19	2.52	2.69	48.6
Average					1.49	2.54	2.00	2.14	39.3
Blank	<0.1	0.3							

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 7 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet PM<sub>2.5</sub> and PM<sub>10</sub> Emission Data

# PM<sub>2.5</sub>

	Total	Dry Volume		Emission			
Test	Collected	Sampled	Actual	<b>Dry Reference</b>	<b>Dry Adjusted</b>	Wet Reference	Rate
No.	mg	Rm³*	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	<0.3	1.185	<0.15	<0.25	<0.20	<0.22	<3.72
2	<0.5	1.181	< 0.25	< 0.42	<0.33	<0.36	<6.22
3	<1.0	1.174	<0.50	<0.85	<0.67	<0.71	<13.6
Average			<0.30	<0.51	<0.40	<0.43	<7.86
Blank	0.3						
	······································						

### PM<sub>10</sub>

Total	Dry Volume	PM <sub>10</sub> Concentration				
Collected	Sampled	Actual	<b>Dry Reference</b>	<b>Dry Adjusted</b>	Wet Reference	Rate
mg	Rm <sup>3</sup> *	mg/m <sup>3</sup>	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
<0.4	1.185	<0.20	<0.34	<0.27	<0.29	<4.96
<0.7	1.181	< 0.35	<0.59	< 0.46	<0.50	<8.71
<1.2	1.174	<0.60	<1.02	<0.80	<0.86	<16.4
		<0.39	<0.65	<0.51	<0.55	<10.0
0.9						
	<0.4 <0.7 <1.2	mg Rm <sup>3</sup> *  <0.4 1.185 <0.7 1.181 <1.2 1.174	mg Rm <sup>3</sup> * mg/m <sup>3</sup> <0.4 1.185 <0.20 <0.7 1.181 <0.35 <1.2 1.174 <0.60  <0.39	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*           <0.4	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³*           <0.4	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³**         Wet Reference mg/Rm³*           <0.4

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Condensable Particulate Emission Data

# **Inorganic Condensable Particulate**

	Total	Dry Volume	Inorganic Condensable Particulate Concentration				Emission
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Rate
No.	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm <sup>3</sup> *	mg/Rm³**	mg/Rm³*	mg/s
1	4.5	1.185	2.28	3.80	3.01	3.23	55.8
2	4.3	1.181	2.16	3.64	2.83	3.06	53.5
3	3.7	1.174	1.85	3.15	2.47	2.64	50.4
Average			2.10	3.53	2.77	2.98	53.3
Blank	1.9						

# **Organic Condensable Particulate**

	Total	Dry Volume	Organic Condensable Particulate Concentration				Emission
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Rate
No.	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm <sup>3</sup> *	mg/Rm <sup>3</sup> **	mg/Rm³*	mg/s
1	2.5	1.185	1.27	2.11	1.67	1.79	31.0
2	3.2	1.181	1.61	2.71	2.11	2.28	39.8
3	2.1	1.174	1.05	1.79	1.40	1.50	28.6
Average			1.31	2.20	1.73	1.86	33.2
Blank	0.6						

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 9 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Halides and Ammonia Emission Data

## Hydrogen Chloride

	HCl	Dry Volume	Hydrogen Chloride Concentration				HCI
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	mg	Rm <sup>3</sup> *	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	5.37	1.319	2.39	4.07	3.21	3.41	64.2
2	5.11	1.324	2.27	3.86	3.04	3.23	60.9
3	4.98	1.320	2.20	3.77	2.94	3.16	57.2
Average			2.29	3.90	3.06	3.27	60.8
Blank	0.312						

## Hydrogen Fluoride

HF	Dry Volume Hydrogen Fluoride Concentration				HF	
Collected	Sampled	Actual	Dry Reference	<b>Dry Adjusted</b>	Wet Reference	<b>Emission Rate</b>
mg	Rm <sup>3</sup> *	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm <sup>3</sup> *	mg/s
<0.168	1.319	<0.075	<0.13	<0.10	<0.11	<2.01
<0.174	1.324	<0.077	<0.13	<0.10	<0.11	<2.07
<0.173	1.320	<0.076	<0.13	<0.10	<0.11	<1.99
		<0.076	<0.13	<0.10	<0.11	<2.02
<0.109						
	<pre>collected   mg &lt;0.168 &lt;0.174 &lt;0.173</pre>	Collected Sampled Rm <sup>3</sup> *  <0.168 1.319 <0.174 1.324 <0.173 1.320	Collected mg         Sampled Rm³*         Actual mg/m³           <0.168	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*           <0.168	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³**           <0.168	Collected mg         Sampled Rm³*         Actual mg/m³         Dry Reference mg/Rm³*         Dry Adjusted mg/Rm³**         Wet Reference mg/Rm³*           <0.168

#### **Ammonia**

	Ammonia	Dry Volume	Ammonia Concentration				Ammonia
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	mg	Rm³*	mg/m³	mg/Rm³*	mg/Rm³**	mg/Rm³*	mg/s
1	1,22	1.319	0.54	0.92	0.73	0.78	14.6
2	1.09	1.324	0.48	0.82	0.65	0.69	13.0
3	1.01	1.320	0.45	0.77	0.60	0.64	11.6
Average			0.49	0.84	0.66	0.70	13.1
Blank	<0.293						

<sup>\*</sup> At 25 °C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2
Combustion Gas Analyses

# Data measured by the DYEC CEMS from November 9 to November 12, 2020

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.88	8.39	8.90
BH Outlet	Carbon Monoxide (mg/Rm³, 1 hr Avg) *	8	14	25
BH Outlet	Carbon Monoxide (mg/Rm³, 4 hr Avg) *	10.8	14.1	20.8
BH Outlet	Sulphur Dioxide (mg/Rm³, 1 hr Avg) *	0	0.2	6
BH Outlet	Sulphur Dioxide (mg/Rm³, 24 hr Avg) *	0	0.1	0.5
BH Outlet	Nitrogen Oxides (mg/Rm³, 1 hr Avg) *	100	110	122
BH Outlet	Nitrogen Oxides (mg/Rm³, 24 hr Avg) *	110	110	111
BH Outlet	Hydrogen Chloride (mg/Rm³, 1 hr Avg) *	2	3	4
BH Outlet	Hydrogen Chloride (mg/Rm³, 24 hr Avg) *	2.8	3.2	3.7
BH Outlet	Total Hydrocarbons (mg/Rm³, 1 hr Avg) *	0	0.1	1
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	9

# Data measured by the ORTECH CEMS on November 9, 2020

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	3.5
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.3	2.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.4	3.8
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		0.3	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.6	5.1
Quench Inlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.0	3.0
Quench Inlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.6	2.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.1	
Quench Inlet	1	Total Hydrocarbons (ppm dry, 10-min Avg)	0.6	1.4	3.2
Quench Inlet	2	Total Hydrocarbons (ppm dry, 10-min Avg)	0.2	1.1	1.8
Quench Inlet	3	Total Hydrocarbons (ppm dry, 10-min Avg)	0	0.6	1.2
Average		Total Hydrocarbons (ppm dry, 10-min Avg)		1.0	

<sup>\*</sup> Reference conditions, dry basis adjusted to 11% oxygen

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers	Total
	Hydrolldoric Acid Digest	& Rinses	Collected
	μg	μg	μg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.15	1.15
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.14	0.14	0.29
Chromium	3.06	0.89	3.95
Cobalt	<0.2	<0.1	<0.20
Copper	6.27	20.1	26.4
Lead	1.02	0.78	1.80
Mercury *	<0.015	0.30	0.30
Molybdenum	24.0	<0.1	24.0
Nickel	2.80	0.66	3.46
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.6	6.16	19.8
Total			<83.4

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	μg	μg	μg
A 4:	0.00		
Antimony	0.23	<0.1	0.23
Arsenic	<1	<0.2	<0.20
Barium	7.52	1.13	8.65
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.15	<0.05	0.15
Chromium	3.14	0.67	3.81
Cobalt	<0.2	<0.1	<0.20
Copper	6.42	16.5	22.9
Lead	1.00	0.41	1.41
Mercury *	<0.015	<0.15	<0.15
Molybdenum	23.9	<0.1	23.9
Nickel	3.07	0.67	3.74
Selenium	<2	3.07	3.07
Silver	<0.2	<0.1	<0.20
Thallium	0.26	<0.05	0.26
Vanadium	<1	<0.1	<0.10
Zinc	17.6	6.44	24.0
Total			<93.2

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	μg	μg	μg
A + i	.0.2		
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	8.27	1.47	9.74
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.27	0.084	0.35
Chromium	2.71	0.60	3.31
Cobalt	<0.2	0.30	0.30
Copper	7.12	15.8	22.9
Lead	1.01	0.61	1.62
Mercury *	<0.015	<0.2	<0.20
Molybdenum	23.2	<0.1	23.2
Nickel	4.34	0.59	4.93
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	0.70	<0.05	0.70
Vanadium	<1	0.27	0.27
Zinc	15.7	9.56	25.3
Total			<94.6

<sup>\*</sup> Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected. Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	<0.20	<0.028	<0.048	<0.038	< 0.040	<0.00076
Arsenic	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Barium	1.15	0.16	0.28	0.22	0.23	0.0044
Beryllium	<0.20	<0.028	<0.048	<0.038	< 0.040	< 0.00076
Cadmium	0.29	0.040	0.069	0.054	0.058	0.0011
Chromium	3.95	0.56	0.95	0.75	0.80	0.015
Cobalt	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Copper	26.4	3.72	6.33	5.00	5.32	0.10
Lead	1.80	0.25	0.43	0.34	0.36	0.0068
Mercury	0.30	0.043	0.073	0.058	0.061	0.0012
Molybdenum	24.0	3.38	5.76	4.55	4.84	0.091
Nickel	3.46	0.49	0.83	0.66	0.70	0.013
Selenium	<1.00	< 0.14	< 0.24	<0.19	<0.20	<0.0038
Silver	<0.20	<0.028	<0.048	<0.038	<0.040	<0.00076
Thallium	<0.20	<0.028	<0.048	<0.038	< 0.040	<0.00076
Vanadium	< 0.10	< 0.014	<0.024	<0.019	<0.020	<0.00038
Zinc	19.8	2.79	4.74	3.75	3.99	0.075
Total	<83.4	<11.8	<20.0	<15.8	<16.8	<0.32

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	4.165
Actual Flowrate (m³/s) :	26.9
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**):	20.0
Wet Reference Flowrate (Rm³/s*) :	18.8

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 2

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	0.23	0.038	0.065	0.051	0.055	0.00099
Arsenic	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Barium	8.65	1.45	2.48	1.93	2.08	0.038
Beryllium	<0.20	< 0.033	<0.057	< 0.045	<0.048	<0.00087
Cadmium	0.15	0.026	0.044	0.034	0.037	0.00067
Chromium	3.81	0.64	1.09	0.85	0.92	0.017
Cobalt	<0.20	< 0.033	<0.057	<0.045	<0.048	<0.00087
Copper	22.9	3.83	6.56	5.11	5.51	0.10
Lead	1.41	0.24	0.40	0.32	0.34	0.0061
Mercury	< 0.15	<0.025	<0.043	<0.033	<0.036	<0.00065
Molybdenum	23.9	4.00	6.84	5.33	5.74	0.10
Nickel	3.74	0.63	1.07	0.83	0.90	0.016
Selenium	3.07	0.51	0.88	0.68	0.74	0.013
Silver	<0.20	< 0.033	<0.057	<0.045	<0.048	<0.00087
Thallium	0.26	0.044	0.074	0.058	0.062	0.0011
Vanadium	<0.10	<0.017	<0.029	<0.022	<0.024	<0.00044
Zinc	24.0	4.02	6.88	5.36	5.78	0.10
Total	<93.2	<15.6	<26.7	<20.8	<22.4	<0.41

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	3.494
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*):	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.1

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	<0.20	<0.033	<0.057	<0.045	<0.048	<0.00087
Arsenic	<0.20	< 0.033	<0.057	< 0.045	<0.048	<0.00087
Barium	9.74	1.62	2.77	2.18	2.34	0.042
Beryllium	<0.20	< 0.033	<0.057	< 0.045	<0.048	<0.00087
Cadmium	0.35	0.058	0.10	0.078	0.084	0.0015
Chromium	3.31	0.55	0.94	0.74	0.80	0.014
Cobalt	0.30	0.049	0.084	0.066	0.071	0.0013
Copper	22.9	3.82	6.53	5.14	5.51	0.099
Lead	1.62	0.27	0.46	0.36	0.39	0.0070
Mercury	<0.20	< 0.033	<0.057	<0.045	<0.048	<0.00087
Molybdenum	23.2	3.86	6.61	5.20	5.58	0.10
Nickel	4.93	0.82	1.40	1.11	1.19	0.021
Selenium	<1.00	<0.17	<0.28	<0.22	<0.24	< 0.0043
Silver	<0.20	< 0.033	<0.057	<0.045	<0.048	<0.00087
Thallium	0.70	0.12	0.20	0.16	0.17	0.0030
Vanadium	0.27	0.045	0.078	0.061	0.066	0.0012
Zinc	25.3	4.21	7.19	5.67	6.08	0.11
Total	<94.6	<15.8	<26.9	<21.2	<22.8	<0.41

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	3.511
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*):	15.2
Dry Adjusted Flowrate (Rm³/s**):	19.3
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Actual Concentrations

Metal		Actual Cond	entration		Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/m³	μg/m³	μg/m³	μg/m³	%
Antimony	<0.028	0.038	<0.033	<0.033	14.7
Arsenic	<0.028	<0.033	<0.033	<0.032	9.4
Barium	0.16	1.45	1.62	1.08	74.0
Beryllium	<0.028	<0.033	<0.033	< 0.032	9.4
Cadmium	0.040	0.026	0.058	0.041	39.2
Chromium	0.56	0.64	0.55	0.58	8.3
Cobalt	<0.028	<0.033	0.049	<0.037	29.5
Copper	3.72	3.83	3.82	3.79	1.6
Lead	0.25	0.24	0.27	0.25	6.7
Mercury	0.043	<0.025	<0.033	< 0.034	26.4
Molybdenum	3.38	4.00	3.86	3.75	8.6
Nickel	0.49	0.63	0.82	0.64	25.9
Selenium	< 0.14	0.51	<0.17	<0.27	76.1
Silver	<0.028	< 0.033	< 0.033	< 0.032	9.4
Thallium	<0.028	0.044	0.12	< 0.063	75.0
Vanadium	<0.014	< 0.017	0.045	<0.025	68.4
Zinc	2.79	4.02	4.21	3.67	21.0
Total	<11.8	<15.6	<15.8	<14.4	15.7

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal		Dry Reference (	Concentration		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation			
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%			
Antimony	<0.048	0.065	<0.057	<0.057	15.0			
Arsenic	<0.048	<0.057	<0.057	< 0.054	9.7			
Barium	0.28	2.48	2.77	1.84	74.1			
Beryllium	<0.048	<0.057	< 0.057	< 0.054	9.7			
Cadmium	0.069	0.044	0.10	0.071	39.2			
Chromium	0.95	1.09	0.94	0.99	8.5			
Cobalt	<0.048	< 0.057	0.084	< 0.063	29.6			
Copper	6.33	6.56	6.53	6.47	1.9			
Lead	0.43	0.40	0.46	0.43	6.7			
Mercury	0.073	< 0.043	< 0.057	<0.058	26.1			
Molybdenum	5.76	6.84	6.61	6.40	8.9			
Nickel	0.83	1.07	1.40	1.10	26.1			
Selenium	<0.24	0.88	<0.28	< 0.47	76.2			
Silver	<0.048	< 0.057	< 0.057	< 0.054	9.7			
Thallium	<0.048	0.074	0.20	<0.11	75.1			
Vanadium	<0.024	<0.029	0.078	<0.043	68.5			
Zinc	4.74	6.88	7.19	6.27	21.3			
Total	<20.0	<26.7	<26.9	<24.5	16.0			

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal		Dry Adjusted C	oncentration		Coefficient
	Test No. 1 μg/Rm³**	Test No. 2 μg/Rm³**	Test No. 3 μg/Rm³**	Average µg/Rm³**	of Variation %
_			_		
Antimony	<0.038	0.051	<0.045	<0.044	14.3
Arsenic	<0.038	<0.045	<0.045	<0.042	9.3
Barium	0.22	1.93	2.18	1.44	74.1
Beryllium	<0.038	<0.045	<0.045	< 0.042	9.3
Cadmium	0.054	0.034	0.078	0.056	39.6
Chromium	0.75	0.85	0.74	0.78	7.7
Cobalt	<0.038	<0.045	0.066	<0.050	29.8
Copper	5.00	5.11	5.14	5.09	1.5
Lead	0.34	0.32	0.36	0.34	7.2
Mercury	0.058	<0.033	<0.045	< 0.045	26.7
Molybdenum	4.55	5.33	5.20	5.03	8.3
Nickel	0.66	0.83	1.11	0.87	26.1
Selenium	<0.19	0.68	<0.22	<0.37	75.5
Silver	<0.038	<0.045	<0.045	<0.042	9.3
Thallium	<0.038	0.058	0.16	<0.084	75.4
Vanadium	<0.019	<0.022	0.061	< 0.034	68.8
Zinc	3.75	5.36	5.67	4.93	20.9
Total	<15.8	<20.8	<21.2	<19.3	15.6

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal		Wet Reference Concentration					
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation		
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%		
Antimony	<0.040	0.055	<0.048	<0.048	14.9		
Arsenic	<0.040	<0.048	<0.048	<0.046	9.8		
Barium	0.23	2.08	2.34	1.55	74.1		
Beryllium	< 0.040	<0.048	<0.048	<0.046	9.8		
Cadmium	0.058	0.037	0.084	0.060	39.5		
Chromium	0.80	0.92	0.80	0.84	8.3		
Cobalt	< 0.040	<0.048	0.071	<0.053	30.0		
Copper	5.32	5.51	5.51	5.45	2.0		
Lead	0.36	0.34	0.39	0.36	7.0		
Mercury	0.061	<0.036	<0.048	<0.048	26.1		
Molybdenum	4.84	5.74	5.58	5.39	8.9		
Nickel	0.70	0.90	1.19	0.93	26.4		
Selenium	<0.20	0.74	<0.24	< 0.39	76.0		
Silver	<0.040	<0.048	<0.048	< 0.046	9.8		
Thallium	< 0.040	0.062	0.17	<0.090	75.4		
Vanadium	<0.020	<0.024	0.066	<0.037	68.9		
Zinc	3.99	5.78	6.08	5.28	21.4		
Total	<16.8	<22.4	<22.8	<20.7	16.1		

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Rates

Metal	Historian Company of the Company of	Emission Rate					
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %		
Antimony	<0.00076	0.00099	<0.00087	<0.00087	13.1		
Arsenic	<0.00076	<0.00087	<0.00087	<0.00083	7.6		
Barium	0.0044	0.038	0.042	0.028	73.6		
Beryllium	<0.00076	<0.00087	<0.00087	<0.00083	7.6		
Cadmium	0.0011	0.00067	0.0015	0.0011	38.7		
Chromium	0.015	0.017	0.014	0.015	7.6		
Cobalt	<0.00076	<0.00087	0.0013	<0.00097	28.2		
Copper	0.10	0.10	0.099	0.10	0.4		
Lead	0.0068	0.0061	0.0070	0.0067	6.9		
Mercury	0.0012	<0.00065	< 0.00087	<0.00089	28.2		
Molybdenum	0.091	0.10	0.10	0.098	6.8		
Nickel	0.013	0.016	0.021	0.017	24.5		
Selenium	<0.0038	0.013	< 0.0043	< 0.0072	75.0		
Silver	<0.00076	<0.00087	<0.00087	<0.00083	7.6		
Thallium	<0.00076	0.0011	0.0030	< 0.0016	74.0		
Vanadium	<0.00038	<0.00044	0.0012	< 0.00067	67.3		
Zinc	0.075	0.10	0.11	0.096	19.4		
Total	<0.32	<0.41	<0.41	<0.38	14.0		

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Antimony	<0.033	<0.057	<0.044	<0.048	<0.00087
Arsenic	< 0.032	<0.054	<0.042	<0.046	<0.00083
Barium	1.08	1.84	1.44	1.55	0.028
Beryllium	< 0.032	<0.054	<0.042	<0.046	<0.00083
Cadmium	0.041	0.071	0.056	0.060	0.0011
Chromium	0.58	0.99	0.78	0.84	0.015
Cobalt	< 0.037	< 0.063	<0.050	< 0.053	<0.00097
Copper	3.79	6.47	5.09	5.45	0.10
Lead	0.25	0.43	0.34	0.36	0.0067
Mercury	< 0.034	<0.058	<0.045	<0.048	<0.00089
Molybdenum	3.75	6.40	5.03	5.39	0.098
Nickel	0.64	1.10	0.87	0.93	0.017
Selenium	<0.27	<0.47	<0.37	< 0.39	<0.0072
Silver	< 0.032	< 0.054	<0.042	<0.046	<0.00083
Thallium	< 0.063	<0.11	<0.084	<0.090	<0.0016
Vanadium	<0.025	< 0.043	< 0.034	<0.037	<0.00067
Zinc	3.67	6.27	4.93	5.28	0.096
Total	<14.4	<24.5	<19.3	<20.7	<0.38

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter	Impingers	Total
	Hydrofluoric Acid Digest	& Rinses	Collected
	μg	μg	μg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	5.19	0.83	6.02
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.41	0.34	2.75
Cobalt	<0.2	<0.1	<0.20
Copper	9.00	8.33	17.3
Lead	0.50	0.52	1.03
Mercury *	<0.015	<0.15	<0.15
Molybdenum	22.3	<0.1	22.3
Nickel	2.09	0.28	2.37
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			<60.4

<sup>\*</sup> Includes the permanganate impingers.

**Note**: "<" indicates that the analyte was not detected. Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	113	0.014	0.035	0.010	0.021	0.27
Pentachlorodibenzo-p-dioxins	311	0.014 0.040	0.025 0.068	0.019 0.054	0.021 0.057	0.37 1.02
Hexachlorodibenzo-p-dioxins	779	0.099	0.008	0.034	0.037	2.56
Heptachlorodibenzo-p-dioxins	626	0.080	0.14	0.11	0.11	2.06
Octachlorodibenzo-p-dioxin	311	0.040	0.068	0.054	0.057	1.02
Total	2140	0.27	0.47	0.37	0.39	7.04

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	24.8	0.0032	0.0054	0.0043	0.0045	0.082
Pentachlorodibenzofurans	202	0.026	0.044	0.035	0.037	0.66
Hexachlorodibenzofurans	236	0.030	0.051	0.041	0.043	0.78
Heptachlorodibenzofurans	154	0.020	0.034	0.027	0.028	0.51
Octachlorodibenzofuran	<43	<0.0055	<0.0094	<0.0074	<0.0079	<0.14
Total	<660	<0.084	<0.14	<0.11	<0.12	<2.17

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*):	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 25 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Dioxin and Furan Congener Group Emission Data Test No. 2

#### **Dioxins**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	128	0.016	0.027	0.022	0.023	0.42
Pentachlorodibenzo-p-dioxins	418	0.052	0.090	0.071	0.075	1.38
Hexachlorodibenzo-p-dioxins	1030	0.13	0.22	0.17	0.18	3.40
Heptachlorodibenzo-p-dioxins	820	0.10	0.18	0.14	0.15	2.71
Octachlorodibenzo-p-dioxin	712	0.089	0.15	0.12	0.13	2.35
Total	3108	0.39	0.67	0.53	0.56	10.3

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	63	0.0078	0.013	0.011	0.011	0.21
Pentachlorodibenzofurans	85.9	0.011	0.018	0.015	0.015	0.28
Hexachlorodibenzofurans	232	0.029	0.050	0.039	0.042	0.77
Heptachlorodibenzofurans	230.0	0.029	0.049	0.039	0.041	0.76
Octachlorodibenzofuran	<88	<0.011	<0.019	<0.015	<0.016	<0.29
Total	<698	<0.087	<0.15	<0.12	<0.13	<2.31

Dry Gas Volume Sampled (Rm³*):	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*):	15.4
Dry Adjusted Flowrate (Rm³/s**):	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

# TABLE 26 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Dioxin and Furan Congener Group Emission Data Test No. 3

#### **Dioxins**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	75.8	0.010	0.017	0.043	0.015	0.35
•		0.010	0.017	0.013	0.015	0.25
Pentachlorodibenzo-p-dioxins	267	0.036	0.060	0.047	0.051	0.88
Hexachlorodibenzo-p-dioxins	655	0.088	0.15	0.12	0.13	2.16
Heptachlorodibenzo-p-dioxins	576	0.077	0.13	0.10	0.11	1.90
Octachlorodibenzo-p-dioxin	326	0.044	0.073	0.058	0.063	1.08
Total	1900	0.26	0.43	0.34	0.37	6.28

#### **Furans**

Congener Group	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzofurans	36.9	0.0050	0.0083	0.0066	0.0071	0.12
Pentachlorodibenzofurans	128	0.017	0.029	0.023	0.025	0.42
Hexachlorodibenzofurans	172	0.023	0.039	0.031	0.033	0.57
Heptachlorodibenzofurans	180	0.024	0.040	0.032	0.035	0.59
Octachlorodibenzofuran	<49	<0.0066	<0.011	<0.0087	<0.0094	<0.16
Total	<566	<0.076	<0.13	<0.10	<0.11	<1.87

Dry Gas Volume Sampled (Rm³*):	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*):	14.7
Dry Adjusted Flowrate (Rm³/s**):	18.6
Wet Reference Flowrate (Rm³/s*):	17.2

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.014	0.016	0.010	0.013	22.1
Pentachlorodibenzo-p-dioxins	0.040	0.052	0.036	0.042	20.1
Hexachlorodibenzo-p-dioxins	0.099	0.13	0.088	0.11	19.9
Heptachlorodibenzo-p-dioxins	0.080	0.10	0.077	0.086	<b>1</b> 5.9
Octachlorodibenzo-p-dioxin	0.040	0.089	0.044	0.057	47.6
Total	0.27	0.39	0.26	0.30	23.6

Congener		Coefficient			
Group	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.0032	0.0078	0.0050	0.0053	44.1
Pentachlorodibenzofurans	0.026	0.011	0.017	0.018	42.0
Hexachlorodibenzofurans	0.030	0.029	0.023	0.027	13.5
Heptachlorodibenzofurans	0.020	0.029	0.024	0.024	18.9
Octachlorodibenzofuran	<0.0055	<0.011	<0.0066	<0.0077	37.9
Total	<0.084	<0.087	<0.076	<0.082	6.9

TABLE 28

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Congener Group Dry Reference Concentrations

Congener Group		Dry Reference Concentration				
	Test No. 1	Test No. 2	Test No. 3	Average ng/Rm³*	of Variation %	
	ng/Rm³*	ng/Rm³*	ng/Rm³*			
  Tetrachlorodibenzo-p-dioxins	0.025	0.027	0.017	0.023	23.4	
Pentachlorodibenzo-p-dioxins	0.068	0.090	0.060	0.072	21.2	
Hexachlorodibenzo-p-dioxins	0.17	0.22	0.15	0.18	21.1	
Heptachlorodibenzo-p-dioxins	0.14	0.18	0.13	0.15	17.0	
Octachlorodibenzo-p-dioxin	0.068	0.15	0.073	0.098	48.5	
Total	0.47	0.67	0.43	0.52	24.7	

Congener Group		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0054	0.013	0.0083	0.0090	44.9
Pentachlorodibenzofurans	0.044	0.018	0.029	0.030	42.3
Hexachlorodibenzofurans	0.051	0.050	0.039	0.047	14.9
Heptachlorodibenzofurans	0.034	0.049	0.040	0.041	19.2
Octachlorodibenzofuran	<0.0094	<0.019	<0.011	<0.013	38.8
Total	<0.14	<0.15	<0.13	<0.14	8.3

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Congener Group		Coefficient			
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
Tetrachlorodibenzo-p-dioxins	0.019	0.022	0.013	0.018	23.3
Pentachlorodibenzo-p-dioxins	0.054	0.071	0.047	0.057	21.2
Hexachlorodibenzo-p-dioxins	0.13	0.17	0.12	0.14	21.0
Heptachlorodibenzo-p-dioxins	0.11	0.14	0.10	0.12	16.9
Octachlorodibenzo-p-dioxin	0.054	0.12	0.058	0.077	48.5
Total	0.37	0.53	0.34	0.41	24.7

Congener Group		Coefficient			
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
Tetrachlorodibenzofurans	0.0043	0.011	0.0066	0.0071	44.8
Pentachlorodibenzofurans	0.035	0.015	0.023	0.024	42.4
Hexachlorodibenzofurans	0.041	0.039	0.031	0.037	14.9
Heptachlorodibenzofurans	0.027	0.039	0.032	0.032	19.2
Octachlorodibenzofuran	<0.0074	<0.015	<0.0087	<0.010	38.8
Total	<0.11	<0.12	<0.10	<0.11	8.3

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 30

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Congener Group Wet Reference Concentrations

Congener		Coefficient			
Group	Test No. 1	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average	of Variation %
	ng/Rm³*			ng/Rm³*	
Tetrachlorodibenzo-p-dioxins	0.021	0.023	0.015	0.019	22.4
Pentachlorodibenzo-p-dioxins	0.057	0.075	0.051	0.061	20.3
Hexachlorodibenzo-p-dioxins	0.14	0.18	0.13	0.15	20.2
Heptachlorodibenzo-p-dioxins	0.11	0.15	0.11	0.12	16.2
Octachlorodibenzo-p-dioxin	0.057	0.13	0.063	0.082	47.8
Total	0.39	0.56	0.37	0.44	23.9

Congener Group		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.0045	0.011	0.0071	0.0076	44.3
Pentachlorodibenzofurans	0.037	0.015	0.025	0.026	42.1
Hexachlorodibenzofurans	0.043	0.042	0.033	0.039	13.9
Heptachlorodibenzofurans	0.028	0.041	0.035	0.035	19.0
Octachlorodibenzofuran	<0.0079	<0.016	<0.0094	<0.011	38.2
Total	<0.12	<0.13	<0.11	<0.12	7.2

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Congener Group		Coefficient			
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	of Variation %
Tetrachlorodibenzo-p-dioxins	0.37	0.42	0.25	0.35	25.4
Pentachlorodibenzo-p-dioxins	1.02	1.38	0.88	1.10	23.5
Hexachlorodibenzo-p-dioxins	2.56	3.40	2.16	2.71	23.3
Heptachlorodibenzo-p-dioxins	2.06	2.71	1.90	2.22	19.2
Octachlorodibenzo-p-dioxin	1.02	2.35	1.08	1.48	50.7
Total	7.04	10.3	6.28	7.86	26.9

Congener Group	-	Coefficient			
	Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	of Variation %
Tetrachlorodibenzofurans	0.082	0.21	0.12	0.14	46.6
Pentachlorodibenzofurans	0.66	0.28	0.42	0.46	42.1
Hexachlorodibenzofurans	0.78	0.77	0.57	0.70	16.7
Heptachlorodibenzofurans	0.51	0.76	0.59	0.62	20.7
Octachlorodibenzofuran	<0.14	<0.29	<0.16	<0.20	40.9
Total	<2.17	<2.31	<1.87	<2.12	10.6

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

## Dioxins

Congener Group	Actual Concentration	Dry Reference Concentration		Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo-p-dioxins	0.013	0.023	0.018	0.019	0.35
Pentachlorodibenzo-p-dioxins	0.042	0.072	0.057	0.061	1.10
Hexachlorodibenzo-p-dioxins	0.11	0.18	0.14	0.15	2.71
Heptachlorodibenzo-p-dioxins	0.086	0.15	0.12	0.12	2.22
Octachlorodibenzo-p-dioxin	0.057	0.098	0.077	0.082	1.48
Total	0.30	0.52	0.41	0.44	7.86

## **Furans**

Congener Group	Actual Concentration	Dry Reference Concentration		Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	ng/s
Tetrachlorodibenzo furans	0.0053	0.0090	0.0071	0.0076	0.14
Pentachlorodibenzofurans	0.018	0.030	0.024	0.026	0.46
Hexachlorodibenzofurans	0.027	0.047	0.037	0.039	0.70
Heptachlorodibenzofurans	0.024	0.041	0.032	0.035	0.62
Octachlorodibenzofuran	<0.0077	<0.013	<0.010	<0.011	<0.20
Total	<0.082	<0.14	<0.11	<0.12	<2.12

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

## **Dioxins**

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<3.0	<3.1
Pentachlorodibenzo-p-dioxins	2.89	<3.1
Hexachlorodibenzo-p-dioxins	<3.2	<3.4
Heptachlorodibenzo-p-dioxins	<5.1	<3.2
Octachlorodibenzo-p-dioxin	<82	133
Total	<96.2	<146

## **Furans**

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<1.8	<1.9
Pentachlorodibenzofurans	<1.7	<2.0
Hexachlorodibenzofurans	<2.2	<3.3
Heptachlorodibenzofurans	<2.5	<9.5
Octachlorodibenzofuran	17.9	31.5
Total	<26.1	<48.2

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit In these cases the value of the detection limit was used to calculate the total collected.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
izoniei		Concentration	Concentration	Concentration	Concentration	Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.1	<0.52	<0.89	<0.71	<0.75	<0.013
12378-pentachlorodibenzo-p-dioxin	<6.7	<0.85	<1.46	<1.15	<1.22	<0.022
123478-hexachlorodibenzo-p-dioxin	18.2	2.31	3.97	3.13	3.33	0.060
123678-hexachlorodibenzo-p-dioxin	46.5	5,91	10.1	8.01	8.50	0.15
123789-hexachlorodibenzo-p-dioxin	19.3	2.45	4.20	3.32	3.53	0.063
1234678-heptachlorodibenzo-p-dioxin	284	36.1	61.9	48.9	51.9	0.93
Octachlorodibenzo-p-dioxin	311	39.5	67.8	53.6	56.8	1.02
2378-tetrachlorodibenzofuran	<5.8	<0.74	<1.26	<1.00	<1.06	<0.019
12378-pentachlorodibenzofuran	6.69	0.85	1.46	1.15	1.22	0.022
23478-pentachlorodibenzofuran	<17	<2.16	<3.70	<2.93	<3.11	<0.056
123478-hexachlorodibenzofuran	<20	<2.54	<4.36	<3.44	<3.66	<0.066
123678-hexachlorodibenzofuran	26.6	3.38	5.80	4.58	4.86	0.088
234678-hexachlorodibenzofuran	44.6	5.66	9.72	7.68	8.15	0.15
123789-hexachlorodibenzofuran	11.2	1.42	2.44	1.93	2.05	0.037
1234678-heptachlorodibenzofuran	116	14.7	25.3	20.0	21.2	0.38
1234789-heptachlorodibenzofuran	<18	<2.29	<3.92	<3.10	<3.29	<0.059
Octachlorodibenzofuran	<43	<5.46	<9.37	<7.41	<7.86	<0.14
PCB 81	<27	<3.43	<5.88	<4.65	<4.93	<0.089
PCB 77	70.8	8.99	15.4	12.2	12.9	0.23
PCB 123	25.7	3.26	5.60	4.43	4.70	0.085
PCB 118	1780	226	388	307	325	5.86
PCB 114	40.9	5.20	8.91	7.04	7.48	0.13
PCB 105	456	57.9	99.3	78.5	83.3	1.50
PCB 126	<15	<1.91	<3.27	<2.58	<2.74	< 0.049
PCB 167	27.6	3.51	6.01	4.75	5.04	0.091
PCB 156/157	79.5	10.1	17.3	13.7	14.5	0.26
PCB 169	<8.3	<1.05	<1.81	<1.43	<1.52	<0.027
PCB 189	18.9	2.40	4.12	3.26	3.45	0.062
Total Dioxins & Furans Only	<999	<127	<218	<172	<183	<3.29
Total PCBs Only	<2550	<324	<555	<439	<466	<8.39
Total Dioxins & Furans and PCBs	<3548	<451	<773	<611	<649	<11.7

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*):	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.9	<0.74	<1.27	<1.00	<1.06	<0.019
12378-pentachlorodibenzo-p-dioxin	<7.0	<0.87	<1.50	<1.19	<1.26	<0.023
123478-hexachlorodibenzo-p-dioxin	<23	<2.87	<4.93	<3.90	<4.13	< 0.076
123678-hexachlorodibenzo-p-dioxin	<51	<6.36	<10.9	<8.64	<9.16	<0.17
123789-hexachlorodibenzo-p-dioxin	<21	<2.62	<4.50	<3.56	<3.77	< 0.069
1234678-heptachlorodibenzo-p-dioxin	333	41.5	71.4	56.4	59.8	1.10
Octachlorodibenzo-p-dioxin	712	88.8	153	121	128	2.35
2378-tetrachlorodibenzofuran	<13	<1.62	<2.79	<2.20	<2.33	<0.043
12378-pentachlorodibenzofuran	<8.6	<1.07	<1.84	<1.46	<1.54	<0.028
23478-pentachlorodibenzofuran	24.8	3.09	5.32	4.20	4.45	0.082
123478-hexachlorodibenzofuran	25.2	3.14	5.41	4.27	4.52	0.083
123678-hexachlorodibenzofuran	<20	<2.49	<4.29	<3.39	<3.59	< 0.066
234678-hexachlorodibenzofuran	44.6	5.56	9.57	7.56	8.01	0.15
123789-hexachlorodibenzofuran	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
1234678-heptachlorodibenzofuran	155	19.3	33.2	26.3	27.8	0.51
1234789-heptachlorodibenzofuran	<17	<2.12	<3.65	<2.88	<3.05	<0.056
Octachlorodibenzofuran	<88	<11.0	<18.9	<14.9	<15.8	<0.29
PCB 81	<24	<2.99	<5.15	<4.07	<4.31	<0.079
PCB 77	226	28.2	48.5	38.3	40.6	0.75
PCB 123	84.7	10.6	18.2	14.3	15.2	0.28
PCB 118	4710	587	1010	798	846	15.6
PCB 114	118	14.7	25.3	20.0	21.2	0.39
PCB 105	1350	168	290	229	242	4.46
PCB 126	<26	<3.24	<5.58	<4.40	<4.67	<0.086
PCB 167	<50	<6.23	<10.7	<8.47	<8.98	< 0.17
PCB 156/157	142	17.7	30.5	24.1	25.5	0.47
PCB 169	<17	<2.12	<3.65	<2.88	<3.05	< 0.056
PCB 189	15.0	1.87	3.22	2.54	2.69	0.050
Total Dioxins & Furans Only	<1561	<195	<335	<264	<280	<5.16
Total PCBs Only	<6763	<843	<1451	<1146	<1214	<22.3
Total Dioxins & Furans and PCBs	<8324	<1038	<1785	<1410	<1494	<27.5

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*):	15.4
Dry Adjusted Flowrate (Rm³/s**):	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.3	<0.58	<0.97	<0.76	<0.83	<0.014
12378-pentachlorodibenzo-p-dioxin	6.19	0.83	1.39	1.10	1.19	0.020
123478-hexachlorodibenzo-p-dioxin	<17	<2.28	<3.82	<3.02	<3.27	< 0.056
123678-hexachlorodibenzo-p-dioxin	42.2	5.67	9.49	7.50	8.11	0.14
123789-hexachlorodibenzo-p-dioxin	<20	<2.69	<4.50	<3.55	<3.84	<0.066
1234678-heptachlorodibenzo-p-dioxin	263	35.3	59.1	46.7	50.5	0.87
Octachlorodibenzo-p-dioxin	326	43.8	73.3	57.9	62.6	1.08
2378-tetrachlorodibenzofuran	<4.0	<0.54	<0.90	<0.71	<0.77	<0.013
12378-pentachlorodibenzofuran	9.13	1.23	2.05	1.62	1.75	0.030
23478-pentachlorodibenzofuran	<14	<1.88	<3.15	<2.49	<2.69	< 0.046
123478-hexachlorodibenzofuran	<19	<2.55	<4.27	<3.38	<3.65	< 0.063
123678-hexachlorodibenzofuran	<18	<2.42	<4.05	<3.20	<3.46	< 0.059
234678-hexachlorodibenzofuran	37.0	4.97	8.32	6.57	7.11	0.12
123789-hexachlorodibenzofuran	<23	<3.09	<5.17	<4.09	<4.42	< 0.076
1234678-heptachlorodibenzofuran	104	14.0	23.4	18.5	20.0	0.34
1234789-heptachlorodibenzofuran	15.0	2.02	3.37	2.67	2.88	0.050
Octachlorodibenzofuran	<49	<6.58	<11.0	<8.71	<9.41	<0.16
PCB 81	<25	<3.36	<5.62	<4.44	<4.80	<0.083
PCB 77	194	26.1	43.6	34.5	37.3	0.64
PCB 123	76.9	10.3	17.3	13.7	14.8	0.25
PCB 118	5080	682	1142	903	976	16.8
PCB 114	144	19.3	32.4	25.6	27.7	0.48
PCB 105	2240	301	504	398	430	7.40
PCB 126	<39	<5.24	<8.77	<6.93	<7.49	<0.13
PCB 167	177	23.8	39.8	31.4	34.0	0.58
PCB 156/157	617	82.9	139	110	119	2.04
PCB 169	<18	<2.42	<4.05	<3.20	<3.46	<0.059
PCB 189	40.9	5.49	9.20	7.27	7.86	0.14
Total Dioxins & Furans Only	<971	<130	<218	<172	<187	<3.21
Total PCBs Only	<8652	<1162	<1945	<1537	<1662	<28.6
Total Dioxins & Furans and PCBs	<9623	<1293	<2163	<1710	<1849	<31.8

Dry Gas Volume Sampled (Rm³*):	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*):	14.7
Dry Adjusted Flowrate (Rm <sup>3</sup> /s**):	18.6
Wet Reference Flowrate (Rm³/s*):	17.2

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 37

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Specific Isomer Actual Concentrations

Specific		Actual Con	centration		Coefficient
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<0.52	<0.74	<0.58	<0.61	18.2
12378-pentachlorodibenzo-p-dioxin	<0.85	<0.87	0.83	<0.85	2.4
123478-hexachlorodibenzo-p-dioxin	2.31	<2.87	<2.28	<2.49	13.2
123678-hexachlorodibenzo-p-dioxin	5.91	<6.36	5.67	<5.98	5.8
123789-hexachlorodibenzo-p-dioxin	2.45	<2.62	<2.69	<2.59	4.7
1234678-heptachlorodibenzo-p-dioxin	36.1	41.5	35.3	37.6	9.0
Octachlorodibenzo-p-dioxin	39.5	88.8	43.8	57.4	47.6
2378-tetrachlorodibenzofuran	<0.74	<1.62	<0.54	<0.96	59.7
12378-pentachlorodibenzofuran	0.85	<1.07	1.23	<1.05	18.0
23478-pentachlorodibenzofuran	<2.16	3.09	<1.88	<2.38	26.7
123478-hexachlorodibenzofuran	<2.54	3.14	<2.55	<2.74	12.5
123678-hexachlorodibenzofuran	3.38	<2.49	<2.42	<2.76	19.3
234678-hexachlorodibenzofuran	5.66	5.56	4.97	5.40	6.9
123789-hexachlorodibenzofuran	1.42	<1.50	<3.09	<2.00	47.0
1234678-heptachlorodibenzofuran	14.7	19.3	14.0	16.0	18.1
1234789-heptachlorodibenzofuran	<2.29	<2.12	2.02	<2.14	6.4
Octachlorodibenzofuran	<5.46	<11.0	<6.58	<7.67	37.9
PCB 81	<3.43	<2.99	<3.36	<3.26	7.2
PCB 77	8.99	28.2	26.1	21.1	49.9
PCB 123	3.26	10.6	10.3	8.05	51.5
PCB 118	226	587	682	499	48.3
PCB 114	5.20	14.7	19.3	13.1	55.1
PCB 105	57.9	168	301	176	69.2
PCB 126	<1.91	<3.24	<5.24	<3.46	48.5
PCB 167	3.51	<6.23	23.8	<11.2	98.5
PCB 156/157	10.1	17.7	82.9	36.9	108
PCB 169	<1.05	<2.12	<2.42	<1.86	38.5
PCB 189	2.40	1.87	5.49	3.26	60.1
Total Dioxins & Furans Only	<127	<195	<130	<151	25.3
Total PCBs Only	<324	<843	<1162	<776	54.5
Total Dioxins & Furans and PCBs	<451	<1038	<1293	<927	46.6

TABLE 38

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific	C	ry Reference	Concentration	)	Coefficient
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.89	<1.27	<0.97	<1.04	18.9
12378-pentachlorodibenzo-p-dioxin	<1.46	<1.50	1.39	<1.45	3.8
123478-hexachlorodibenzo-p-dioxin	3.97	<4.93	<3.82	<4.24	14.3
123678-hexachlorodibenzo-p-dioxin	10.1	<10.9	9.49	<10.2	7.1
123789-hexachlorodibenzo-p-dioxin	4.20	<4.50	<4.50	<4.40	3.9
1234678-heptachlorodibenzo-p-dioxin	61.9	71.4	59.1	64.1	10.1
Octachlorodibenzo-p-dioxin	67.8	153	73.3	97.9	48.5
2378-tetrachlorodibenzofuran	<1.26	<2.79	<0.90	<1.65	60.7
12378-pentachlorodibenzofuran	1.46	<1.84	2.05	<1.78	16.9
23478-pentachlorodibenzofuran	<3.70	5.32	<3.15	<4.06	27.8
123478-hexachlorodibenzofuran	<4.36	5.41	<4.27	<4.68	13.5
123678-hexachlorodibenzofuran	5.80	<4.29	<4.05	<4.71	20.1
234678-hexachlorodibenzofuran	9.72	9.57	8.32	9.20	8.3
123789-hexachlorodibenzofuran	2.44	<2.57	<5.17	<3.39	45.3
1234678-heptachlorodibenzofuran	25.3	33.2	23.4	27.3	19.2
1234789-heptachlorodibenzofuran	<3.92	<3.65	3.37	<3.65	7.5
Octachlorodibenzofuran	<9.37	<18.9	<11.0	<13.1	38.8
PCB 81	<5.88	<5.15	<5.62	<5.55	6.7
PCB 77	15.4	48.5	43.6	35.8	49.8
PCB 123	5.60	18.2	17.3	13.7	51.3
PCB 118	388	1010	1142	847	47.6
PCB 114	8.91	25.3	32.4	22.2	54.2
PCB 105	99.3	290	504	298	68.0
PCB 126	<3.27	<5.58	<8.77	<5.87	47.0
PCB 167	6.01	<10.7	39.8	<18.8	97.1
PCB 156/157	17.3	30.5	139	62.2	107
PCB 169	<1.81	<3.65	<4.05	<3.17	37.7
PCB 189	4.12	3.22	9.20	5.51	58.5
Total Dioxins & Furans Only	<218	<335	<218	<257	26.3
Total PCBs Only	<555	<1451	<1945	<1317	53.5
Total Dioxins & Furans and PCBs	<773	<1785	<2163	<1574	45.7

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 39

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific	1	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.71	<1.00	<0.76	<0.82	18.9
12378-pentachlorodibenzo-p-dioxin	<1.15	<1.19	1.10	<1.15	3.8
123478-hexachlorodibenzo-p-dioxin	3.13	<3.90	<3.02	<3.35	14.2
123678-hexachlorodibenzo-p-dioxin	8.01	<8.64	7.50	<8.05	7.1
123789-hexachlorodibenzo-p-dioxin	3.32	<3.56	<3.55	<3.48	3.8
1234678-heptachlorodibenzo-p-dioxin	48.9	56.4	46.7	50.7	10.0
Octachlorodibenzo-p-dioxin	53.6	121	57.9	77.4	48.5
2378-tetrachlorodibenzofuran	<1.00	<2.20	<0.71	<1.30	60.7
12378-pentachlorodibenzofuran	1.15	<1.46	1.62	<1.41	16.9
23478-pentachlorodibenzofuran	<2.93	4.20	<2.49	<3.21	27.8
123478-hexachlorodibenzofuran	<3.44	4.27	<3.38	<3.70	13.4
123678-hexachlorodibenzofuran	4.58	<3.39	<3.20	<3.72	20.1
234678-hexachlorodibenzofuran	7.68	7.56	6.57	7.27	8.3
123789-hexachlorodibenzofuran	1.93	<2.03	<4.09	<2.68	45.4
1234678-heptachlorodibenzofuran	20.0	26.3	18.5	21.6	19.1
1234789-heptachlorodibenzofuran	<3.10	<2.88	2.67	<2.88	7.5
Octachlorodibenzofuran	<7.41	<14.9	<8.71	<10.3	38.8
PCB 81	<4.65	<4.07	<4.44	<4.39	6.8
PCB 77	12.2	38.3	34.5	28.3	49.8
PCB 123	4.43	14.3	13.7	10.8	51.2
PCB 118	307	798	903	669	47.6
PCB 114	7.04	20.0	25.6	17.5	54.2
PCB 105	78.5	229	398	235	68.0
PCB 126	<2.58	<4.40	<6.93	<4.64	47.0
PCB 167	4.75	<8.47	31.4	<14.9	97.1
PCB 156/157	13.7	24.1	110	49.1	107
PCB 169	<1.43	<2.88	<3.20	<2.50	37.7
PCB 189	3.26	2.54	7.27	4.35	58.5
Total Dioxins & Furans Only	<172	<264	<172	<203	26.2
Total PCBs Only	<439	<1146	<1537	<1041	53.5
Total Dioxins & Furans and PCBs	<611	<1410	<1710	<1244	45.7

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific	V	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm <sup>3</sup> *	%
2378-tetrachlorodibenzo-p-dioxin	<0.75	<1.06	<0.83	<0.88	18.4
12378-pentachlorodibenzo-p-dioxin	<1.22	<1.26	1.19	<1.22	2.8
123478-hexachlorodibenzo-p-dioxin	3.33	<4.13	<3.27	<3.57	13.5
123678-hexachlorodibenzo-p-dioxin	8.50	<9.16	8.11	<8.59	6.2
123789-hexachlorodibenzo-p-dioxin	3.53	<3.77	<3.84	<3.71	4.4
1234678-heptachlorodibenzo-p-dioxin	51.9	59.8	50.5	54.1	9.2
Octachlorodibenzo-p-dioxin	56.8	128	62.6	82.4	47.8
2378-tetrachlorodibenzofuran	<1.06	<2.33	<0.77	<1.39	60.0
12378-pentachlorodibenzofuran	1.22	<1.54	1.75	<1.51	17.8
23478-pentachlorodibenzofuran	<3.11	4.45	<2.69	<3.42	27.0
123478-hexachlorodibenzofuran	<3.66	4.52	<3.65	<3.94	12.8
123678-hexachlorodibenzofuran	4.86	<3.59	<3.46	<3.97	19.5
234678-hexachlorodibenzofuran	8.15	8.01	7.11	7.76	7.3
123789-hexachlorodibenzofuran	2.05	<2.15	<4.42	<2.87	46.6
1234678-heptachlorodibenzofuran	21.2	27.8	20.0	23.0	18.4
1234789-heptachlorodibenzofuran	<3.29	<3.05	2.88	<3.07	6.7
Octachlorodibenzofuran	<7.86	<15.8	<9.41	<11.0	38.2
PCB 81	<4.93	<4.31	<4.80	<4.68	7.1
PCB 77	12.9	40.6	37.3	30.3	49.9
PCB 123	4.70	15.2	14.8	11.6	51.4
PCB 118	325	846	976	716	48.1
PCB 114	7.48	21.2	27.7	18.8	54.9
PCB 105	83.3	242	430	252	68.9
PCB 126	<2.74	<4.67	<7.49	<4.97	48.1
PCB 167	5.04	<8.98	34.0	<16.0	98.1
PCB 156/157	14.5	25.5	119	52.9	108
PCB 169	<1.52	<3.05	<3.46	<2.68	38.3
PCB 189	3.45	2.69	7.86	4.67	59.7
Total Dioxins & Furans Only	<183	<280	<187	<216	25.6
Total PCBs Only	<466	<1214	<1662	<1114	54.2
Total Dioxins & Furans and PCBs	<649	<1494	<1849	<1331	46.3

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific			Coefficient		
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.013	<0.019	<0.014	<0.016	20.8
12378-pentachlorodibenzo-p-dioxin	<0.022	<0.023	0.020	<0.022	6.1
123478-hexachlorodibenzo-p-dioxin	0.060	<0.076	<0.056	<0.064	16.4
123678-hexachlorodibenzo-p-dioxin	0.15	<0.17	0.14	<0.15	9.4
123789-hexachlorodibenzo-p-dioxin	0.063	<0.069	<0.066	<0.066	4.4
1234678-heptachlorodibenzo-p-dioxin	0.93	1.10	0.87	0.97	12.3
Octachlorodibenzo-p-dioxin	1.02	2.35	1.08	1.48	50.7
2378-tetrachlorodibenzofuran	<0.019	<0.043	<0.013	<0.025	62.8
12378-pentachlorodibenzofuran	0.022	<0.043	0.030	<0.023	16.0
23478-pentachlorodibenzofuran	< 0.056	0.028	<0.030	<0.027	30.0
123478-hexachlorodibenzofuran	<0.066	0.082	<0.040	<0.001	15.6
123678-hexachlorodibenzofuran	0.088	< 0.065	<0.059	<0.071	20.6
234678-hexachlorodibenzofuran	0.15	0.15	0.12	0.14	10.3
123789-hexachlorodibenzofuran	0.037	<0.040	<0.12	<0.051	43.0
1234678-heptachlorodibenzofuran	0.38	0.51	0.34	0.41	21.4
1234789-heptachlorodibenzofuran	<0.059	<0.056	0.050	<0.055	9.0
Octachlorodibenzofuran	<0.14	<0.29	<0.16	<0.20	40.9
PCB 81	<0.089	<0.079	<0.083	<0.084	5.8
PCB 77	0.23	0.75	0.64	0.54	50.2
PCB 123	0.085	0.28	0.25	0.21	51.5
PCB 118	5.86	15.6	16.8	12.7	47.0
PCB 114	0.13	0.39	0.48	0.33	53.2
PCB 105	1.50	4.46	7.40	4.45	66.3
PCB 126	< 0.049	<0.086	<0.13	<0.088	45.2
PCB 167	0.091	<0.17	0.58	<0.28	95.1
PCB 156/157	0.26	0.47	2.04	0.92	105
PCB 169	<0.027	<0.056	< 0.059	<0.048	37.1
PCB 189	0.062	0.050	0.14	0.082	56.2
Total Dioxins & Furans Only	<3.29	<5.16	<3.21	<3.88	28.4
Total PCBs Only	<8.39	<22.3	<28.6	<19.8	52.3
Total Dioxins & Furans and PCBs	<11.7	<27.5	<31.8	<23.7	44.8

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Concentration	Concentration	Concentration	Concentration	Rate
	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.61	<1.04	<0.82	<0.88	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.85	<1.45	<1.15	<1.22	<0.022
123478-hexachlorodibenzo-p-dioxin	<2.49	<4.24	<3.35	<3.57	<0.064
123678-hexachlorodibenzo-p-dioxin	<5.98	<10.2	<8.05	<8.59	<0.15
123789-hexachlorodibenzo-p-dioxin	<2.59	<4.40	<3.48	<3.71	< 0.066
1234678-heptachlorodibenzo-p-dioxin	37.6	64.1	50.7	54.1	0.97
Octachlorodibenzo-p-dioxin	57.4	97.9	77.4	82.4	1.48
2378-tetrachlorodibenzofuran	<0.96	<1.65	<1.30	<1.39	<0.025
12378-pentachlorodibenzofuran	<1.05	<1.78	<1.41	<1.51	<0.027
23478-pentachlorodibenzofuran	<2.38	<4.06	<3.21	<3.42	<0.061
123478-hexachlorodibenzofuran	<2.74	<4.68	<3.70	<3.94	<0.071
123678-hexachlorodibenzofuran	<2.76	<4.71	<3.72	<3.97	< 0.071
234678-hexachlorodibenzofuran	5.40	9.20	7.27	7.76	0.14
123789-hexachlorodibenzofuran	<2.00	<3.39	<2.68	<2.87	< 0.051
1234678-heptachlorodibenzofuran	16.0	27.3	21.6	23.0	0.41
1234789-heptachlorodibenzofuran	<2.14	<3.65	<2.88	<3.07	<0.055
Octachlorodibenzofuran	<7.67	<13.1	<10.3	<11.0	<0.20
PCB 81	<3.26	<5.55	<4.39	<4.68	<0.084
PCB 77	21.1	35.8	28.3	30.3	0.54
PCB 123	8.05	13.7	10.8	11.6	0.21
PCB 118	499	847	669	716	12.7
PCB 114	13.1	22.2	17.5	18.8	0.33
PCB 105	176	298	235	252	4.45
PCB 126	<3.46	<5.87	<4.64	<4.97	<0.088
PCB 167	<11.2	<18.8	<14.9	<16.0	<0.28
PCB 156/157	36.9	62.2	49.1	52.9	0.92
PCB 169	<1.86	<3.17	<2.50	<2.68	<0.048
PCB 189	3.26	5.51	4.35	4.67	0.082
Total Dioxins & Furans Only	<151	<257	<203	<216	<3.88
Total PCBs Only	<776	<1317	<1041	<1114	<19.8
Total Dioxins & Furans and PCBs	<927	<1574	<1244	<1331	<23.7

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 43

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Blank Dioxin and Furan Specific Isomer Analyses

Specific	Blank	Laboratory
Isomer	Train	Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<3.0	<3.1
12378-pentachlorodibenzo-p-dioxin	<2.3	<3.1
123478-hexachlorodibenzo-p-dioxin	<3.2	<3.4
123678-hexachlorodibenzo-p-dioxin	<2.8	<3.3
123789-hexachlorodibenzo-p-dioxin	<3.1	<3.3
1234678-heptachlorodibenzo-p-dioxin	<16	<15
Octachlorodibenzo-p-dioxin	<82	133
2378-tetrachlorodibenzofuran	<1.8	<1.9
12378-pentachlorodibenzofuran	<1.7	<2.0
23478-pentachlorodibenzofuran	<1.6	<1.9
123478-hexachlorodibenzofuran	<1.8	<2.7
123678-hexachlorodibenzofuran	<1.8	<2.6
234678-hexachlorodibenzofuran	<1.9	<2.9
123789-hexachlorodibenzofuran	<2.2	<3.3
1234678-heptachlorodibenzofuran	<3.1	<7.4
1234789-heptachlorodibenzofuran	<2.5	<9.5
Octachlorodibenzofuran	17.9	31.5
PCB 81	<22	<12
PCB 77	33.2	<12
PCB 123	<29	<14
PCB 118	680	18.3
PCB 114	<23	<14
PCB 105	340	<14
PCB 126	<26	<17
PCB 167	51.4	<11
PCB 156/157	144	<16
PCB 169	<22	<13
PCB 189	20.2	<10
Total Dioxins & Furans Only	<148.7	<229.9
Total PCBs Only	<1391	<151
Total Dioxins & Furans and PCBs	<1540	<381

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit In these cases the value of the detection limit was used to calculate the total collected.

TABLE 44

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific	Toxicity		Actual Con	centration	
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	pg TEQ/m³	pg TEQ/m³	pg TEQ/m³	pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.52	<0.74	<0.58	<0.61
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.85	<0.87	0.83	<0.85
123478-hexachlorodibenzo-p-dioxin	0.10000	0.23	<0.29	<0.23	<0.25
123678-hexachlorodibenzo-p-dioxin	0.10000	0.59	<0.64	0.57	< 0.60
123789-hexachlorodibenzo-p-dioxin	0.10000	0.25	<0.26	<0.27	<0.26
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.36	0.42	0.35	0.38
Octachlorodibenzo-p-dioxin	0.00030	0.012	0.027	0.013	0.017
2378-tetrachlorodibenzofuran	0.10000	<0.074	<0.16	<0.054	<0.096
12378-pentachlorodibenzofuran	0.03000	0.025	<0.032	0.037	< 0.031
23478-pentachlorodibenzofuran	0.30000	<0.65	0.93	<0.56	<0.71
123478-hexachlorodibenzofuran	0.10000	<0.25	0.31	<0.26	<0.27
123678-hexachlorodibenzofuran	0.10000	0.34	<0.25	<0.24	<0.28
234678-hexachlorodibenzofuran	0.10000	0.57	0.56	0.50	0.54
123789-hexachlorodibenzofuran	0.10000	0.14	<0.15	<0.31	<0.20
1234678-heptachlorodibenzofuran	0.01000	0.15	0.19	0.14	0.16
1234789-heptachlorodibenzofuran	0.01000	<0.023	<0.021	0.020	<0.021
Octachlorodibenzofuran	0.00030	<0.0016	<0.0033	<0.0020	<0.0023
PCB 81	0.00030	<0.0010	<0.00090	<0.0010	<0.00098
PCB 77	0.00010	0.00090	0.0028	0.0026	0.0021
PCB 123	0.00003	0.000098	0.00032	0.00031	0.00024
PCB 118	0.00003	0.0068	0.018	0.020	0.015
PCB 114	0.00003	0.00016	0.00044	0.00058	0.00039
PCB 105	0.00003	0.0017	0.0050	0.0090	0.0053
PCB 126	0.10000	<0.19	<0.32	<0.52	<0.35
PCB 167	0.00003	0.00011	<0.00019	0.00071	< 0.00034
PCB 156/157	0.00003	0.00030	0.00053	0.0025	0.0011
PCB 169	0.03000	<0.032	<0.064	<0.073	<0.056
PCB 189	0.00003	0.000072	0.000056	0.00016	0.000098
Total Dioxins & Furans Only	•	<5.03	<5.84	<4.96	<5.28
Total PCBs Only		<0.23	<0.42	<0.63	< 0.43
Total Dioxins & Furans and PCBs		<5.26	<6.26	<5.59	<5.71

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific	Toxicity	Dry Reference Concentration						
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average			
	Factor	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm³*	pg TEQ/Rm³*	pg TEQ/Rm³*			
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.89	<1.27	<0.97	<1.04			
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.46	<1.50	1.39	<1.45			
123478-hexachlorodibenzo-p-dioxin	0.10000	0.40	< 0.49	<0.38	<0.42			
123678-hexachlorodibenzo-p-dioxin	0.10000	1.01	<1.09	0.95	<1.02			
123789-hexachlorodibenzo-p-dioxin	0.10000	0.42	<0.45	< 0.45	<0.44			
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.62	0.71	0.59	0.64			
Octachlorodibenzo-p-dioxin	0.00030	0.020	0.046	0.022	0.029			
2378-tetrachlorodibenzofuran	0.10000	<0.13	<0.28	<0.090	<0.165			
12378-pentachlorodibenzofuran	0.03000	0.044	<0.055	0.062	<0.054			
23478-pentachlorodibenzofuran	0.30000	<1.11	1.60	< 0.94	<1.22			
123478-hexachlorodibenzofuran	0.10000	<0.44	0.54	< 0.43	<0.47			
123678-hexachlorodibenzofuran	0.10000	0.58	< 0.43	< 0.40	< 0.47			
234678-hexachlorodibenzofuran	0.10000	0.97	0.96	0.83	0.92			
123789-hexachlorodibenzofuran	0.10000	0.24	<0.26	<0.52	< 0.34			
1234678-heptachlorodibenzofuran	0.01000	0.25	0.33	0.23	0.27			
1234789-heptachlorodibenzofuran	0.01000	<0.039	< 0.036	0.034	<0.036			
Octachlorodibenzofuran	0.00030	<0.0028	<0.0057	<0.0033	<0.0039			
PCB 81	0.00030	<0.0018	<0.0015	<0.0017	<0.0017			
PCB 77	0.00010	0.0015	0.0048	0.0044	0.0036			
PCB 123	0.00003	0.00017	0.00055	0.00052	0.00041			
PCB 118	0.00003	0.012	0.030	0.034	0.025			
PCB 114	0.00003	0.00027	0.00076	0.00097	0.00067			
PCB 105	0.00003	0.0030	0.0087	0.015	0.0089			
PCB 126	0.10000	<0.33	<0.56	<0.88	<0.59			
PCB 167	0.00003	0.00018	<0.00032	0.0012	<0.00057			
PCB 156/157	0.00003	0.00052	0.00091	0.0042	0.0019			
PCB 169	0.03000	<0.054	<0.11	<0.12	<0.095			
PCB 189	0.00003	0.00012	0.000097	0.00028	0.00017			
Total Dioxins & Furans Only		<8.63	<10.1	<8.30	<8.99			
Total PCBs Only		<0.40	<0.72	<1.06	<0.73			
Total Dioxins & Furans and PCBs		<9.03	<10.8	<9.36	<9.72			

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific	Toxicity	Dry Adjusted Concentration				
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average	
	Factor	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm³*	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *	
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.71	<1.00	<0.76	<0.82	
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.15	<1.19	1.10	<1.15	
123478-hexachlorodibenzo-p-dioxin	0.10000	0.31	<0.39	<0.30	<0.34	
123678-hexachlorodibenzo-p-dioxin	0.10000	0.80	<0.86	0.75	<0.80	
123789-hexachlorodibenzo-p-dioxin	0.10000	0.33	<0.36	<0.36	<0.35	
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.49	0.56	0.47	0.51	
Octachlorodibenzo-p-dioxin	0.00030	0.016	0.036	0.017	0.023	
2378-tetrachlorodibenzofuran	0.10000	<0.10	<0.22	<0.071	<0.13	
12378-pentachlorodibenzofuran	0.03000	0.035	<0.044	0.049	< 0.042	
23478-pentachlorodibenzofuran	0.30000	<0.88	1.26	<0.75	<0.96	
123478-hexachlorodibenzofuran	0.10000	<0.34	0.43	< 0.34	< 0.37	
123678-hexachlorodibenzofuran	0.10000	0.46	<0.34	<0.32	< 0.37	
234678-hexachlorodibenzofuran	0.10000	0.77	0.76	0.66	0.73	
123789-hexachlorodibenzofuran	0.10000	0.19	<0.20	< 0.41	<0.27	
1234678-heptachlorodibenzofuran	0.01000	0.20	0.26	0.18	0.22	
1234789-heptachlorodibenzofuran	0.01000	<0.031	<0.029	0.027	< 0.029	
Octachlorodibenzofuran	0.00030	<0.0022	<0.0045	<0.0026	<0.0031	
PCB 81	0.00030	<0.0014	<0.0012	<0.0013	<0.0013	
PCB 77	0.00010	0.0012	0.0038	0.0034	0.0028	
PCB 123	0.00003	0.00013	0.00043	0.00041	0.00032	
PCB 118	0.00003	0.0092	0.024	0.027	0.020	
PCB 114	0.00003	0.00021	0.00060	0.00077	0.00053	
PCB 105	0.00003	0.0024	0.0069	0.012	0.0071	
PCB 126	0.10000	<0.26	< 0.44	<0.69	< 0.46	
PCB 167	0.00003	0.00014	<0.00025	0.00094	<0.00045	
PCB 156/157	0.00003	0.00041	0.00072	0.0033	0.0015	
PCB 169	0.03000	<0.043	<0.086	<0.096	<0.075	
PCB 189	0.00003	0.000098	0.000076	0.00022	0.00013	
Total Dioxins & Furans Only		<6.82	<7.94	<6.56	<7.11	
Total PCBs Only		<0.32	<0.56	<0.84	<0.57	
Total Dioxins & Furans and PCBs		<7.14	<8.50	<7.40	<7.68	

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 46B

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

Calculated Using the Full Detection Limit

Specific	Toxicity	Toxicity Dry Adjusted Concentration					
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average		
	Factor	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> *		
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.71	<1.00	<0.76	<0.82		
12378-pentachlorodibenzo-p-dioxin	0.500	<0.58	<0.59	0.55	<0.57		
123478-hexachlorodibenzo-p-dioxin	0.100	0.31	<0.39	<0.30	<0.34		
123678-hexachlorodibenzo-p-dioxin	0.100	0.80	<0.86	0.75	<0.80		
123789-hexachlorodibenzo-p-dioxin	0.100	0.33	<0.36	<0.36	<0.35		
1234678-heptachlorodibenzo-p-dioxin	0.010	0.49	0.56	0.47	0.51		
Octachlorodibenzo-p-dioxin	0.001	0.054	0.12	0.058	0.077		
2378-tetrachlorodibenzofuran	0.100	<0.10	<0.22	<0.071	<0.13		
12378-pentachlorodibenzofuran	0.050	0.058	<0.073	0.081	< 0.071		
23478-pentachlorodibenzofuran	0.500	<1.46	2.10	<1.24	<1.60		
123478-hexachlorodibenzofuran	0.100	<0.34	0.43	<0.34	<0.37		
123678-hexachlorodibenzofuran	0.100	0.46	< 0.34	<0.32	< 0.37		
234678-hexachlorodibenzofuran	0.100	0.77	0.76	0.66	0.73		
123789-hexachlorodibenzofuran	0.100	0.19	<0.20	< 0.41	<0.27		
1234678-heptachlorodibenzofuran	0.010	0.20	0.26	0.18	0.22		
1234789-heptachlorodibenzofuran	0.010	<0.031	<0.029	0.027	<0.029		
Octachlorodibenzofuran	0.001	<0.0074	<0.015	<0.0087	<0.010		
Total Dioxins & Furans		<6.90	<8.31	<6.59	<7.26		
In-Stack Emission Limit					60		

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific	Toxicity	Wet Reference Concentration					
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average		
	Factor	pg TEQ/Rm³*	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm³*	pg TEQ/Rm <sup>3*</sup>		
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.75	<1.06	<0.83	<0.88		
12378-pentachlorodibenzo-p-dioxin	1.00000	<1.22	<1.26	1.19	<1.22		
123478-hexachlorodibenzo-p-dioxin	0.10000	0.33	< 0.41	< 0.33	<0.36		
123678-hexachlorodibenzo-p-dioxin	0.10000	0.85	<0.92	0.81	<0.86		
123789-hexachlorodibenzo-p-dioxin	0.10000	0.35	<0.38	<0.38	<0.37		
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.52	0.60	0.51	0.54		
Octachlorodibenzo-p-dioxin	0.00030	0.017	0.038	0.019	0.025		
2378-tetrachlorodibenzofuran	0.10000	<0.11	<0.23	<0.077	<0.14		
12378-pentachlorodibenzofuran	0.03000	0.037	<0.046	0.053	< 0.045		
23478-pentachlorodibenzofuran	0.30000	<0.93	1.34	< 0.81	<1.02		
123478-hexachlorodibenzofuran	0.10000	<0.37	0.45	<0.37	< 0.39		
123678-hexachlorodibenzofuran	0.10000	0.49	< 0.36	< 0.35	< 0.40		
234678-hexachlorodibenzofuran	0.10000	0.82	0.80	0.71	0.78		
123789-hexachlorodibenzofuran	0.10000	0.20	<0.22	<0.44	<0.29		
1234678-heptachlorodibenzofuran	0.01000	0.21	0.28	0.20	0.23		
1234789-heptachlorodibenzofuran	0.01000	<0.033	< 0.031	0.029	< 0.031		
Octachlorodibenzofuran	0.00030	<0.0024	<0.0047	<0.0028	<0.0033		
PCB 81	0.00030	<0.0015	<0.0013	<0.0014	<0.0014		
PCB 77	0.00010	0.0013	0.0041	0.0037	0.0030		
PCB 123	0.00003	0.00014	0.00046	0.00044	0.00035		
PCB 118	0.00003	0.0098	0.025	0.029	0.021		
PCB 114	0.00003	0.00022	0.00064	0.00083	0.00056		
PCB 105	0.00003	0.0025	0.0073	0.013	0.0076		
PCB 126	0.10000	<0.27	<0.47	<0.75	<0.50		
PCB 167	0.00003	0.00015	<0.00027	0.0010	<0.00048		
PCB 156/157	0.00003	0.00044	0.00076	0.0036	0.0016		
PCB 169	0.03000	<0.046	<0.092	<0.10	<0.080		
PCB 189	0.00003	0.00010	0.000081	0.00024	0.00014		
Total Dioxins & Furans Only		<7.24	<8.41	<7.09	<7.58		
Total PCBs Only		<0.34	<0.60	<0.91	<0.61		
Total Dioxins & Furans and PCBs		<7.57	<9.01	<8.00	<8.20		

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 48

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Toxicity Equivalent Emission Rates

Specific	Toxicity				
Isomer	Equivalency	Test No. 1	Test No. 2	Test No. 3	Average
	Factor	ng TEQ/s	ng TEQ/s	ng TEQ/s	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.00000	<0.013	<0.019	<0.014	<0.016
12378-pentachlorodibenzo-p-dioxin	1.00000	<0.022	< 0.023	0.020	< 0.022
123478-hexachlorodibenzo-p-dioxin	0.10000	0.0060	<0.0076	<0.0056	< 0.0064
123678-hexachlorodibenzo-p-dioxin	0.10000	0.015	<0.017	0.014	< 0.015
123789-hexachlorodibenzo-p-dioxin	0.10000	0.0063	< 0.0069	<0.0066	<0.0066
1234678-heptachlorodibenzo-p-dioxin	0.01000	0.0093	0.011	0.0087	0.0097
Octachlorodibenzo-p-dioxin	0.00030	0.00031	0.00071	0.00032	0.00045
2378-tetrachlorodibenzofuran	0.10000	<0.0019	<0.0043	<0.0013	<0.0025
12378-pentachlorodibenzofuran	0.03000	0.00066	<0.00085	0.00091	<0.00081
23478-pentachlorodibenzofuran	0.30000	< 0.017	0.025	< 0.014	<0.018
123478-hexachlorodibenzofuran	0.10000	<0.0066	0.0083	< 0.0063	< 0.0071
123678-hexachlorodibenzofuran	0.10000	0.0088	<0.0066	< 0.0059	< 0.0071
234678-hexachlorodibenzofuran	0.10000	0.015	0.015	0.012	0.014
123789-hexachlorodibenzofuran	0.10000	0.0037	<0.0040	<0.0076	<0.0051
1234678-heptachlorodibenzofuran	0.01000	0.0038	0.0051	0.0034	0.0041
1234789-heptachlorodibenzofuran	0.01000	<0.00059	<0.00056	0.00050	<0.00055
Octachlorodibenzofuran	0.00030	<0.000042	<0.000087	<0.000049	<0.000059
PCB 81	0.00030	<0.000027	<0.000024	<0.000025	<0.000025
PCB 77	0.00010	0.000023	0.000075	0.000064	0.000054
PCB 123	0.00003	0.0000025	0.0000084	0.0000076	0.0000062
PCB 118	0.00003	0.00018	0.00047	0.00050	0.00038
PCB 114	0.00003	0.0000040	0.000012	0.000014	0.000010
PCB 105	0.00003	0.000045	0.00013	0.00022	0.00013
PCB 126	0.10000	< 0.0049	<0.0086	< 0.013	<0.0088
PCB 167	0.00003	0.0000027	<0.0000050	0.000018	<0.0000084
PCB 156/157	0.00003	0.0000078	0.000014	0.000061	0.000028
PCB 169	0.03000	<0.00082	<0.0017	<0.0018	<0.0014
PCB 189	0.00003	0.0000019	0.0000015	0.0000041	0.0000025
Total Dioxins & Furans Only		<0.13	<0.15	<0.12	<0.14
Total PCBs Only		<0.0060	<0.011	<0.016	< 0.011
Total Dioxins & Furans and PCBs		<0.14	<0.17	<0.14	<0.15

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission
isomer					Rate
	pg TEQ/m³	pg TEQ/Rm <sup>3*</sup>	pg TEQ/Rm <sup>3</sup> **	pg TEQ/Rm <sup>3</sup> *	ng TEQ/s
   2378-tetrachlorodibenzo-p-dioxin"	<0.61	<1.04	<0.82	<0.88	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.85	<1.45	<1.15	<1.22	<0.010
123478-hexachlorodibenzo-p-dioxin	<0.25	<0.42	<0.34	<0.36	<0.0064
123678-hexachlorodibenzo-p-dioxin	<0.60	<1.02	<0.80	<0.86	<0.015
123789-hexachlorodibenzo-p-dioxin	<0.26	<0.44	<0.35	<0.37	<0.015
1234678-heptachlorodibenzo-p-dioxin	0.38	0.64	0.51	0.54	0.0097
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.0097
octosmorodiscrizo p dioxin	0.017	0.025	0.023	0.025	0.00043
2378-tetrachlorodibenzofuran	<0.096	<0.17	<0.13	<0.14	<0.0025
12378-pentachlorodibenzofuran	< 0.031	<0.054	< 0.042	<0.045	<0.00081
23478-pentachlorodibenzofuran	< 0.71	<1.22	<0.96	<1.02	<0.018
123478-hexachlorodibenzofuran	<0.27	<0.47	<0.37	<0.39	<0.0071
123678-hexachlorodibenzofuran	<0.28	<0.47	<0.37	<0.40	<0.0071
234678-hexachlorodibenzofuran	0.54	0.92	0.73	0.78	0.014
123789-hexachlorodibenzofuran	<0.20	< 0.34	<0.27	<0.29	<0.0051
1234678-heptachlorodibenzofuran	0.16	0.27	0.22	0.23	0.0041
1234789-heptachlorodibenzofuran	< 0.021	<0.036	<0.029	<0.031	<0.00055
Octachlorodibenzofuran	<0.0023	<0.0039	<0.0031	<0.0033	<0.000059
PCB 81	<0.00098	<0.0017	<0.0013	<0.0014	<0.000025
PCB 77	0.0021	0.0036	0.0028	0.0030	0.000054
PCB 123	0.00024	0.00041	0.00032	0.00035	0.0000054
PCB 118	0.015	0.025	0.020	0.021	0.00038
PCB 114	0.00039	0.00067	0.00053	0.00056	0.000010
PCB 105	0.0053	0.0089	0.0071	0.0076	0.00013
PCB 126	<0.35	<0.59	<0.46	<0.50	<0.0088
PCB 167	<0.00034	<0.00057	<0.00045	<0.00048	<0.000084
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000028
PCB 169	<0.056	<0.095	<0.075	<0.080	<0.0014
PCB 189	0.000098	0.00017	0.00013	0.00014	0.0000025
Total Dioxins & Furans Only	<5.28	<8.99	<7.11	<7.58	<0.14
Total PCBs Only	<0.43	<0.73	<0.57	< 0.61	<0.011
Total Dioxins & Furans and PCBs	<5.71	<9.72	<7.68	<8.20	<0.15

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 50

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Summary of Dioxin and Furan Toxicity Equivalent Emission Data

Calculated Using Half the Detection Limit

Specific	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission	
Isomer	Concentration	Concentration	Concentration	Concentration	Rate	
	pg TEQ/m³	pg TEQ/Rm <sup>3</sup> *	pg TEQ/Rm <sup>3</sup> **	pg TEQ/Rm <sup>3</sup> *	ng TEQ/s	
2378-tetrachlorodibenzo-p-dioxin	0.31	0.52	0.41	0.44	0.0079	
12378-pentachlorodibenzo-p-dioxin	0.56	0.96	0.76	0.81	0.014	
123478-hexachlorodibenzo-p-dioxin	0.16	0.28	0.22	0.234	0.0042	
123678-hexachlorodibenzo-p-dioxin	0.49	0.84	0.66	0.71	0.013	
123789-hexachlorodibenzo-p-dioxin	0.17	0.29	0.23	0.24	0.0044	
1234678-heptachlorodibenzo-p-dioxin	0.38	0.64	0.51	0.54	0.0097	
Octachlorodibenzo-p-dioxin	0.017	0.029	0.023	0.025	0.00045	
2378-tetrachlorodibenzofuran	0.048	0.083	0.065	0.069	0.0013	
12378-pentachlorodibenzofuran	0.026	0.044	0.035	0.037	0.00066	
23478-pentachlorodibenzofuran	0.51	0.87	0.69	0.74	0.013	
123478-hexachlorodibenzofuran	0.19	0.32	0.26	0.27	0.0049	
123678-hexachlorodibenzofuran	0.19	0.33	0.26	0.28	0.0050	
234678-hexachlorodibenzofuran	0.54	0.92	0.73	0.78	0.014	
123789-hexachlorodibenzofuran	0.12	0.21	0.17	0.18	0.0032	
1234678-heptachlorodibenzofuran	0.16	0.27	0.22	0.23	0.0041	
1234789-heptachlorodibenzofuran	0.014	0.024	0.019	0.020	0.00036	
Octachlorodibenzofuran	0.0012	0.0020	0.0016	0.0017	0.000030	
PCB 81	0.00049	0.00083	0.00066	0.00070	0.000013	
PCB 77	0.0021	0.0036	0.0028	0.0030	0.000054	
PCB 123	0.00024	0.00041	0.00032	0.00035	0.0000062	
PCB 118	0.015	0.025	0.020	0.021	0.00038	
PCB 114	0.00039	0.00067	0.00053	0.00056	0.000010	
PCB 105	0.0053	0.0089	0.0071	0.0076	0.00013	
PCB 126	0.17	0.29	0.23	0.25	0.0044	
PCB 167	0.00030	0.00051	0.00040	0.00044	0.0000076	
PCB 156/157	0.0011	0.0019	0.0015	0.0016	0.000028	
PCB 169	0.028	0.048	0.038	0.040	0.00071	
PCB 189	0.00098	0.00017	0.00013	0.00014	0.0000025	
Total Dioxins & Furans Only	3.90	6.64	5.25	5.60	0.10	
Total PCBs Only	0.23	0.38	0.30	0.32	0.0058	
Total Dioxins & Furans and PCBs	4.12	7.02	5.55	5.92	0.11	

<sup>\*</sup> At 25°C and 1 atmosphere

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	1950	248	425	336	356	6.42
1,3-Dichlorobenzene	188	23.9	41.0	32.4	34.4	0.62
1,4-Dichlorobenzene	133	16.9	29.0	22.9	24.3	0.44
1,2-Dichlorobenzene	141	17.9	30.7	24.3	25.8	0.46
Total Dichlorobenzene	462	58.7	101	79.6	84.4	1.52
1,3,5-trichlorobenzene	23.9	3.04	5.21	4.12	4.37	0.079
1,2,4-trichlorobenzene	42.9	5.45	9.35	7.39	7.84	0.14
1,2,3-trichlorobenzene	20.5	2.60	4.47	3.53	3.75	0.067
Total Trichlorobenzene	87.3	11.1	19.0	15.0	16.0	0.29
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	17.8	2.26	3.88	3.07	3.25	0.059
1,2,3,4-tetrachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total Tetrachlorobenzene	<29.8	<3.79	<6.49	<5.13	<5.45	<0.098
Pentachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Hexachlorobenzene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total Chlorobenzenes	<2553	<324	<556	<440	<467	<8.40

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*):	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*):	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	1970	246	423	334	354	6.51
1,3-Dichlorobenzene	198	24.7	42.5	33.5	35.5	0.65
1,4-Dichlorobenzene	128	16.0	27.5	21.7	23.0	0.42
1,2-Dichlorobenzene	148	18.4	31.7	25.1	26.6	0.49
Total Dichlorobenzene	474	59.1	102	80.3	85.1	1.57
1,3,5-trichlorobenzene	19.3	2.41	4.14	3.27	3.46	0.064
1,2,4-trichlorobenzene	45.1	5.62	9.67	7.64	8.10	0.15
1,2,3-trichlorobenzene	20.2	2.52	4.33	3.42	3.63	0.067
Total Trichlorobenzene	84.6	10.5	18.1	14.3	15.2	0.28
   1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.50	<2.57	<2.03	<2.15	<0.040
1,2,3,4-tetrachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
Total Tetrachlorobenzene	<24.0	<2.99	<5.15	<4.07	<4.31	<0.079
Pentachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Hexachlorobenzene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Total Chlorobenzenes	<2577	<321	<553	<436	<463	<8.51

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*):	15.4
Dry Adjusted Flowrate (Rm³/s**):	19.5
Wet Reference Flowrate (Rm³/s*):	18.4

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	1430	192	321	254	275	4.73
1,3-Dichlorobenzene	144	19.3	32.4	25.6	27.7	0.48
1,4-Dichlorobenzene	91.8	12.3	20.6	16.3	17.6	0.30
1,2-Dichlorobenzene	109	14.6	24.5	19.4	20.9	0.36
Total Dichlorobenzene	345	46.3	77.5	61.3	66.3	1.14
1,3,5-trichlorobenzene	18.1	2.43	4.07	3.22	3.48	0.060
1,2,4-trichlorobenzene	35.0	4.70	7.87	6.22	6.72	0.12
1,2,3-trichlorobenzene	22.0	2.96	4.95	3.91	4.23	0.073
Total Trichlorobenzene	75.1	10.1	16.9	13.3	14.4	0.25
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<1.61	<2.70	<2.13	<2.31	<0.040
1,2,3,4-tetrachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Total Tetrachlorobenzene	<24.0	<3.22	<5.40	<4.26	<4.61	<0.079
Pentachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Hexachlorobenzene	<12	<1.61	<2.70	<2.13	<2.31	<0.040
Total Chlorobenzenes	<1898	<255	<427	<337	<365	<6.27

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**):	18.6
Wet Reference Flowrate (Rm³/s*) :	17.2

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific		Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Monochlorobenzene	248	246	192	228	13.8
1,3-Dichlorobenzene	23.9	24.7	19.3	22.6	12.7
1,4-Dichlorobenzene	16.9	16.0	12.3	15.1	16.0
1,2-Dichlorobenzene	17.9	18.4	14.6	17.0	12.1
Total Dichlorobenzene	58.7	59.1	46.3	54.7	13.3
1,3,5-trichlorobenzene	3.04	2.41	2.43	2.62	13.6
1,2,4-trichlorobenzene	5.45	5.62	4.70	5.26	9.3
1,2,3-trichlorobenzene	2.60	2.52	2.96	2.69	8.6
Total Trichlorobenzene	11.1	10.5	10.1	10.6	4.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.26	<1.50	<1.61	<1.79	23.0
1,2,3,4-tetrachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Total Tetrachlorobenzene	<3.79	<2.99	<3.22	<3.33	12.2
Pentachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Hexachlorobenzene	<1.52	<1.50	<1.61	<1.54	3.9
Total Chlorobenzenes	<324	<321	<255	<300	13.0

TABLE 55

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dry Reference Concentrations for Chlorobenzenes

C	Coefficient			
Test No. 1	Test No. 2	Test No. 3	Average	of Variation
ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
425	423	321	390	15.1
41.0	42.5	32.4	38.6	14.1
29.0	27.5	20.6	25.7	17.3
30.7	31.7	24.5	29.0	13.5
101	102	77.5	93.3	14.6
5.21	4.14	4.07	4.47	14.3
9.35	9.67	7.87	8.96	10.7
4.47	4.33	4.95	4.58	7.0
19.0	18.1	16.9	18.0	6.0
3.88	<2.57	<2.70	<3.05	23.6
<2.61	<2.57	<2.70	<2.63	2.4
<6.49	<5.15	<5.40	<5.68	12.6
<2.61	<2.57	<2.70	<2.63	2.4
<2.61	<2.57	<2.70	<2.63	2.4
<556	<553	<427	<512	14.4
	Test No. 1 ng/Rm³*  425  41.0 29.0 30.7 101  5.21 9.35 4.47 19.0  3.88 <2.61 <6.49  <2.61 <2.61 <2.61	Test No. 1       Test No. 2         ng/Rm³*       ng/Rm³*         425       423         41.0       42.5         29.0       27.5         30.7       31.7         101       102         5.21       4.14         9.35       9.67         4.47       4.33         19.0       18.1         3.88       <2.57	Test No. 1         Test No. 2         Test No. 3           ng/Rm³*         ng/Rm³*         ng/Rm³*           425         423         321           41.0         42.5         32.4           29.0         27.5         20.6           30.7         31.7         24.5           101         102         77.5           5.21         4.14         4.07           9.35         9.67         7.87           4.47         4.33         4.95           19.0         18.1         16.9           3.88         <2.57	ng/Rm³*         ng/Rm³*         ng/Rm³*         ng/Rm³*           425         423         321         390           41.0         42.5         32.4         38.6           29.0         27.5         20.6         25.7           30.7         31.7         24.5         29.0           101         102         77.5         93.3           5.21         4.14         4.07         4.47           9.35         9.67         7.87         8.96           4.47         4.33         4.95         4.58           19.0         18.1         16.9         18.0           3.88         <2.57

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer		Coefficient			
	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
Monochlorobenzene	336	334	254	308	15.1
1,3-Dichlorobenzene	32.4	33.5	25.6	30.5	14.1
1,4-Dichlorobenzene	22.9	21.7	16.3	20.3	17.3
1,2-Dichlorobenzene	24.3	25.1	19.4	22.9	13.5
Total Dichlorobenzene	79.6	80.3	61.3	73.7	14.6
1,3,5-trichlorobenzene	4.12	3.27	3.22	3.53	14.3
1,2,4-trichlorobenzene	7.39	7.64	6.22	7.08	10.7
1,2,3-trichlorobenzene	3.53	3.42	3.91	3.62	7.1
Total Trichlorobenzene	15.0	14.3	13.3	14.2	6.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.07	<2.03	<2.13	<2.41	23.6
1,2,3,4-tetrachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Total Tetrachlorobenzene	<5.13	<4.07	<4.26	<4.49	12.6
Pentachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Hexachlorobenzene	<2.07	<2.03	<2.13	<2.08	2.4
Total Chlorobenzenes	<440	<436	<337	<404	14.4

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific	N	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Monochlorobenzene	356	354	275	328	14.1
1,3-Dichlorobenzene	34.4	35.5	27.7	32.5	13.1
1,4-Dichlorobenzene	24.3	23.0	17.6	21.6	16.3
1,2-Dichlorobenzene	25.8	26.6	20.9	24.4	12.5
Total Dichlorobenzene	84.4	85.1	66.3	78.6	13.6
1,3,5-trichlorobenzene	4.37	3.46	3.48	3.77	13.7
1,2,4-trichlorobenzene	7.84	8.10	6.72	7.55	9.7
1,2,3-trichlorobenzene	3.75	3.63	4.23	3.87	8.2
Total Trichlorobenzene	16.0	15.2	14.4	15.2	5.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.25	<2.15	<2.31	<2.57	23.2
1,2,3,4-tetrachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Total Tetrachlorobenzene	<5.45	<4.31	<4.61	<4.79	12.3
Pentachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Hexachlorobenzene	<2.19	<2.15	<2.31	<2.22	3.5
Total Chlorobenzenes	<467	<463	<365	<431	13.4

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 58

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific		Emission Rate					
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation		
	μg/s	μg/s	μg/s	μg/s	%		
Monochlorobenzene	6.42	6.51	4.73	5.88	17.0		
1,3-Dichlorobenzene	0.62	0.65	0.48	0.58	16.2		
1,4-Dichlorobenzene	0.44	0.42	0.30	0.39	19.0		
1,2-Dichlorobenzene	0.46	0.49	0.36	0.44	15.6		
Total Dichlorobenzene	1.52	1.57	1.14	1.41	16.6		
1,3,5-trichlorobenzene	0.079	0.064	0.060	0.067	14.7		
1,2,4-trichlorobenzene	0.14	0.15	0.12	0.14	12.9		
1,2,3-trichlorobenzene	0.067	0.067	0.073	0.069	4.7		
Total Trichlorobenzene	0.29	0.28	0.25	0.27	7.6		
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.059	<0.040	<0.040	<0.046	23.8		
1,2,3,4-tetrachlorobenzene	< 0.039	<0.040	<0.040	<0.040	0.3		
Total Tetrachlorobenzene	<0.098	<0.079	<0.079	<0.086	12.6		
Pentachlorobenzene	<0.039	<0.040	<0.040	<0.040	0.3		
Hexachlorobenzene	<0.039	<0.040	<0.040	<0.040	0.3		
Total Chlorobenzenes	<8.40	<8.51	<6.27	<7.73	16.3		

TABLE 59

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Monochlorobenzene	228	390	308	328	5.88
1,3-Dichlorobenzene	22.6	38.6	30.5	32.5	0.58
1,4-Dichlorobenzene	15.1	25.7	20.3	21.6	0.39
1,2-Dichlorobenzene	17.0	29.0	22.9	24.4	0.44
Total Dichlorobenzene	54.7	93.3	73.7	78.6	1.41
1,3,5-trichlorobenzene	2.62	4.47	3.53	3.77	0.067
1,2,4-trichlorobenzene	5.26	8.96	7.08	7.55	0.14
1,2,3-trichlorobenzene	2.69	4.58	3.62	3.87	0.069
Total Trichlorobenzene	10.6	18.0	14.2	15.2	0.27
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<1.79	<3.05	<2.41	<2.57	<0.046
1,2,3,4-tetrachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Total Tetrachlorobenzene	<3.33	<5.68	<4.49	<4.79	<0.086
Pentachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Hexachlorobenzene	<1.54	<2.63	<2.08	<2.22	<0.040
Total Chlorobenzenes	<300	<512	<404	<431	<7.73

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers	Blank Train	Laboratory Blank
and Congener Group Totals	Total ng	Total ng
Monochlorobenzene	<12	<12
1,3-Dichlorobenzene	<12	<12
1,4-Dichlorobenzene	<12	<12
1,2-Dichlorobenzene	<12	<12
Total Dichlorobenzene	<36.0	<36.0
1,3,5-trichlorobenzene	<12	<12
1,2,4-trichlorobenzene	<12	<12
1,2,3-trichlorobenzene	<12	<12
Total Trichlorobenzene	<36.0	<36.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<12	<12
1,2,3,4-tetrachlorobenzene	<12	<12
Total Tetrachlorobenzene	<24.0	<24.0
Pentachlorobenzene	<12	<12
Hexachlorobenzene	<12	<12
Total Chlorobenzenes	<132	<132

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
4-monochlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Monochlorophenols	<180	<22.9	<39.2	<31.0	<32.9	<0.59
2,6-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3,5-dichlorophenol	238	30.2	51.9	41.0	43.5	0.78
2,3-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
3,4-dichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Dichlorophenols	<478	<60.7	<104	<82.3	<87.4	<1.57
2,4,6-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,6-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,4,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,4-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	< 0.20
3,4,5-trichlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Trichlorophenols	<360	<45.7	<78.4	<62.0	<65.8	<1.18
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Tetrachlorophenols	<120	<15.2	<26.1	<20.7	<21.9	<0.39
Pentachlorophenol	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Total Chlorophenols	<1198	<152	<261	<206	<219	<3.94

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*):	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Collected	Concentration	Concentration	Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
4-monochlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Monochlorophenols	<180	<22.4	<38.6	<30.5	<32.3	<0.59
2,6-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,4 & 2,5-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,5-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,4-dichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Dichlorophenols	<300	<37.4	<64.4	<50.8	<53.9	<0.99
2,4,6-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,6-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,4,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,4-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
3,4,5-trichlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Trichlorophenols	<360	<44.9	<77.2	<61.0	<64.6	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
2,3,4,5-tetrachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Tetrachlorophenols	<120	<15.0	<25.7	<20.3	<21.5	<0.40
Pentachlorophenol	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Total Chlorophenols	<1020	<127	<219	<173	<183	<3.37

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*):	15.4
Dry Adjusted Flowrate (Rm³/s**):	19.5
Wet Reference Flowrate (Rm³/s*):	18.4

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted	Wet Reference	Emission
isomer				Concentration	Concentration	Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
4-monochlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Monochlorophenols	<180	<24.2	<40.5	<32.0	<34.6	<0.59
2,6-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,4 & 2,5-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,5-dichlorophenol	248	33.3	55.8	44.1	47.7	0.82
2,3-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,4-dichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Dichlorophenols	<488	<65.6	<110	<86.7	<93.8	<1.61
2,4,6-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,6-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,4,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,4-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
3,4,5-trichlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Trichlorophenols	<360	<48.4	<80.9	<64.0	<69.2	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
2,3,4,5-tetrachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Tetrachlorophenols	<120	<16.1	<27.0	<21.3	<23.1	<0.40
Pentachlorophenol	<60	<8.06	<13.5	<10.7	<11.5	<0.20
Total Chlorophenols	<1208	<162	<272	<215	<232	<3.99

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*):	14.7
Dry Adjusted Flowrate (Rm³/s**):	18.6
Wet Reference Flowrate (Rm³/s*):	17.2

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific	Actual Concentration					
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation	
	ng/m³	ng/m³	ng/m³	ng/m³	%	
2-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
3-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
4-monochlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
Total Monochlorophenols	<22.9	<22.4	<24.2	<23.2	3.9	
  2,6-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,4 & 2,5-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
3,5-dichlorophenol	30.2	<7.48	33.3	<23.7	59.6	
2,3-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
3,4-dichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
Total Dichlorophenols	<60.7	<37.4	<65.6	<54.6	27.6	
2,4,6-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,3,6-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,3,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,4,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,3,4-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
3,4,5-trichlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
Total Trichlorophenols	<45.7	<44.9	<48.4	<46.3	3.9	
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
2,3,4,5-tetrachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
Total Tetrachlorophenols	<15.2	<15.0	<16.1	<15.4	3.9	
Pentachlorophenol	<7.62	<7.48	<8.06	<7.72	3.9	
Total Chlorophenols	<152	<127	<162	<147	12.3	

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific		Dry Reference Concentration			
lsomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
4-monochlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Monochlorophenols	<39.2	<38.6	<40.5	<39.4	2.4
2,6-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,4 & 2,5-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,5-dichlorophenol	51.9	<12.9	55.8	<40.2	59.0
2,3-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,4-dichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Dichlorophenols	<104	<64.4	<110	<92.7	26.7
2,4,6-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,6-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,4,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,4-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
3,4,5-trichlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Trichlorophenols	<78.4	<77.2	<80.9	<78.9	2.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
2,3,4,5-tetrachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Tetrachlorophenols	<26.1	<25.7	<27.0	<26.3	2.4
Pentachlorophenol	<13.1	<12.9	<13.5	<13.1	2.4
Total Chlorophenols	<261	<219	<272	<250	11.2

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific		Dry Adjusted	Concentration		Coefficient
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<10.3	<10.2	-10 7	-10.4	~ 4
3-monochlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
4-monochlorophenol	<10.3		<10.7	<10.4	2.4
Total Monochlorophenols		<10.2	<10.7	<10.4	2.4
Total Monochiorophenois	<31.0	<30.5	<32.0	<31.2	2.4
2,6-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,4 & 2,5-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,5-dichlorophenol	41.0	<10.2	44.1	<31.7	59.1
2,3-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,4-dichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Dichlorophenols	<82.3	<50.8	<86.7	<73.3	26.7
2,4,6-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,6-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,4,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,4-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
3,4,5-trichlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Trichlorophenols	<62.0	<61.0	<64.0	<62.3	2.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
2,3,4,5-tetrachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Tetrachlorophenols	<20.7	<20.3	<21.3	<20.8	2.4
Pentachlorophenol	<10.3	<10.2	<10.7	<10.4	2.4
Total Chlorophenols	<206	<173	<215	<198	11.2

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 67

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific	1	Coefficient			
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
4-monochlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Monochlorophenols	<32.9	<32.3	<34.6	<33.3	3.5
2,6-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,4 & 2,5-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,5-dichlorophenol	43.5	<10.8	47.7	<34.0	59.5
2,3-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,4-dichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Dichlorophenols	<87.4	<53.9	<93.8	<78.3	27.4
2,4,6-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,6-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,4,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,4-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
3,4,5-trichlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Trichlorophenols	<65.8	<64.6	<69.2	<66.5	3.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
2,3,4,5-tetrachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Tetrachlorophenols	<21.9	<21.5	<23.1	<22.2	3.5
Pentachlorophenol	<11.0	<10.8	<11.5	<11.1	3.5
Total Chlorophenols	<219	<183	<232	<211	12.0

TABLE 68

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Chlorophenol Isomer and Congener Group Emission Rates

Specific	Emission Rate				Coefficient
Isomer	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/s	μg/s	μg/s	μg/s	%
2					
2-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
4-monochlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Monochlorophenols	<0.59	<0.59	<0.59	<0.59	0.3
2,6-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,4 & 2,5-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3,5-dichlorophenol	0.78	<0.20	0.82	< 0.60	58.1
2,3-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
3,4-dichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Dichlorophenols	<1.57	<0.99	<1.61	<1.39	25.0
2,4,6-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,6-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,5-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,4,5-trichlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,4-trichlorophenol	< 0.20	<0.20	<0.20	<0.20	0.3
3,4,5-trichlorophenol	< 0.20	<0.20	<0.20	<0.20	0.3
Total Trichlorophenols	<1.18	<1.19	<1.19	<1.19	0.3
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
2,3,4,5-tetrachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Tetrachlorophenols	<0.39	<0.40	<0.40	< 0.40	0.3
Pentachlorophenol	<0.20	<0.20	<0.20	<0.20	0.3
Total Chlorophenols	<3.94	<3.37	<3.99	<3.77	9.2

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
Isomer	Concentration	Concentration	Concentration	Concentration	Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
2-monochlorophenol	<7.72	<13.1	<10.4	<11.1	-0.20
3-monochlorophenol	<7.72 <7.72	<13.1	<10.4	<11.1 <11.1	<0.20
4-monochlorophenol	<7.72 <7.72	<13.1			<0.20
Total Monochlorophenols	<23.2	<39.4	<10.4 <31.2	<11.1 <33.3	<0.20
rotar monocinorophenois	\25.2	<b>\33.4</b>	<b>\31.</b> 2	<33.3	<0.59
2,6-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,4 & 2,5-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,5-dichlorophenol	<23.7	<40.2	<31.7	<34.0	< 0.60
2,3-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,4-dichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Dichlorophenols	<54.6	<92.7	<73.3	<78.3	<1.39
2,4,6-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,6-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,4,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,4-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
3,4,5-trichlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Trichlorophenols	<46.3	<78.9	<62.3	<66.5	<1.19
2,3,5,6/2,3,4,6-tetrachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
2,3,4,5-tetrachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Tetrachlorophenols	<15.4	<26.3	<20.8	<22.2	<0.40
Pentachlorophenol	<7.72	<13.1	<10.4	<11.1	<0.20
Total Chlorophenols	<147	<250	<198	<211	<3.77

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener	Lab Blank	Blank Train
Group	Total ng	Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6/2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	<12	<1.52	<2.61	-2.07	-2.10	-0.020
Acenaphthylene	<12	<1.52	<2.61	<2.07 <2.07	<2.19	<0.039
Anthracene	<12	<1.52	<2.61	<2.07 <2.07	<2.19	<0.039
Benzo(a)Anthracene	<12	<1.52	<2.61		<2.19	<0.039
Benzo(b)Fluoranthene	<12	<1.52	<2.61 <2.61	<2.07 <2.07	<2.19	<0.039
Benzo(k)Fluoranthene	<12	<1.52	<2.61		<2.19	<0.039
Benzo(a)fluorene	<12	<1.52		<2.07	<2.19	<0.039
Benzo(b)fluorene	<12	<1.52 <1.52	<2.61	<2.07	<2.19	<0.039
Benzo(g,h,i)Perylene	61.1		<2.61	<2.07	<2.19	<0.039
Benzo(a)Pyrene	<12	7.76	13.3	10.5	11.2	0.20
		<1.52	<2.61	<2.07	<2.19	< 0.039
Benzo(e)Pyrene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Biphenyl	32.0	4.06	6.97	5.51	5.85	0.11
2-Chloronaphthalene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Chrysene/Triphenylene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Coronene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Dibenzo(a,e)pyrene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
9,10-dimethylanthracene	<12	<1.52	<2.61	<2.07	<2.19	<0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.52	<2.61	<2.07	<2.19	< 0.039
Fluoranthene	19.4	2.46	4.23	3.34	3.55	0.064
Fluorene	<12	<1.52	<2.61	<2.07	<2.19	< 0.039
Indeno(1,2,3-cd)Pyrene	<12	<1.52	<2.61	<2.07	<2.19	< 0.039
2-methylanthracene	21.6	2.74	4.71	3.72	3.95	0.071
3-Methylcholanthrene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
1-Methylnaphthalene	22.3	2.83	4.86	3.84	4.08	0.073
2-Methylnaphthalene	39.1	4.97	8.52	6.73	7.15	0.13
1-Methylphenanthrene	36.4	4.62	7.93	6.27	6.65	0.12
9-Methylphenanthrene	13.1	1.66	2.85	2.26	2.39	0.043
Naphthalene	290	36.8	63.2	49.9	53.0	0.95
Perylene	<12	<1.52	<2.61	<2.07	<2.19	< 0.039
Phenanthrene	78.5	9.97	17.1	13.5	14.3	0.26
Picene	<60	<7.62	<13.1	<10.3	<11.0	<0.20
Pyrene	20.3	2.58	4.42	3.50	3.71	0.067
Tetralin	204	25.9	44.4	35.1	37.3	0.67
m-terphenyl	<12	<1.52	<2.61	<2.07	<2.19	< 0.039
o-Terphenyl	<12	<1.52	<2.61	<2.07	<2.19	<0.039
p-terphenyl	<12	<1.52	<2.61	<2.07	<2.19	<0.039
Total	<1330	<169	<290	<229	<243	<4.37

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	4.590
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*):	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

**TABLE 72 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Polycyclic Aromatic Hydrocarbon Emission Data** Test No. 2

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	44.7	5.57	9.59	7.57	8.02	0.15
Acenaphthylene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Anthracene	12.4	1.55	2.66	2.10	2.23	0.041
Benzo(a)Anthracene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(b)Fluoranthene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(k)Fluoranthene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(a)fluorene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(b)fluorene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Benzo(g,h,i)Perylene	47.5	5.92	10.2	8.05	8.53	0.16
Benzo(a)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
Benzo(e)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Biphenyl	57.4	7.16	12.3	9.72	10.3	0.19
2-Chloronaphthalene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Chrysene/Triphenylene	12.1	1.51	2.60	2.05	2.17	0.040
Coronene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Dibenzo(a,c/a,h)Anthracene	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
Dibenzo(a,e)pyrene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
9,10-dimethylanthracene	21.1	2.63	4.53	3.57	3.79	0.070
7,12-Dimethylbenzo(a)anthracene	<12	<1.50	<2 <i>.</i> 57	<2.03	<2.15	<0.040
Fluoranthene	64.0	7.98	13.7	10.8	11.5	0.21
Fluorene	26.5	3.30	5.68	4.49	4.76	0.088
Indeno(1,2,3-cd)Pyrene	<12	<1.50	<2.57	<2.03	<2.15	<0.040
2-methylanthracene	66.5	8.29	14.3	11.3	11.9	0.22
3-Methylcholanthrene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
1-Methylnaphthalene	25.4	3.17	5.45	4.30	4.56	0.084
2-Methylnaphthalene	54.1	6.74	11.6	9.16	9.71	0.18
1-Methylphenanthrene	42.2	5.26	9.05	7.15	7.58	0.14
9-Methylphenanthrene	67.4	8.40	14.5	11.4	12.1	0.22
Naphthalene	277	34.5	59.4	46.9	49.7	0.92
Perylene	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
Phenanthrene	230	28.7	49.3	39.0	41.3	0.76
Picene	<60	<7.48	<12.9	<10.2	<10.8	<0.20
Pyrene	66.2	8.25	14.2	11.2	11.9	0.22
Tetralin	278	34.7	59.6	47.1	49.9	0.92
m-terphenyl	25.0	3.12	5.36	4.24	4.49	0.083
o-Terphenyl	<12	<1.50	<2.57	<2.03	<2.15	< 0.040
p-terphenyl	<12	<1.50	<2.57	<2.03	<2.15	<0.040
Total	<1838	<229	<394	<311	<330	<6.07

Dry Gas Volume Sampled (Rm <sup>3</sup> *) :	4.662
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	18.4

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

<sup>\*</sup> At 25°C and 1 atmosphere \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

**TABLE 73 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet** Polycyclic Aromatic Hydrocarbon Emission Data Test No. 3

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate	
	ng	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s	
Acenaphthene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
Acenaphthylene	<12	<1.61	<2.70	<2.13	<2.31		
Anthracene	<12	<1.61	<2.70	<2.13	<2.31 <2.31	<0.040	
Benzo(a)Anthracene	<12	<1.61	<2.70	<2.13	<2.31 <2.31	<0.040	
Benzo(b)Fluoranthene	<12	<1.61	<2.70	<2.13	<2.31 <2.31	<0.040	
Benzo(k)Fluoranthene	<12	<1.61	<2.70	<2.13		<0.040	
Benzo(a)fluorene	<12	<1.61	<2.70	<2.13 <2.13	<2.31	<0.040	
Benzo(b)fluorene	<12	<1.61	<2.70 <2.70		<2.31	<0.040	
Benzo(g,h,i)Perylene	19.9	2.67	4.47	<2.13 3.54	<2.31	<0.040	
Benzo(a)Pyrene	<12	<1.61			3.82	0.066	
Benzo(e)Pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
Biphenyl	29.6	3.98	<2.70	<2.13	<2.31	<0.040	
2-Chloronaphthalene	<12	<1.61	6.65	5.26	5.69	0.098	
Chrysene/Triphenylene	<12 <12		<2.70	<2.13	<2.31	<0.040	
Coronene		<1.61	<2.70	<2.13	<2.31	<0.040	
Dibenzo(a,c/a,h)Anthracene	<60	<8.06	<13.5	<10.7	<11.5	<0.20	
Dibenzo(a,e)pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
	<60	<8.06	<13.5	<10.7	<11.5	<0.20	
9,10-dimethylanthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
7,12-Dimethylbenzo(a)anthracene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
Fluoranthene	27.2	3.65	6.12	4.83	5.23	0.090	
Fluorene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
Indeno(1,2,3-cd)Pyrene	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
2-methylanthracene	21.6	2.90	4.86	3.84	4.15	0.071	
3-Methylcholanthrene	<60	<8.06	<13.5	<10.7	<11.5	<0.20	
1-Methylnaphthalene	22.0	2.96	4.95	3.91	4.23	0.073	
2-Methylnaphthalene	32.5	4.37	7.31	5.77	6.24	0.11	
1-Methylphenanthrene	21.1	2.83	4.74	3.75	4.05	0.070	
9-Methylphenanthrene	14.5	1.95	3.26	2.58	2.79	0.048	
Naphthalene	224	30.1	50.4	39.8	43.0	0.74	
Perylene	<12	<1.61	<2.70	<2.13	<2.31	< 0.040	
Phenanthrene	66.1	8.88	14.9	11.7	12.7	0.22	
Picene	<60	<8.06	<13.5	<10.7	<11.5	<0.20	
Pyrene	18.5	2.49	4.16	3.29	3.55	0.061	
Tetralin	288	38.7	64.7	51.2	55.3	0.95	
m-terphenyl	<12	<1.61	<2.70	<2.13	<2.31	< 0.040	
o-Terphenyl	<12	<1.61	<2.70	<2.13	<2.31	< 0.040	
p-terphenyl	<12	<1.61	<2.70	<2.13	<2.31	<0.040	
Total	<1277	<172	<287	<227	<245	<4.22	

Dry Gas Volume Sampled (Rm³*) :	4.448
Actual Flowrate (m³/s) :	24.6
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**):	18.6
Wet Reference Flowrate (Rm³/s*) :	17.2

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

<sup>\*</sup> At 25°C and 1 atmosphere \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 74

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound			Coefficient		
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<1.52	5.57	<1.61	<2.90	79.6
Acenaphthylene	<1.52	<1.50	<1.61	<1.54	3.9
Anthracene	<1.52	1.55	<1.61	<1.56	2.9
Benzo(a)Anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(b)Fluoranthene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(k)Fluoranthene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(a)fluorene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(b)fluorene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(g,h,i)Perylene	7.76	5.92	2.67	5.45	47.2
Benzo(a)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
Benzo(e)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
Biphenyl	4.06	7.16	3.98	5.07	35.7
2-Chloronaphthalene	<1.52	<1.50	<1.61	<1.54	3.9
Chrysene/Triphenylene	<1.52	1.51	<1.61	<1.55	3.6
Coronene	<7.62	<7.48	<8.06	<7.72	3.9
Dibenzo(a,c/a,h)Anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Dibenzo(a,e)pyrene	<7.62	<7.48	<8.06	<7.72	3.9
9,10-dimethylanthracene	<1.52	2.63	<1.61	<1.92	32.0
7,12-Dimethylbenzo(a)anthracene	<1.52	<1.50	<1.61	<1.54	3.9
Fluoranthene	2.46	7.98	3.65	4.70	61.7
Fluorene	<1.52	3.30	<1.61	<2.15	46.7
Indeno(1,2,3-cd)Pyrene	<1.52	<1.50	<1.61	<1.54	3.9
2-methylanthracene	2.74	8.29	2.90	4.64	68.0
3-Methylcholanthrene	<7.62	<7.48	<8.06	<7.72	3.9
1-Methylnaphthalene	2.83	3.17	2.96	2.98	5.7
2-Methylnaphthalene	4.97	6.74	4.37	5.36	23.1
1-Methylphenanthrene	4.62	5.26	2.83	4.24	29.7
9-Methylphenanthrene	1.66	8.40	1.95	4.00	95.2
Naphthalene	36.8	34.5	30.1	33.8	10.1
Perylene	<1.52	<1.50	<1.61	<1.54	3.9
Phenanthrene	9.97	28.7	8.88	15.8	70.2
Picene	<7.62	<7.48	<8.06	<7.72	3.9
Pyrene	2.58	8.25	2.49	4.44	3.9 74.4
Tetralin	25.9	34.7	38.7	33.1	19.7
m-terphenyl	<1.52	3.12	<1.61	<2.08	42.9
o-Terphenyl	<1.52	<1.50	<1.61	<1.54	3.9
p-terphenyl	<1.52	<1.50	<1.61	<1.54	3.9
Total	<169	<229	<172	<190	17.9

TABLE 75

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound		Dry Reference Concentration				
	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%	
Acenaphthene	<2.61	9.59	<2.70	<4.97	80.6	
Acenaphthylene	<2.61	<2.57	<2.70	<2.63	2.4	
Anthracene	<2.61	2.66	<2.70	<2.66	1.6	
Benzo(a)Anthracene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(b)Fluoranthene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(k)Fluoranthene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(a)fluorene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(b)fluorene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(g,h,i)Perylene	13.3	10.2	4.47	9.32	48.1	
Benzo(a)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4	
Benzo(e)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4	
Biphenyl	6.97	12.3	6.65	8.65	36.8	
2-Chloronaphthalene	<2.61	<2.57	<2.70	<2.63	2.4	
Chrysene/Triphenylene	<2.61	2.60	<2.70	<2.64	2.1	
Coronene	<13.1	<12.9	<13.5	<13.1	2.4	
Dibenzo(a,c/a,h)Anthracene	<2.61	<2.57	<2.70	<2.63	2.4	
Dibenzo(a,e)pyrene	<13.1	<12.9	<13.5	<13.1	2.4	
9,10-dimethylanthracene	<2.61	4.53	<2.70	<3.28	32.9	
7,12-Dimethylbenzo(a)anthracene	<2.61	<2.57	<2.70	<2.63	2.4	
Fluoranthene	4.23	13.7	6.12	8.02	62.7	
Fluorene	<2.61	5.68	<2.70	<3.67	47.7	
Indeno(1,2,3-cd)Pyrene	<2.61	<2.57	<2.70	<2.63	2.4	
2-methylanthracene	4.71	14.3	4.86	7.94	68.9	
3-Methylcholanthrene	<13.1	<12.9	<13.5	<13.1	2.4	
1-Methylnaphthalene	4.86	5.45	4.95	5.08	6.3	
2-Methylnaphthalene	8.52	11.6	7.31	9.14	24.2	
1-Methylphenanthrene	7.93	9.05	4.74	7.24	30.9	
9-Methylphenanthrene	2.85	14.5	3.26	6.86	96.0	
Naphthalene	63.2	59.4	50.4	57.7	11.4	
Perylene	<2.61	<2.57	<2.70	<2.63	2.4	
Phenanthrene	17.1	49.3	14.9	27.1	71.2	
Picene	<13.1	<12.9	<13.5	<13.1	2.4	
Pyrene	4.42	14.2	4.16	7.59	75.4	
, Tetralin	44.4	59.6	64.7	56.3	18.8	
m-terphenyl	<2.61	5.36	<2.70	<3.56	43.9	
o-Terphenyl	<2.61	<2.57	<2.70	<2.63	2.4	
p-terphenyl	<2.61	<2.57	<2.70	<2.63	2.4	
Total	<290	<394	<287	<324	18.9	

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound		Coefficient			
-	Test No. 1	Test No. 2	Concentration Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.07	7.57	<2.13	<3.92	80.5
Acenaphthylene	<2.07	<2.03	<2.13	<2.08	2.4
Anthracene	<2.07	2.10	<2.13	<2.10	1.6
Benzo(a)Anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(b)Fluoranthene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(k)Fluoranthene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(a)fluorene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(b)fluorene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(g,h,i)Perylene	10.5	8.05	3.54	7.37	48.1
Benzo(a)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
Benzo(e)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
Biphenyl	5.51	9.72	5.26	6.83	36.7
2-Chloronaphthalene	<2.07	<2.03	<2.13	<2.08	2.4
Chrysene/Triphenylene	<2.07	2.05	<2.13	<2.08	2.1
Coronene	<10.3	<10.2	<10.7	<10.4	2.4
Dibenzo(a,c/a,h)Anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Dibenzo(a,e)pyrene	<10.3	<10.2	<10.7	<10.4	2.4
9,10-dimethylanthracene	<2.07	3.57	<2.13	<2.59	32.9
7,12-Dimethylbenzo(a)anthracene	<2.07	<2.03	<2.13	<2.08	2.4
Fluoranthene	3.34	10.8	4.83	6.34	62.6
Fluorene	<2.07	4.49	<2.13	<2.90	47.7
Indeno(1,2,3-cd)Pyrene	<2.07	<2.03	<2.13	<2.08	2.4
2-methylanthracene	3.72	11.3	3.84	6.27	68.9
3-Methylcholanthrene	<10.3	<10.2	<10.7	<10.4	2.4
1-Methylnaphthalene	3.84	4.30	3.91	4.02	6.2
2-Methylnaphthalene	6.73	9.16	5.77	7.22	24.2
1-Methylphenanthrene	6.27	7.15	3.75	5.72	30.8
9-Methylphenanthrene	2.26	11.4	2.58	5.42	96.0
Naphthalene	49.9	46.9	39.8	45.6	11.4
Perylene	<2.07	<2.03	<2.13	<2.08	2.4
Phenanthrene	13.5	39.0	11.7	21.4	71.1
Picene	<10.3	<10.2	<10.7	<10.4	2.4
Pyrene	3.50	11.2	3.29	6.00	75.3
Tetralin	35.1	47.1	51.2	44.5	18.7
m-terphenyl	<2.07	4.24	<2.13	<2.81	43.9
o-Terphenyl	<2.07	<2.03	<2.13	<2.08	2.4
p-terphenyl	<2.07	<2.03	<2.13	<2.08	2.4
Total	<229	<311	<227	<256	18.8

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound			Coefficient		
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<2.19	8.02	<2.31	<4.17	79.9
Acenaphthylene	<2.19	<2.15	<2.31	<2.22	3.5
Anthracene	<2.19	2.23	<2.31	<2.24	2.6
Benzo(a)Anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(b)Fluoranthene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(k)Fluoranthene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(a)fluorene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(b)fluorene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(g,h,i)Perylene	11.2	8.53	3.82	7.84	47.4
Benzo(a)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
Benzo(e)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
Biphenyl	5.85	10.3	5.69	7.28	36.0
2-Chloronaphthalene	<2.19	<2.15	<2.31	<2.22	3.5
Chrysene/Triphenylene	<2.19	2.17	<2.31	<2.22	3.2
Coronene	<11.0	<10.8	<11.5	<11.1	3.5
Dibenzo(a,c/a,h)Anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Dibenzo(a,e)pyrene	<11.0	<10.8	<11.5	<11.1	3.5
9,10-dimethylanthracene	<2.19	3.79	<2.31	<2.76	32.2
7,12-Dimethylbenzo(a)anthracene	<2.19	<2.15	<2.31	<2.22	3.5
Fluoranthene	3.55	11.5	5.23	6.75	62.0
Fluorene	<2.19	4.76	<2.31	<3.09	47.0
Indeno(1,2,3-cd)Pyrene	<2.19	<2.15	<2.31	<2.22	3.5
2-methylanthracene	3.95	11.9	4.15	6.68	68.2
3-Methylcholanthrene	<11.0	<10.8	<11.5	<11.1	3.5
1-Methylnaphthalene	4.08	4.56	4.23	4.29	5.8
2-Methylnaphthalene	7.15	9.71	6.24	7.70	23.4
1-Methylphenanthrene	6.65	7.58	4.05	6.09	30.0
9-Methylphenanthrene	2.39	12.1	2.79	5.76	95.4
Naphthalene	53.0	49.7	43.0	48.6	10.4
Perylene	<2.19	<2.15	<2.31	<2.22	3.5
Phenanthrene	14.3	41.3	12.7	22.8	70.5
Picene	<11.0	<10.8	<11.5	<11.1	3.5
Pyrene	3.71	11.9	3.55	6.38	74.7
Tetralin	37.3	49.9	55.3	47.5	19.5
m-terphenyl	<2.19	4.49	<2.31	<3.00	43.2
o-Terphenyl	<2.19	<2.15	<2.31	<2.22	3.5
p-terphenyl	<2.19	<2.15	<2.31	<2.22	3.5
Total	<243	<330	<245	<273	18.1

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 78

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Polycyclic Aromatic Hydrocarbon Emission Rates

Compound		Coefficient			
·	Test No. 1	Test No. 2	on Rate Test No. 3	Average	of Variation
	μg/s	μg/s	μg/s	μg/s	%
Acenaphthene	<0.039	0.15	< 0.040	<0.076	82.5
Acenaphthylene	<0.039	<0.040	<0.040	< 0.040	0.3
Anthracene	<0.039	0.041	< 0.040	<0.040	2.0
Benzo(a)Anthracene	<0.039	<0.040	<0.040	< 0.040	0.3
Benzo(b)Fluoranthene	<0.039	<0.040	<0.040	<0.040	0.3
Benzo(k)Fluoranthene	< 0.039	< 0.040	<0.040	<0.040	0.3
Benzo(a)fluorene	< 0.039	< 0.040	<0.040	< 0.040	0.3
Benzo(b)fluorene	< 0.039	<0.040	< 0.040	< 0.040	0.3
Benzo(g,h,i)Perylene	0.20	0.16	0.066	0.14	48.8
Benzo(a)Pyrene	< 0.039	< 0.040	< 0.040	< 0.040	0.3
Benzo(e)Pyrene	< 0.039	< 0.040	< 0.040	< 0.040	0.3
Biphenyl	0.11	0.19	0.098	0.13	38.9
2-Chloronaphthalene	< 0.039	< 0.040	< 0.040	< 0.040	0.3
Chrysene/Triphenylene	< 0.039	0.040	< 0.040	< 0.040	0.6
Coronene	<0.20	<0.20	<0.20	<0.20	0.3
Dibenzo(a,c/a,h)Anthracene	< 0.039	<0.040	<0.040	<0.040	0.3
Dibenzo(a,e)pyrene	< 0.20	<0.20	<0.20	<0.20	0.3
9,10-dimethylanthracene	< 0.039	0.070	<0.040	<0.050	35.1
7,12-Dimethylbenzo(a)anthracene	< 0.039	<0.040	<0.040	<0.040	0.3
Fluoranthene	0.064	0.21	0.090	0.12	64.7
Fluorene	<0.039	0.088	<0.040	<0.056	49.9
Indeno(1,2,3-cd)Pyrene	<0.039	<0.040	<0.040	<0.040	0.3
2-methylanthracene	0.071	0.22	0.071	0.12	71.0
3-Methylcholanthrene	<0.20	<0.20	<0.20	<0.20	0.3
1-Methylnaphthalene	0.073	0.084	0.073	0.077	8.2
2-Methylnaphthalene	0.13	0.18	0.11	0.077	26.5
1-Methylphenanthrene	0.12	0.14	0.070	0.14	32.8
9-Methylphenanthrene	0.043	0.22	0.048	0.11	97.8
Naphthalene	0.95	0.92	0.74	0.10	13.1
Perylene	<0.039	<0.040	<0.040	<0.040	
Phenanthrene	0.26	0.76	0.22	0.040	0.3
Picene	<0.20	<0.20	<0.20		73.2
Pyrene	0.067	0.22	0.061	<0.20	0.3
Tetralin	0.67	0.22		0.12	77.4
m-terphenyl	<0.039		0.95	0.85	18.1
o-Terphenyl	<0.039	0.083	<0.040	<0.054	46.1
p-terphenyl		<0.040	<0.040	<0.040	0.3
p-cei pitettyi	<0.039	<0.040	<0.040	<0.040	0.3
Total	<4.37	<6.07	<4.22	<4.89	21.0

TABLE 79

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Concentration	Concentration	Concentration	Concentration	Rate
	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	μg/s
Acenaphthene	<2.90	<4.97	<3.92	<4.17	<0.076
Acenaphthylene	<1.54	<2.63	<2.08	<2.22	< 0.040
Anthracene	<1.56	<2.66	<2.10	<2.24	<0.040
Benzo(a)Anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(b)Fluoranthene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(k)Fluoranthene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(a)fluorene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(b)fluorene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(g,h,i)Perylene	5.45	9.32	7.37	7.84	0.14
Benzo(a)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
Benzo(e)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
Biphenyl	5.07	8.65	6.83	7.28	0.13
2-Chloronaphthalene	<1.54	<2.63	<2.08	<2.22	<0.040
Chrysene/Triphenylene	<1.55	<2.64	<2.08	<2.22	<0.040
Coronene	<7.72	<13.1	<10.4	<11.1	<0.20
Dibenzo(a,c/a,h)Anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Dibenzo(a,e)pyrene	<7.72	<13.1	<10.4	<11.1	<0.20
9,10-dimethylanthracene	<1.92	<3.28	<2.59	<2.76	<0.050
7,12-Dimethylbenzo(a)anthracene	<1.54	<2.63	<2.08	<2.22	<0.040
Fluoranthene	4.70	8.02	6.34	6.75	0.12
Fluorene	<2.15	<3.67	<2.90	<3.09	<0.056
Indeno(1,2,3-cd)Pyrene	<1.54	<2.63	<2.08	<2.22	<0.040
2-methylanthracene	4.64	7.94	6.27	6.68	0.12
3-Methylcholanthrene	<7.72	<13.1	<10.4	<11.1	<0.20
1-Methylnaphthalene	2.98	5.08	4.02	4.29	0.077
2-Methylnaphthalene	5.36	9.14	7.22	7.70	0.14
1-Methylphenanthrene	4.24	7.24	5.72	6.09	0.11
9-Methylphenanthrene	4.00	6.86	5.42	5.76	0.10
Naphthalene	33.8	57.7	45.6	48.6	0.87
Perylene	<1.54	<2.63	<2.08	<2.22	< 0.040
Phenanthrene	15.8	27.1	21.4	22.8	0.41
Picene	<7.72	<13.1	<10.4	<11.1	<0.20
Pyrene	4.44	7.59	6.00	6.38	0.12
Tetralin	33.1	56.3	44.5	47.5	0.85
m-terphenyl	<2.08	<3.56	<2.81	<3.00	<0.054
o-Terphenyl	<1.54	<2.63	<2.08	<2.22	<0.040
p-terphenyl	<1.54	<2.63	<2.08	<2.22	<0.040
Total	<190	<324	<256	<273	<4.89

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 80

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train	Laboratory Blank
	ng	ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	<12	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	<12	.<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<60	<60
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<60	<60
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<60	<60
1-Methylnaphthalene	<12	<12
2-Methylnaphthalene	<12	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	164	190
Perylene	<12	<12
Phenanthrene	<12	<12
Picene	<60	<60
Pyrene	<12	<12
Tetralin	181	276
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<957	<1078

<sup>&</sup>quot;<" indicates that the amount detected is less than the detection limit. In these cases the value of the detection limit was used to calculate the total collected.

# TABLE 81 Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Acetaldehyde, Formaldehyde and Acrolein Emission Data

### Acetaldehyde

	Total	Dry Volume	Acetaldehyde Concentration Acetal					
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>	
No.	μg	Rm <sup>3</sup> *	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s	
1	2.12	0.0329	37.6	64.4	51.1	54.2	0.97	
2	1.83	0.0306	34.6	59.8	47.1	50.0	0.92	
3	2.17	0.0305	41.2	71.2	56.1	59.5	1.09	
Average			37.8	65.1	51.4	54.6	0.99	
Blank	1.44							

#### Formaldehyde

	Total	Dry Volume		Formaldehyde			
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	μg	Rm³*	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
1	2.36	0.0329	41.9	71.6	56.8	60.4	1.08
2	1.22	0.0306	23.1	39.9	31.4	33.3	0.61
3	1.66	0.0305	31.5	54.5	42.9	45.5	0.84
Average			32.2	55.3	43.7	46.4	0.84
Blank	0.98						

#### Acrolein

	Total	Dry Volume		Acrolein			
Test	Collected	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	<b>Emission Rate</b>
No.	μg	Rm³*	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
1	<0.1	0.0329	<1.78	<3.04	<2.41	<2.56	<0.046
2	<0.1	0.0306	<1.89	<3.27	<2.57	<2.73	<0.050
3	<0.1	0.0305	<1.90	<3.28	<2.59	<2.74	<0.050
Average			<1.86	<3.20	<2.52	<2.68	<0.049
Blank	<0.1						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

Sampling was conducted at a single point. Volumetric flowrates from corresponding isokinetic tests were used to calculate emission data.

- \* At 25 °C and 1 atmosphere
- \*\* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Acetone	1.36	37.3	64.0	50.6	53.7	0.97
Benzene	0.11	3.14	5.38	4.25	4.51	0.081
Bromodichloromethane	0.017	0.47	0.80	0.63	0.67	0.012
Bromoform	< 0.01	<0.28	< 0.47	< 0.37	<0.40	<0.0071
Bromomethane	< 0.09	<2.48	<4.25	<3.36	<3.56	< 0.064
1,3-Butadiene	< 0.02	<0.55	< 0.94	<0.75	<0.79	<0.014
2-Butanone	1.15	31.5	54.0	42.7	45.3	0.82
Carbon Tetrachloride	0.031	0.85	1.46	1.16	1.23	0.022
Chloroform	0.094	2.59	4.44	3.51	3.72	0.067
Cumene (Isopropylbenzene)	0.033	0.91	1.56	1.23	1.31	0.024
Dibromochloromethane	< 0.01	<0.28	< 0.47	< 0.37	<0.40	<0.0071
Dichlorodifluoromethane	< 0.02	<0.55	< 0.94	<0.75	<0.79	< 0.014
1,2-Dichloroethane	0.017	0.47	0.80	0.63	0.67	0.012
trans,1,2-Dichloroethene	0.016	0.44	0.76	0.60	0.63	0.011
1,1-Dichloroethene	<0.01	<0.28	< 0.47	<0.37	<0.40	< 0.0071
1,2-Dichloropropane	< 0.01	<0.28	< 0.47	<0.37	< 0.40	< 0.0071
Ethylbenzene	0.20	5.39	9.25	7.31	7.76	0.14
Ethylene Dibromide	< 0.02	<0.55	<0.94	<0.75	<0.79	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	0.24	6.69	11.5	9.07	9.62	0.17
Methylene Chloride	0.70	19.4	33.2	26.3	27.9	0.50
Styrene	0.11	3.08	5.29	4.18	4.44	0.080
Tetrachloroethene	0.010	0.28	0.47	0.37	0.40	0.0071
Toluene	0.80	22.1	38.0	30.0	31.8	0.57
1,1,1-Trichloroethane	< 0.01	<0.28	< 0.47	<0.37	<0.40	< 0.0071
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.28	<0.47	<0.37	<0.40	< 0.0071
Trichlorotrifluoroethane	<0.02	<0.55	< 0.94	<0.75	<0.79	< 0.014
Trichlorofluoromethane	0.053	1.46	2.50	1.98	2.10	0.038
M&P-Xylene	2.49	68.5	118	92.9	98.6	1.77
O-Xylene	0.81	22.3	38.3	30.3	32.2	0.58
Vinyl Chloride	<0.02	<0.55	<0.94	<0.75	<0.79	<0.014
Total	<8.50	<234	<401	<317	<336	<6.06

Dry Gas Volume Sampled (Rm³*):	0.0212
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission
	Collected	Concentration			Concentration	Rate
	μg	μg/m³	μg/Rm³*	μg/Rm³**	μg/Rm³*	mg/s
Acetone	1.67	47.3	81.1	64.1	68.0	1.22
Benzene	0.14	3.99	6.84	5.41	5.74	0.10
Bromodichloromethane	0.022	0.62	1.07	0.84	0.90	0.016
Bromoform	<0.01	<0.28	< 0.49	<0.38	<0.41	<0.0073
Bromomethane	< 0.09	<2.55	<4.37	<3.45	<3.66	<0.066
1,3-Butadiene	< 0.02	<0.57	< 0.97	<0.77	<0.81	< 0.015
2-Butanone	1.41	39.9	68.5	54.2	57.5	1.03
Carbon Tetrachloride	0.038	1.07	1.84	1.46	1.55	0.028
Chloroform	0.12	3.28	5.63	4.45	4.72	0.085
Cumene (Isopropylbenzene)	0.041	1.16	1.99	1.57	1.67	0.030
Dibromochloromethane	< 0.01	<0.28	< 0.49	<0.38	<0.41	<0.0073
Dichlorodifluoromethane	<0.02	<0.57	< 0.97	<0.77	<0.81	<0.015
1,2-Dichloroethane	0.021	0.59	1.02	0.81	0.85	0.015
trans,1,2-Dichloroethene	0.020	0.57	0.97	0.77	0.81	0.015
1,1-Dichloroethene	< 0.01	<0.28	< 0.49	<0.38	< 0.41	< 0.0073
1,2-Dichloropropane	< 0.01	<0.28	<0.49	<0.38	<0.41	< 0.0073
Ethylbenzene	0.24	6.82	11.7	9.24	9.81	0.18
Ethylene Dibromide	< 0.02	<0.57	<0.97	<0.77	<0.81	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	0.30	8.46	14.5	11.5	12.2	0.22
Methylene Chloride	0.87	24.5	42.1	33.3	35.3	0.64
Styrene	0.14	3.90	6.70	5.29	5.62	0.10
Tetrachloroethene	0.013	0.37	0.63	0.50	0.53	0.0095
Toluene	0.99	28.0	48.1	38.0	40.3	0.73
1,1,1-Trichloroethane	< 0.01	<0.28	< 0.49	<0.38	<0.41	<0.0073
Trichloroethene/1,1,2-Trichloroethene	< 0.01	<0.28	< 0.49	<0.38	<0.41	< 0.0073
Trichlorotrifluoroethane	<0.02	< 0.57	<0.97	<0.77	<0.81	<0.015
Trichlorofluoromethane	0.065	1.84	3.15	2.49	2.65	0.048
M&P-Xylene	3.07	86.8	149	118	125	2.25
O-Xylene	1.00	28.3	48.5	38.4	40.7	0.73
Vinyl Chloride	<0.02	<0.57	<0.97	<0.77	<0.81	<0.015
Total	<10.42	<295	<505	<400	<424	<7.63

Dry Gas Volume Sampled (Rm <sup>3</sup> *):	0.0206
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*):	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Compound Total		Actual Dry Reference Concentration Concentration		Wet Reference	Emission	
	Conecteu				Concentration	Rate	
	µg	μg/m³	μg/Rm³*	μg/Rm <sup>3</sup> **	μg/Rm³*	mg/s	
A							
Acetone	1.47	40.7	69.9	55.3	58.6	1.06	
Benzene	0.12	3.42	5.87	4.64	4.92	0.089	
Bromodichloromethane	0.019	0.53	0.91	0.72	0.76	0.014	
Bromoform	< 0.01	<0.28	<0.48	<0.38	< 0.40	<0.0072	
Bromomethane	<0.09	<2.50	<4.29	<3.39	<3.60	< 0.065	
1,3-Butadiene	<0.02	<0.56	<0.95	<0.75	<0.80	< 0.014	
2-Butanone	1.24	34.4	59.1	46.7	49.5	0.89	
Carbon Tetrachloride	0.034	0.95	1.62	1.28	1.36	0.024	
Chloroform	0.10	2.84	4.87	3.85	4.08	0.073	
Cumene (Isopropylbenzene)	0.036	1.00	1.72	1.36	1.44	0.026	
Dibromochloromethane	< 0.01	<0.28	< 0.48	<0.38	< 0.40	<0.0072	
Dichlorodifluoromethane	<0.02	<0.56	<0.95	<0.75	<0.80	<0.014	
1,2-Dichloroethane	0.018	0.50	0.86	0.68	0.72	0.013	
trans,1,2-Dichloroethene	0.017	0.47	0.81	0.64	0.68	0.012	
1,1-Dichloroethene	< 0.01	<0.28	< 0.48	<0.38	< 0.40	< 0.0072	
1,2-Dichloropropane	< 0.01	<0.28	<0.48	<0.38	<0.40	< 0.0072	
Ethylbenzene	0.21	5.90	10.1	8.00	8.48	0.15	
Ethylene Dibromide	< 0.02	< 0.56	<0.95	<0.75	<0.80	< 0.014	
Mesitylene (1,3,5-Trimethylbenzene)	0.26	7.29	12.5	9.88	10.5	0.19	
Methylene Chloride	0.76	21.1	36.3	28.7	30.4	0.55	
Styrene	0.12	3.37	5.77	4.56	4.84	0.087	
Tetrachloroethene	0.011	0.31	0.52	0.41	0.44	0.0079	
Toluene	0.87	24.1	41.4	32.7	34.7	0.63	
1,1,1-Trichloroethane	< 0.01	<0.28	<0.48	<0.38	<0.40	<0.0072	
Trichloroethene/1,1,2-Trichloroethene	< 0.01	<0.28	<0.48	<0.38	<0.40	<0.0072	
Trichlorotrifluoroethane	< 0.02	<0.56	<0.95	<0.75	<0.80	< 0.014	
Trichlorofluoromethane	0.057	1.59	2.72	2.15	2.28	0.041	
M&P-Xylene	2.69	74.8	128	101	108	1.94	
O-Xylene	0.88	24.4	41.8	33.1	35.1	0.63	
Vinyl Chloride	<0.02	<0.56	<0.95	<0.75	<0.80	< 0.014	
Total	<9.16	<255	<437	<345	<367	<6.60	

Dry Gas Volume Sampled (Rm³*) :	0.0210
Actual Flowrate (m³/s) :	25.9
Dry Reference Flowrate (Rm³/s*):	15.1
Dry Adjusted Flowrate (Rm³/s**):	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound		Actual Concentration					
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation		
	μg/m³	μg/m³	μg/m³	μg/m³	%		
A							
Acetone	37.3	47.3	40.7	41.8	12.1		
Benzene	3.14	3.99	3.42	3.52	12.3		
Bromodichloromethane	0.47	0.62	0.53	0.54	14.4		
Bromoform	<0.28	<0.28	<0.28	<0.28	1.4		
Bromomethane	<2.48	<2.55	<2.50	<2.51	1.4		
1,3-Butadiene	<0.55	<0.57	<0.56	<0.56	1.4		
2-Butanone	31.5	39.9	34.4	35.3	12.1		
Carbon Tetrachloride	0.85	1.07	0.95	0.96	11.6		
Chloroform	2.59	3.28	2.84	2.90	12.1		
Cumene (Isopropylbenzene)	0.91	1.16	1.00	1.02	12.4		
Dibromochloromethane	<0.28	<0.28	<0.28	<0.28	1.4		
Dichlorodifluoromethane	<0.55	<0.57	<0.56	<0.56	1.4		
1,2-Dichloroethane	0.47	0.59	0.50	0.52	12.6		
trans,1,2-Dichloroethene	0.44	0.57	0.47	0.49	13.2		
1,1-Dichloroethene	<0.28	<0.28	<0.28	<0.28	1.4		
1,2-Dichloropropane	<0.28	<0.28	<0.28	<0.28	1.4		
Ethylbenzene	5.39	6.82	5.90	6.04	12.0		
Ethylene Dibromide	<0.55	<0.57	<0.56	<0.56	1.4		
Mesitylene (1,3,5-Trimethylbenzene)	6.69	8.46	7.29	7.48	12.0		
Methylene Chloride	19.4	24.5	21.1	21.7	12.1		
Styrene	3.08	3.90	3.37	3.45	12.1		
Tetrachloroethene	0.28	0.37	0.31	0.32	14.9		
Toluene	22.1	28.0	24.1	24.8	12.1		
1,1,1-Trichloroethane	<0.28	<0.28	<0.28	<0.28	1.4		
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.28	<0.28	<0.28	1.4		
Trichlorotrifluoroethane	<0.55	<0.57	<0.56	<0.56	1.4		
Trichlorofluoromethane	1.46	1.84	1.59	1.63	11.9		
M&P-Xylene	68.5	86.8	74.8	76.7	12.1		
D-Xylene	22.3	28.3	24.4	25.0	12.1		
Vinyl Chloride	<0.55	<0.57	<0.56	<0.56	1.4		
Total	<234	<295	<255	<261	11.8		

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound		Coefficient				
	Test No. 1 Test No. 2 Test No.		Test No. 3	Average	of Variation	
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%	
Acetone	64.0	81.1	69.9	71.7	12.1	
Benzene	5.38	6.84	5.87	6.03	12.3	
Bromodichloromethane	0.80	1.07	0.91	0.93	14.4	
Bromoform	< 0.47	< 0.49	<0.48	<0.48	1.4	
Bromomethane	<4.25	<4.37	<4.29	<4.30	1.4	
1,3-Butadiene	< 0.94	<0.97	<0.95	<0.96	1.4	
2-Butanone	54.0	68.5	59.1	60.5	12.1	
Carbon Tetrachloride	1.46	1.84	1.62	1.64	11.6	
Chloroform	4.44	5.63	4.87	4.98	12.1	
Cumene (Isopropylbenzene)	1.56	1.99	1.72	· 1.75	12.4	
Dibromochloromethane	< 0.47	< 0.49	<0.48	<0.48	1.4	
Dichlorodifluoromethane	< 0.94	<0.97	<0.95	<0.96	1.4	
1,2-Dichloroethane	0.80	1.02	0.86	0.89	12.6	
trans,1,2-Dichloroethene	0.76	0.97	0.81	0.85	13.2	
1,1-Dichloroethene	< 0.47	< 0.49	<0.48	<0.48	1.4	
1,2-Dichloropropane	< 0.47	< 0.49	<0.48	<0.48	1.4	
Ethylbenzene	9.25	11.7	10.1	10.4	12.0	
Ethylene Dibromide	< 0.94	<0.97	<0.95	<0.96	1.4	
Mesitylene (1,3,5-Trimethylbenzene)	11.5	14.5	12.5	12.8	12.0	
Methylene Chloride	33.2	42.1	36.3	37.2	12.1	
Styrene	5.29	6.70	5.77	5.92	12.1	
Tetrachloroethene	0.47	0.63	0.52	0.54	14.9	
Toluene	38.0	48.1	41.4	42.5	12.1	
1,1,1-Trichloroethane	< 0.47	< 0.49	<0.48	<0.48	1.4	
Trichloroethene/1,1,2-Trichloroethene	<0.47	< 0.49	<0.48	<0.48	1.4	
Trichlorotrifluoroethane	< 0.94	<0.97	<0.95	<0.96	1.4	
Trichlorofluoromethane	2.50	3.15	2.72	2.79	11.9	
M&P-Xylene	118	149	128	132	12.1	
O-Xylene	38.3	48.5	41.8	42.9	12.1	
Vinyl Chloride	<0.94	<0.97	<0.95	<0.96	1.4	
Total	<401	<505	<437	<448	11.8	

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound		Coefficient				
	Test No. 1 Test No. 2		d Concentration Test No. 3	Average	of Variation	
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%	
Acetone	50.6	64.1	FF 3	567	10.4	
Benzene	4.25	54.1 5.41	55.3	56.7	12.1	
Bromodichloromethane	0.63		4.64	4.77	12.3	
Bromoform	< 0.37	0.84	0.72	0.73	14.4	
Bromomethane	<0.37 <3.36	< 0.38	<0.38	<0.38	1.4	
1,3-Butadiene		<3.45	<3.39	<3.40	1.4	
2-Butanone	<0.75	<0.77	<0.75	<0.76	1.4	
Z-Butanone Carbon Tetrachloride	42.7	54.2	46.7	47.9	12.1	
	1.16	1.46	1.28	1.30	11.6	
Chloroform	3.51	4.45	3.85	3.93	12.1	
Cumene (Isopropylbenzene)	1.23	1.57	1.36	1.39	12.4	
Dibromochloromethane	<0.37	<0.38	<0.38	<0.38	1.4	
Dichlorodifluoromethane	<0.75	<0.77	<0.75	<0.76	1.4	
1,2-Dichloroethane	0.63	0.81	0.68	0.71	12.6	
trans,1,2-Dichloroethene	0.60	0.77	0.64	0.67	13.2	
1,1-Dichloroethene	<0.37	<0.38	<0.38	<0.38	1.4	
1,2-Dichloropropane	<0.37	<0.38	<0.38	<0.38	1.4	
Ethylbenzene	7.31	9.24	8.00	8.18	12.0	
Ethylene Dibromide	<0.75	<0.77	<0.75	<0.76	1.4	
Mesitylene (1,3,5-Trimethylbenzene)	9.07	11.5	9.88	10.1	12.0	
Methylene Chloride	26.3	33.3	28.7	29.4	12.1	
Styrene	4.18	5.29	4.56	4.68	12.1	
Tetrachloroethene	0.37	0.50	0.41	0.43	14.9	
Toluene	30.0	38.0	32.7	33.6	12.1	
1,1,1-Trichloroethane	<0.37	<0.38	<0.38	<0.38	1.4	
Trichloroethene/1,1,2-Trichloroethene	<0.37	<0.38	<0.38	<0.38	1.4	
Trichlorotrifluoroethane	< 0.75	<0.77	<0.75	<0.76	1.4	
Trichlorofluoromethane	1.98	2.49	2.15	2.21	11.9	
M&P-Xylene	92.9	118	101	104	12.1	
O-Xylene	30.3	38.4	33.1	33.9	12.1	
Vinyl Chloride	<0.75	<0.77	<0.75	<0.76	1.4	
Total	<317	<400	<345	<354	11.8	

<sup>\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Volatile Organic Wet Reference Concentrations

Compound		Coefficient			
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*	%
Acetone	53.7	68.0	58.6	60.1	12.1
Benzene	4.51	5.74	4.92	5.06	12.3
Bromodichloromethane	0.67	0.90	0.76	0.78	14.4
Bromoform	<0.40	<0.41	<0.40	< 0.40	1.4
Bromomethane	<3.56	<3.66	<3.60	<3.61	1.4
1,3-Butadiene	<0.79	<0.81	<0.80	<0.80	1.4
2-Butanone	45.3	57.5	49.5	50.8	12.1
Carbon Tetrachloride	1.23	1.55	1.36	1.38	11.6
Chloroform	3.72	4.72	4.08	4.18	12.1
Cumene (Isopropylbenzene)	1.31	1.67	1.44	1.47	12.4
Dibromochloromethane	< 0.40	<0.41	<0.40	< 0.40	1.4
Dichlorodifluoromethane	<0.79	<0.81	<0.80	<0.80	1.4
1,2-Dichloroethane	0.67	0.85	0.72	0.75	12.6
trans,1,2-Dichloroethene	0.63	0.81	0.68	0.71	13.2
1,1-Dichloroethene	< 0.40	< 0.41	< 0.40	<0.40	1.4
1,2-Dichloropropane	< 0.40	< 0.41	< 0.40	<0.40	1.4
Ethylbenzene	7.76	9.81	8.48	8.69	12.0
Ethylene Dibromide	< 0.79	<0.81	<0.80	<0.80	1.4
Mesitylene (1,3,5-Trimethylbenzene)	9.62	12.2	10.5	10.8	12.0
Methylene Chloride	27.9	35.3	30.4	31,2	12.1
Styrene	4.44	5.62	4.84	4.96	12.1
Tetrachloroethene	0.40	0.53	0.44	0.46	14.9
Toluene	31.8	40.3	34.7	35.6	12.1
1,1,1-Trichloroethane	< 0.40	< 0.41	< 0.40	< 0.40	1.4
Trichloroethene/1,1,2-Trichloroethene	< 0.40	< 0.41	<0.40	<0.40	1.4
Trichlorotrifluoroethane	<0.79	<0.81	<0.80	<0.80	1.4
Trichlorofluoromethane	2.10	2.65	2.28	2.34	11.9
M&P-Xylene	98.6	125	108	110	12.1
O-Xylene	32.2	40.7	35.1	36.0	12.1
Vinyl Chloride	<0.79	<0.81	<0.80	<0.80	1.4
Total	<336	<424	<367	<376	11.8

<sup>\*</sup> At 25°C and 1 atmosphere

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound		Emission Rate					
	Test No. 1	Test No. 2	Test No. 3	lo. 3 Average	of Variation		
	mg/s	mg/s	mg/s	mg/s	%		
Acetone	0.97	1.22	1.06	1.08	12.1		
Benzene	0.081	0.10	0.089	0.091	12.3		
Bromodichloromethane	0.012	0.016	0.014	0.014	14.4		
Bromoform	< 0.0071	< 0.0073	<0.0072	<0.0072	1.4		
Bromomethane	< 0.064	< 0.066	<0.065	< 0.065	1.4		
1,3-Butadiene	< 0.014	< 0.015	< 0.014	< 0.014	1.4		
2-Butanone	0.82	1.03	0.89	0.91	12.1		
Carbon Tetrachloride	0.022	0.028	0.024	0.025	11.6		
Chloroform	0.067	0.085	0.073	0.075	12.1		
Cumene (Isopropylbenzene)	0.024	0.030	0.026	0.026	12.4		
Dibromochloromethane	< 0.0071	< 0.0073	<0.0072	<0.0072	1.4		
Dichlorodifluoromethane	< 0.014	< 0.015	< 0.014	< 0.014	1.4		
1,2-Dichloroethane	0.012	0.015	0.013	0.013	12.6		
trans,1,2-Dichloroethene	0.011	0.015	0.012	0.013	13.2		
1,1-Dichloroethene	< 0.0071	< 0.0073	<0.0072	≪0.0072	1.4		
1,2-Dichloropropane	< 0.0071	< 0.0073	<0.0072	<0.0072	1.4		
Ethylbenzene	0.14	0.18	0.15	0.16	12.0		
Ethylene Dibromide	< 0.014	< 0.015	<0.014	<0.014	1.4		
Mesitylene (1,3,5-Trimethylbenzene)	0.17	0.22	0.19	0.19	12.0		
Methylene Chloride	0.50	0.64	0.55	0.56	12.1		
Styrene	0.080	0.10	0.087	0.089	12.1		
Tetrachloroethene	0.0071	0.0095	0.0079	0.0082	14.9		
Toluene	0.57	0.73	0.63	0.64	12.1		
1,1,1-Trichloroethane	< 0.0071	<0.0073	<0.0072	<0.0072	1.4		
Trichloroethene/1,1,2-Trichloroethene	<0.0071	<0.0073	<0.0072	<0.0072	1.4		
Trichlorotrifluoroethane	<0.014	<0.015	< 0.014	<0.014	1.4		
Trichlorofluoromethane	0.038	0.048	0.041	0.042	11.9		
M&P-Xylene	1.77	2.25	1.94	1.99	12.1		
O-Xylene	0.58	0.73	0.63	0.65	12.1		
Vinyl Chloride	<0.014	<0.015	<0.014	<0.014	1.4		
Total	<6.06	<7.63	<6.60	<6.76	11.8		

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	μg/m³	μg/Rm³*	μg/Rm³*	μg/Rm³*	mg/s
Acetone	41.8	71.7	56.7	60.1	1.08
Benzene	3.52	6.03	4.77	5.06	0.091
Bromodichloromethane	0.54	0.93	0.73	0.78	0.014
Bromoform	<0.28	<0.48	<0.38	<0.40	< 0.0072
Bromomethane	<2.51	<4.30	<3.40	<3.61	<0.065
1,3-Butadiene	<0.56	<0.96	<0.76	<0.80	< 0.014
2-Butanone	35.3	60.5	47.9	50.8	0.91
Carbon Tetrachloride	0.96	1.64	1.30	1.38	0.025
Chloroform	2.90	4.98	3.93	4.18	0.075
Cumene (Isopropylbenzene)	1.02	1.75	1.39	1.47	0.026
Dibromochloromethane	<0.28	<0.48	<0.38	< 0.40	<0.0072
Dichlorodifluoromethane	<0.56	<0.96	<0.76	<0.80	< 0.014
1,2-Dichloroethane	0.52	0.89	0.71	0.75	0.013
trans,1,2-Dichloroethene	0.49	0.85	0.67	0.71	0.013
1,1-Dichloroethene	<0.28	<0.48	<0.38	< 0.40	<0.0072
1,2-Dichloropropane	<0.28	<0.48	<0.38	< 0.40	< 0.0072
Ethylbenzene	6.04	10.4	8.18	8.69	0.16
Ethylene Dibromide	<0.56	<0.96	<0.76	<0.80	< 0.014
Mesitylene (1,3,5-Trimethylbenzene)	7.48	12.8	10.1	10.8	0.19
Methylene Chloride	21.7	37.2	29.4	31.2	0.56
Styrene	3.45	5.92	4.68	4.96	0.089
Tetrachloroethene	0.32	0.54	0.43	0.46	0.0082
Toluene	24.8	42.5	33.6	35.6	0.64
1,1,1-Trichloroethane	<0.28	<0.48	<0.38	< 0.40	<0.0072
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.48	<0.38	<0.40	<0.0072
Trichlorotrifluoroethane	<0.56	<0.96	<0.76	<0.80	<0.014
Trichlorofluoromethane	1.63	2.79	2.21	2.34	0.042
M&P-Xylene	76.7	132	104	110	1.99
O-Xylene	25.0	42.9	33.9	36.0	0.65
Vinyl Chloride	<0.56	<0.96	<0.76	<0.80	<0.014
Total	<261	<448	<354	<376	<6.76

<sup>\*</sup> At 25°C and 1 atmosphere

<sup>\*\*</sup> At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank 1 Tube 5A/5B	Field Blank 2 Tube 11A/11B	Trip Blank Tube 12A/12B	Method Blank
	μg	μg	μg	μg
Acetone	0.15	0.11	0.13	<0.1
Benzene	< 0.05	< 0.05	<0.05	<0.05
Bromodichloromethane	< 0.01	< 0.01	< 0.01	<0.01
Bromoform	< 0.01	< 0.01	< 0.01	<0.01
Bromomethane	< 0.09	< 0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02
2-Butanone	< 0.01	< 0.01	<0.01	<0.01
Carbon Tetrachloride	< 0.01	< 0.01	<0.01	<0.01
Chloroform	< 0.01	< 0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	< 0.01	< 0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	< 0.01	< 0.01	<0.01	<0.01
trans,1,2-Dichloroethene	< 0.01	< 0.01	< 0.01	<0.01
1,1-Dichloroethene	< 0.01	< 0.01	<0.01	<0.01
1,2-Dichloropropane	< 0.01	< 0.01	<0.01	<0.01
Ethylbenzene	< 0.01	< 0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	< 0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	< 0.02	< 0.02	<0.02	<0.02
Methylene Chloride	0.11	< 0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	< 0.01	< 0.01	<0.01	<0.01
Toluene	< 0.05	< 0.05	<0.05	<0.05
1,1,1-Trichloroethane	< 0.01	< 0.01	<0.01	< 0.01
Trichloroethene/1,1,2-Trichloroethene	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	< 0.02	<0.02	<0.02	<0.02
M&P-Xylene	< 0.03	< 0.03	<0.03	<0.03
O-Xylene	< 0.01	< 0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02
Total	<0.82	<0.77	<0.79	<0.76



# **APPENDIX 3**

Pre-Test Plan Acceptance Letter and ECA No. 7306-8FDKNX (96 pages)

# Ministry of the Environment, Conservation and Parks

Technical Assessment and Standards Development Branch 40 St. Clair Avenue West 7th Floor

Toronto ON M4V 1M2 Phone: 416.327.5519 Fax: 416.327.2936

#### Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations techniques et de l'élaboration des normes 40, avenue St. Clair Ouest 7° étage Toronto (Ontario) M4V 1M2

Tél: 416.327.5519 Téléc: 416.327.2936

Via email: <u>cbelore@ortech.ca</u>
TSS File No.: CR:SA:109912:20

Ontario 🕅

#### 2020/10/14

Mr. Chris Belore **ORTECH Consulting Inc.** 804 Southdown Rd. Mississauga, Ontario L5J 2Y4

**Re.:** Pre-test plan for source testing to be conducted at Durham-York Energy Centre. Environmental Compliance Approval No. 7306-8FDKNX.

#### Dear Mr. Belore:

We reviewed your letter, dated 2020/09/08, prepared and submitted on behalf of Covanta Durham York Renewable Energy L.P. (DYEC), and referring to source testing (ORTECH Project 22050) to be conducted at DYEC's energy from waste facility, located at 72 Osbourne Rd., Clarington (Ontario).

The testing is an annual requirement by Condition 7(1) of the Environmental Compliance Approval No. 7306-8FDKNX, issued on 2011/06/28.

#### **Target Sources:**

- Municipal Solid Waste Combustor Unit 1 (Baghouse Outlet Duct)
- Municipal Solid Waste Combustor Unit 2 (Baghouse Outlet Duct)
- Quench Inlet Unit 1 (Total Hydrocarbons only)
- Quench Inlet Unit 2 (Total Hydrocarbons only)

#### Target contaminants:

- Total suspended particulate matter (TSP),
- PM<sub>10</sub>,
- $\bullet$  PM<sub>2.5</sub>,

- PM condensable,
- Metals (17 selected metals, as listed in the ECA's Schedule "D"),
- Semivolatile Organic Compounds (17 dioxins and furans isomers, 12 dioxin-like PCBs, 39 selected PAHs, 12 chlorobenzenes, and 19 chlorophenols) – as listed in ECA's Schedule "D",
- Volatile Organic Compounds (33 selected VOCs, as listed in the ECA's Schedule "D"),
- Aldehydes (acetaldehyde, acrolein and formaldehyde),
- Halides (hydrogen fluoride and hydrogen chloride),
- Ammonia,
- Nitrogen oxides (NOx),
- Sulphur dioxide (SO<sub>2</sub>),
- Combustion gases (oxygen, CO, and CO<sub>2</sub>), and
- Total organic matter (THC).

# Reference methodologies:

• TSP: OSTC Method ON-5

PM<sub>2.5</sub>/PM<sub>10</sub>: US EPA 40CFR60 Method 201A,
PM condensable: US EPA 40CFR60 Method 202,
Metals: US EPA 40CFR60 Method 29,

SVOCs: Environment Canada's Report EPS 1/RM/2,
 VOCs: US EPA SW-846 Method 0030, (SLO-VOST)

Aldehydes: NCASI Method ISS/FP-A105.01
 Halides & Ammonia: US EPA 40CFR60 Method 26A,

NOx: DYEC CEM,
 SO<sub>2</sub>: DYEC CEM,
 CO<sub>2</sub>: DYEC CEM,
 O<sub>2</sub>: DYEC CEM,
 CO: DYEC CEM,

• THC: US EPA 40CFR60 Method 25A, and

• Stack Gas Parameters: Ontario Source Testing Code's Method ON-1 to ON-4.

**Note:** ORTECH has indicated its intention at using the DYEC CEM system to determine compliance of some of the target contaminants listed in the ECA's Schedule "D", a relative accuracy certification (RATA) of the parameters of interest need to be conducted to validate that the DYEC CEM's parameters of interest meet the minimum specification listed in the ECA's Schedule "F", if the last RATA conducted at the DYEC CEM system is older than 1 year. The RATA report is to be appended to the source testing report.

DYEC CEMS data will also be used to determine the molecular weight of the gas stream and correct results to 11% oxygen, as necessary.

The following sampling modifications will be incorporated into the 2020 sampling program to enhance the collection efficiency and reliability of the specified targeted compounds.

- <u>SVOC's</u> ORTECH will now soak the 3 pieces of front sampling train glassware (filter bottom, filter bottom u-tube and trap inlet stem) per the Method, in lieu of their previous enhanced rinsing procedure. (Regional Municipality of Durham-York letter dated 2020/03/05)
- <u>VOC's</u> sampling will be conducted at a reduced sampling rate of 0.5 litres per minute (lpm) or SLO VOST.
- <u>Aldehydes</u> determined using NCASI Method ISS/FP-A105.01; replacing California Air Resources Board (CARB) Method 430 Ashland Modification Procedure.

#### **Brief Process Description:**

The DYEC is an energy-from-waste facility built with a maximum thermal/combustion processing rate of 140,000 tonnes per year of municipals solid waste (MSW). The facility operates on a continuous basis, hours/day, 7 days/week, 365 days/year, with the waste delivered initially set at 6 days per week between 07:00 and 19:00 hours.

The facility consists of two thermal treatment lines, each equipped and operated independently operated boilers/furnaces and air pollution control equipment. Each thermal treatment line has a maximum continuous rating (MCR) of 218 t/d of MSW, with a heat content of 13 MJ/kg, and a steam MCR of 33.64 tonnes/hour, to generate 20 MW of electricity (nominal capacity).

MSW arrives at the facility via covered refuse trucks and is deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

Each thermal treatment line is equipped with independent air pollution control equipment; consisting of a Selective Non-Catalytic Reduction System with ammonia injection (for NOx control), an activated carbon injection system (to reduce mercury and dioxins in flue gas), a dry recirculation lime injection scrubber (to control acid gases), and a pulse jet type baghouse (to control particulate emissions).

The treated exhaust gases from both lines are vented to the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

#### Target Process Condition during the Source Testing Program:

It is stated in the pre-test plan states that during the source testing program, DYEC will target maximum load at each of the two thermal treatment lines.

DYEC's personnel will be responsible for the monitoring, collection, compilation and reporting of pertinent process data during the test program, in order to establish MSW processing levels that can be properly correlated to the magnitude of the emissions of the contaminants of interest being exhausted from the process.

The process parameters to be monitored and recorded include:

- Power output (MWh/d)
- Auxiliary fuel combusted (m<sup>3</sup>/d)
- Average combustion zone temperature (°C)
- Steam generated (t/d)
- MSW combusted (t/d)
- NOx reagent injection rate (L/d)
- Carbon injection rate (kg/d)
- Lime injection rate (kg/d)
- DYEC CEMs (printouts to be appended to the source testing report)
- Baghouses inlet temperature and pressure drop.
- Any upset conditions during the source testing program (including actions taken to correct it, if applicable).

Consistent with our request beginning with the 2017 compliance source testing program, we require digital data (in Excel) of DYEC and ORTECH's CEMS output. In the case of DYEC CEMS output, we require the 1-munute averages for the full days when source testing was conducted, to confirm that the in-stack emissions and process parameters were within the ECA requirements, in order to validate that the thermal treatment units and associated air pollution control equipment were operating as expected by the MECP.

Our review indicated that the pre-test plan is suitable for conducting the 2020 source testing program, as the proposed reference methodologies and process monitoring strategies are still appropriate for this program. The sampling strategies are considered acceptable; but in the case of those contaminants that will be monitored by the DYEC CEM system, a relative accuracy certification (not older than 1 year) is required to assure the quality of the data generated meet the MECP expectations.

We noted the sampling schedule is set to begin Monday November 9, 2020 and continue through Thursday November 12, 2020. If changes in the sampling schedule occur, please notify the MECP's York-Durham District Office, and the Technology Standards Section.

Just a reminder that the source testing report is required to be submitted only in electronic format to the Technology Standards Section; and in electronic and hardcopy formats to the MECP's York-Durham District Office.

If you have any questions with regard to this assessment, I can be reached by phone at 416-705-4660

#### Regards,

Bill Fullerton

Source Assessment Specialist (A)

Willan Fullets

**Technology Standards Section** 

cc: M. Neild – Covanta DYEC L.P. (via email: mneild@covanta.com)

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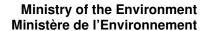
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File AQ-02 (Durham-York Energy Centre – Clarington - 2020)





#### **CERTIFICATE OF APPROVAL**

MULTI-MEDIA Number 7306-8FDKNX

Issue Date: June 28, 2011

The Regional Municipality of Durham 605 Rossland Rd E 5th Floor Whitby, Ontario L1N 6A3

and

The Regional Municipality of York 17250 Yonge Street Newmarket, Ontario L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership 445 South Street Morristown, New Jersey United States of America 07960

Site Location: Durham York Energy Centre

72 Osbourne Road

Lot 27, Concession Broken Front, Part 1

Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

- (a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and
- (b) the following air pollution control equipment:
  - (i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
  - (ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
  - (iii) a dry recirculation lime injection scrubber to control acid gases;
  - (iv) a pulse jet type baghouse to control particulate emissions;
- (2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;
- (3) waste and reagent storage as described in Condition 2.:
- (4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;
- (5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;
- (6) one (1) emergency diesel generator, rated at 250 Kilowatts;
- (7) natural gas-fired combustion equipment for comfort heating;
- (8) a wastewater management system for collection, recirculation and reuse of the process water; and
- (9) a stormwater management facility for collection, transmission and discharge of noncontact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

- "Acoustic Assessment Report" means the report, prepared in accordance with Publication NPC-233 by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;
- "Acoustic Assessment Summary Table" means a table summarizing the results of the Acoustic Assessment Report;
- "Acoustic Audit" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233*;
- "Acoustic Audit Report" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233*;
- "Acoustical Consultant" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;
- "Air Standards Manager" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;
- "APC Building" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;
- "APC Equipment" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;
- "Boiler Building" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;
- "**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate:
- "Bulky Unprocessable Items" means the incoming Waste received at the Site that cannot be processed in the Equipment;

- "CEM Systems" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";
- "Certificate" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA*, and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;
- "40 CFR 60" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;
- "Complaint" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;
- "Commencement Date of Operation" means the date when the approved Waste is first received at the Site;
- "Compound of Concern" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;
- "Controlled Shutdown" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;
- "**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;
- "**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;
- "**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA*, section 9 of the *EPA* and section 53 of the *OWRA*;
- "**District Manager**" means the District Manager of the York Durham District Office of the Ministry;
- "Emergency Shutdown" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

- "Emission Summary Table" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;
- "EAA" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;
- "**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;
- "EPA" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;
- "**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;
- "ESDM Report" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;
- "Facility" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;
- "Facility Production Limit" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;
- "Grizzly Building" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;
- "Independent Acoustical Consultant" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;
- "I-TEF" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;
- "I-TEQ" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;
- "Manager" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg.* 419/05, or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"Ministry" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"Municipality" means the Municipality of Clarington;

"NMA" means the Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended;

"Noise Control Measures" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"LDR" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O*. *Reg.* 347, which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O*. *Reg.* 347;

"Leachate Toxicity Criteria" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg.* 347;

"O. Reg. 419/05" means the Ontario Regulation 419/05, Air Pollution – Local Air Quality enacted under the EPA, as amended;

"O. Reg. 347" means the Ontario Regulation 347, R.R.O 1990 (General –Waste Management) enacted under the EPA, as amended;

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

"Owner" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"PA" means the Pesticides Act, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05*;

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

- "**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;
- "**Professional Engineer**" means a Professional Engineer as defined within the <u>Professional</u> Engineers Act, R.S.O. 1990, c. P.28, as amended;
- "**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA*;
- "*Publication NPC-103*" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;
- "Publication NPC-205" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;
- "Publication NPC-207" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;
- "*Publication NPC-232*" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;
- "*Publication NPC-233*" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;
- "Rejected Waste" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;
- "Regional Director" means the Regional Director of the Central Region of the Ministry;
- "**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;
- "Report EPS 1/PG/7" means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;
- "**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);
- "Residue Building" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"SDWA" means the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended;

"Sensitive Receptor" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

- (a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);
- (b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);
- (c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and
- (d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"Source Testing" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"Source Testing Code" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"Stack" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"Supporting Documentation" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"Test Contaminants" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"Total Power Failure" means the loss of the external power supply and concurrent loss of all inplant power generation; "**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"Waste" means municipal solid waste as defined in the O. Reg. 347 and limited to the approved waste set out in Condition No. 2.(2);

"Waste Processing Rate means the mass of Waste fed into one of the Boilers;

"Works" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"Unacceptable Waste" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"Undiluted Gases" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

# **GENERAL PROVISIONS**

#### 1. **GENERAL**

#### **Compliance**

- (1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- (2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

#### **Build in Accordance**

- (3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:
  - (i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

- (ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".
- (iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".
- (b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.
  - (ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

#### **As-built Drawings**

- (4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.
  - (b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.
  - (c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.
  - (d) The as-built drawings shall be made available to Ministry staff upon request.

## **Interpretation**

- (5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.
- (6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.
- (7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.
- (8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

### **Other Legal Obligations**

- (9) The issuance of, and compliance with the conditions of this Certificate does not:
  - (a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
  - (b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

#### **Adverse Effects**

- (10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.
- (11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
- (12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

## **Change of Ownership**

- (14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:
  - (a) the ownership of the Site;
  - (b) the operator of the Site;
  - (c) the address of the Owner;
  - (d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the <u>Business Names Act</u>, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
  - (e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.
- (15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

#### **Inspections by the Ministry**

- (16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA*, the *EPA*, the *PA*, the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:
  - (a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
  - (b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
  - (c) to inspect the Site, related equipment and appurtenances;
  - (d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
  - (e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
  - (f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA*, the *OWRA*, the *PA*, the *SDWA* or the *NMA*.

#### **Information**

- (17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request.
- (18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:
  - (a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or
  - (b) acceptance by the Ministry of the information's completeness or accuracy.
- (19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

# 2. SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

- (1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.
- (2) The operation of this Site is limited to:
  - (a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:
    - (i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and
    - (ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);
  - (b) collection and management of the stormwater run-off generated at the Site.
- (3) The following Unacceptable Waste is prohibited from being accepted at the Site:
  - (a) hazardous waste, as defined in the O. Reg. 347;
  - (b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

# (4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

### (5) Storage Restrictions:

#### Solids:

- (a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.
- (b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:
  - (i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or
  - (ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.
- (c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.
- (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.
- (e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.
- (f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

- (g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.
- (h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.
- (i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.
- (j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.
- (k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

### Liquids:

- (1) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.
  - (ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.
  - (iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled "Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities" dated May 2007, as amended.
- (6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.
- (7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.
- (8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.
  - (b) Emergency Waste storage duration extension:
    - (i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

- (ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.
- (iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.
- (9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

#### 3. SIGNS and SITE SECURITY

- (1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:
  - (a) name of the Owner;
  - (b) this Certificate number;
  - (c) hours during which the Site is open;
  - (d) waste types that are approved to be accepted at the Site;
  - (e) Owner's telephone number to which complaints may be directed;
  - (f) Owner's twenty-four hour emergency telephone number (if different from above);
  - (g) a warning against unauthorized access; and
  - (h) a warning against dumping at the Site.
- (2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.
- (3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.
- (4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.
- (5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

- (6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.
- (7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.
- (8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

# 4. <u>SITE OPERATIONS</u>

## (1) **Operating hours:**

- (a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.
- (b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.
- (c) Emergency Receipt of Waste:
  - (i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.
  - (ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.
  - (iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

### (2) **Incoming Waste receipt:**

- (a) At the weigh scale, the Trained Personnel shall:
  - (i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

- (ii) inspect the incoming Waste with radiation detection equipment.
- (b) In the Tipping Building, the Trained Personnel shall:
  - (i) visually inspect all incoming Waste being unloaded into the Waste pit;
  - (ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.
- (c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.
- (d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

### (3) Unacceptable Waste handling:

- (a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:
  - (i) is stored in a way that ensures that no adverse effects result from its storage;
  - (ii) is segregated from all other waste;
  - (iii) is handled and removed from the Site in accordance with the *O. Reg.* 347 and the *EPA*; and
  - (iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.
- (b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

#### (4) Waste Sorting:

- (a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.
- (b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

#### (5) Residual Waste Handling and Disposal:

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

- handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.
- (ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.
- (b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.
  - (ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.
  - (iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.
- (c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.
  - (ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.
- d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.
- (e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

# (6) Wastewater Management

- (a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.
- (b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

- (i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and
- (ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.
- (c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.
- (d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.
  - (ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.
- (e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.
- (f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.
- (g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.
- (h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.
- (7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

## 5. **EQUIPMENT and SITE INSPECTIONS and MAINTENANCE**

#### **Operation and Maintenance**

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

- (a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA*, the *OWRA* and their Regulations;
- (b) calibration procedures for the CEM Systems as required by this Certificate;
- (c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
- (d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with 40 CFR 60, Appendix F or Report EPS 1/PG/7, as appropriate;
- (e) Waste receiving and screening procedures;
- (f) Waste, Rejected Waste and Residual Waste handling procedures;
- (g) testing and monitoring procedures as required by this Certificate;
- (h) maintenance and preventative maintenance procedures as required by this Certificate:
- (i) Facility inspection, including frequency of inspections, procedures;
- (j) procedure for handling complaints as required by this Certificate.
- (k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
- (l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
- (m) procedures for record keeping activities as required by this Certificate;
- (n) description of the responsibilities of the Site personnel and the personnel training protocols; and
- (o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.
- (2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

## **Critical Spare Parts**

- (4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.
  - (b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

## **Inspections**

- (5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:
  - (a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
  - (b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
  - (c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
  - (d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
  - (e) security fencing, gates, barriers and signs;
  - (f) off-site nuisance impacts such as odour, dust, litter, etc.
  - (g) presence of stormwater pooling at the Site; and
  - (h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.
- (6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

#### **Inspections and Maintenance of the Works**

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

#### 6. PERFORMANCE REQUIREMENTS

- (1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:
  - (a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;
  - (b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205*;
  - (c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207*.
- (2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:
  - (a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (°C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.
    - (ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.
  - (b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.
  - (c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

- (ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.
- (d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.
- (e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.
- (f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.
- (g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.
- (h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.
- (3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.
- (4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

#### **Residual Waste Compliance Criteria**

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347*.

- (b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg.* 347.
- (6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347*.

### 7. TESTING, MONITORING and AUDITING

### **Source Testing**

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

### **Continuous Monitoring**

- (2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:
  - (a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;
  - (b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;
  - (c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;
  - (d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

### **Long-Term Sampling for Dioxins and Furans**

(3) (a) The Owner shall develop, install, maintain and update as necessary a longterm sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

- this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.
- (b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

# **Ambient Air Monitoring**

- (4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.
  - (b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.
  - (c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

## **Noise Monitoring - Acoustic Audit**

#### (5) The Owner:

- (a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;
- (b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

#### (6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

# **Residual Waste Testing**

- (7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.
  - (b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.
  - (c) The Testing Protocol shall include the rationale for the proposed methods and the following:
    - (i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;
    - (ii) sample(s) handling and preserving procedures;
    - (iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and
    - (iv) a testing protocol for the bottom ash during the Site commissioning period.
  - (d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.
- (8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:
  - (a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;
  - (b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

- (c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re establish compliance with the "incinerator ash" definition from the *O. Reg.* 347 and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and
- (d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.
- (9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.
  - (b) The Owner shall follow the following schedule for compliance testing:
    - (i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;
    - (ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and
    - (iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests reestablish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

#### **Soil Testing:**

- (10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.
  - (b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

## **Disposal of Residual Waste**

- (11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.
- (12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347*, may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.
- (13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

## **Groundwater and Surface Water Monitoring**

- (14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
  - (b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.
  - (c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

#### 8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

### **Odour Management**

- (1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.
  - (b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.
    - (ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

- (c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.
- (2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.
- (3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.
- (4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.
- (5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.
- (6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.
- (7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.
  - (ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.
  - (iii) These tests shall be repeated as directed or agreed by the District Manager.
- (8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
- (9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:
  - (i) identification of all potential sources of odourous emissions;

- (ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
- (iii) procedures for the implementation of the Odour Management and Mitigation Plan;
- (iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
- (v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.
- (b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

#### **Vehicles and Traffic**

- (10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.
  - (b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.
  - (c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.
  - (d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.
- (11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

#### Litter

- (12) The Owner shall:
  - (a) take all practical steps to prevent the escape of litter from the Site;
  - (b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
  - (c) if necessary, erect litter fences around the areas causing a litter problem.

#### **Dust**

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

#### **Vermin and Vectors**

- (14) The Owner shall:
  - (a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and
  - (b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

### **Visual Screening**

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

### 9. **STAFF TRAINING**

- (1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:
  - (i) terms and conditions of this Certificate and the requirements of the EA Approval;
  - (ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
  - (iii) testing, monitoring and operating requirements;
  - (iv) maintenance and inspection procedures;
  - (v) recording procedures;
  - (vi) nuisance impact control and housekeeping procedures;
  - (vii) procedures for recording and responding to public complaints;
  - (viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
  - (ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
  - (x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
  - (xi) emergency first-aid information; and
  - (xii) relevant waste management legislation and regulations, including the *EPA*, the *OWRA*, the *O. Reg. 347*, the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.
- (2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

- (a) upon commencing employment at the Site in a particular position;
- (b) whenever items listed in Condition 9.(1) are changed or updated; and
- (c) during the planned refresher training.

# 10. <u>COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE</u> <u>PROCEDURE</u>

- (1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.
- (2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

# Step 1: Record of Complaint/Emission Event

- (a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:
  - (A) name, address and the telephone number of the complainant, if known;
  - (B) time and date of the complaint/Emission Event;
  - (C) details of the complaint; and
  - (ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

#### Step 2: Investigation and Handling of Complaint/Emission Event

- (b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:
  - (i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
  - (ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
  - (iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

- (iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).
- (c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.
- (d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.
- (3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.
- (4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

#### 11. CONTINGENCY and EMERGENCY RESPONSE PLAN

- (1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.
  - (b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.
- (2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:
  - (a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

- (b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
- (c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
- (d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
- (e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
- (f) names and telephone numbers of waste management companies available for emergency response;
- (g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
- (h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
- (i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
- (j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
- (k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
- (l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
- (m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
- (n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
  - (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
  - (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
  - (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
  - (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
  - (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
  - (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA*, the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

- (3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.
- (4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.
- (5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.
- (6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.
- (7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

## 12. EMERGENCY SITUATION RESPONSE and REPORTING

- (1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.
- (2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.
- (3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.
- (4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

## 13. SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

- (1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.
- (2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:
  - (i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
  - (ii) failure of the APC Equipment associated with the Boilers; and
  - (iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;
  - (b) In addition to fulfilling the notification requirements from the *EPA*, the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:
    - (i) date of the occurrence;
    - (ii) general description of the occurrence;
    - (iii) duration of the occurrence;
    - (iv) effect of the occurrence on the emissions from the Facility;
    - (v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
    - (vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.
- (3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.
- (4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

- (b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.
  - (ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.
  - (iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.
  - (iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

### 14. **RECORDS KEEPING**

- (1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.
- (2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

#### **Daily Activities**

- (3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:
  - (a) date of record and the name and signature of the person completing the report;
  - (b) quantity and source of the incoming Waste received at the Site;
  - (c) records of the estimated quantity of Waste thermally treated in the Boilers;
  - (d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
  - (e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
  - (f) destination and/or receiving site(s) for the Residual Waste shipped from the Site:
  - (g) quantity and type of any Rejected Waste accepted at the Site;
  - (h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
  - (i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
  - (j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

# **Monitoring and Testing Records**

- (4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:
  - (a) day and time of the activity;
  - (b) all original records produced by the recording devices associated with the CEM Systems;
  - (c) a summary of daily records of readings of the CEM Systems, including:
    - (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
    - (ii) the daily minimum and maximum one hour average readings for oxygen;
    - (iii) the daily minimum and maximum 10-minute average readings for organic matter;
    - (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
    - (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
    - (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
    - (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
    - (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
  - (d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
  - (e) all records produced during any Acoustic Audit;
  - (f) all records produced during any Source Testing;
  - (g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
  - (h) all records produced during the Residual Waste compliance testing;
  - (i) all records produced during the Soil Testing;
  - (j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
  - (k) all records produced during the Ambient Air Monitoring required by this Certificate;
  - (l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
    - (i) transaction number;
    - (ii) hauler;
    - (iii) vehicle ID;
    - (iv) alarm level;
    - (v) maximum CPS:
    - (vi) uSv/hr;

- (vii) comment;
- (viii) background CPS;
- (ix) driver time in and out; and
- (x) name of the Trainer Personnel that carried out the monitoring.
- (m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
- (n) results the negative pressure in the Tipping Building carried out, as required.

### **Inspections/Maintenance/Repairs**

- (5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:
  - (a) the name and signature of the Trained Personnel that conducted the inspection;
  - (b) the date and time of the inspection;
  - (c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
  - (d) the recommendations for remedial action;
  - (e) the date, time and description of actions (repair or maintenance) undertaken;
  - (f) the name and signature of the Trained Personnel who undertook the remedial action; and
  - (g) an estimate of the quantity of any materials removed during cleaning of the Works.

### **Emergency Situations**

- (6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:
  - (a) the type of an emergency situation;
  - (b) description of how the emergency situation was handled;
  - (c) the type and amount of material spilled, if applicable;
  - (d) a description of how the material was cleaned up and stored, if generated; and
  - (e) the location and time of final disposal, if applicable; and
  - (f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

# **Complaints Response Records**

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

#### **Training**

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

- (a) date of training;
- (b) name and signature of person who has been trained; and
- (c) description of the training provided.

#### Reports

- (9) The Owner shall keep at the Site the following reports required by this Certificate:
  - (a) the ESDM Report
  - (b) the Acoustic Assessment Report;
  - (c) the Annual Report; and
  - (d) the Third Party Audit.

## 15. **REPORTING**

## **Annual Report**

- (1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:
  - (a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste:
  - (b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;
  - (c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;
  - (d) annual water usage;
  - (e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;
  - (f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;
  - (g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;
  - (h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

- Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;
- (i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;
- (j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;
- (k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;
- (l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;
- (m) a summary of any emergency situations that have occurred at the Site and how they were handled;
- (n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;
- (o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;
- (p) any recommendations to improve the environmental and process performance of the Site in the future:
- (q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and
- (r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

#### **Third Party Audit**

- (2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.
  - (b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

- (i) a review of the data from the monitoring and testing required by this Certificate:
- (ii) a review of all complaints received about the operation of the Facility;
- (iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
- (iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.
- (3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

#### **Soil Testing Report**

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

#### 16. PUBLIC ACCESS TO DOCUMENTATION

- (1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:
  - (a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;
  - (b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;
  - (c) the most recent Annual Report;
  - (d) the most current Third Party Audit Report;
  - (e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;
  - (f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and
  - (g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

#### 17. <u>ADVISORY COMMITTEE</u>

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

#### 18. **CLOSURE of the SITE**

- (1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.
- (2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

#### SCHEDULE "A"

#### **Supporting Documentation**

- (1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:
  - (a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;
  - (b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.
- (2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:
  - (a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;
  - (b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;
  - (c) Attachment #4 containing the Host Community Agreement
  - (d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and
  - (e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;
- (3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

- (a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).
- (b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).
- (c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.
- (d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

#### SCHEDULE "B"

## Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

- (a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.
- (b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and
- (c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

#### **One-hour Average To 10-minute Average Conversion**

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min\*1.65

where X10min = 10-minute average concentration X60min = one-hour average concentration

## SCHEDULE "C"

# PERFORMANCE REQUIREMENTS In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance	
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing	
cadmium	7 μg/Rm3	Results from compliance Source Testing	
lead	50 μg/Rm3	Results from compliance Source Testing	
mercury	15 μg/Rm3	Results from compliance Source Testing	
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ	
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes	
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes	
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes	
organic matter	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing	
(undiluted, expressed as equivalent methane)			
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)	
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute	
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every	

	fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

 $\mu\text{g}/\text{Rm}3$  - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

### SCHEDULE "D"

### **TEST CONTAMINANTS**

Hydrogen Chloride

Hydrogen Fluoride

Oxides of Nitrogen expressed as Nitrogen Dioxide

Sulphur Dioxide

Total Hydrocarbons, expressed as methane on wet basis

Carbon Dioxide

Total Suspended Particulate Matter (< 44 microns)

Total PM-10 including condensables

Total PM-2.5 including condensables

#### **Metals**

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cobalt

Copper

Lead

Mercury

Molybdenum

Nickel

Selenium

Silver

Thallium

Vanadium

Zinc

## Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
	2-monochlorophenol (2-MCP)
Monochlorobenzene (MCB)	3-monochlorophenol (3-MCP)
1,2-Dichlorobenzene (1,2-DCB)	4-monochlorophenol (4-MCP)
1,3-Dichlorobenzene (1,3-DCB)	2,3-dichlorophenol (2,3-DCP)
1,4-Dichlorobenzene (1,4-DCB)	2,4-dichlorophenol (2,4-DCP)
1,2,3-Trichlorobenzene (1,2,3-TCB)	2,5-dichlorophenol (2,5-DCP)
1,2,4-Trichlorobenzene (1,2,4-TCB)	2,6-dichlorophenol (2,6-DCP)
1,3,5-Trichlorobenzene (1,3,5-TCB)	3,4-dichlorophenol (3,4-DCP)
1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)	3,5-dichlorophenol (3,5-DCP)
1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)	2,3,4-trichlorophenol (2,3,4-T3CP)
1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)	2,3,5-trichlorophenol (2,3,5-T3CP)
Pentachlorobenzene (PeCB)	2,3,6-trichlorophenol (2,3,6-T3CP)
Hexachlorobenzene (HxCB) 2,4,5-trichlorophenol (2,4,5-T3CP)	
	2,4,6-trichlorophenol (2,4,6-T3CP)
	3,4,5-trichlorophenol (3,4,5-T3CP)
	2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP)
	2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP)
	2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP)
	Pentachlorophenol (PeCP)

## Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

### Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	1
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

#### **SCHEDULE "E"**

#### SOURCE TESTING PROCEDURES

- 1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.
- 2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.
  - (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.
- 3. The Owner shall finalize the test protocol in consultation with the Manager.
- 4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.
- 5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.
- 6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.
- 7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.
- 8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:
  - (1) an executive summary;
  - (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
  - (3) all records produced by the CEM Equipment;
  - (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
  - (5) the results of the analyses of the stack emissions;

- a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;
- (7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.
- (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.
- 9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.
- 10. The Director may not accept the results of the Source Testing if:
  - (1) the Source Testing Code or the requirements of the Manager were not followed; or
  - (2) the Owner did not notify the District Manager and the Manager of the Source Testing; or
  - (3) the Owner failed to provide a complete report on the Source Testing.
- 11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

#### SCHEDULE "F"

#### **PARAMETER:**

Temperature

#### LOCATION:

The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

#### **PERFORMANCE:**

The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

#### **PARAMETERS**

#### **SPECIFICATION**

1)	Type:	"K", "J" or other type or alternative measurement
		device with equivalent measurement accuracy and
		suitable to the temperature range being measured

2) Accuracy:  $\pm 1.5$  percent of the minimum gas temperature

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

#### **RELIABILITY:**

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

Carbon Monoxide

#### **INSTALLATION:**

The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

#### **PARAMETERS**

#### **SPECIFICATION**

1) Range (parts per million, ppm):  $0 \text{ to } \ge 100 \text{ ppm}$ 

2) Calibration Gas Ports: close to the sample point

#### **PERFORMANCE:**

The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

#### **PARAMETERS**

#### **SPECIFICATION**

1) Span Value (nearest ppm equivalent):	2 times the average normal	
2) Relative Accuracy:	concentration of the source ≤10 percent of the mean value of the reference method test data	
	or ± 5 ppm whichever is greater	
3) Calibration Error:	≤ 2.5 percent of actual concentration	
4) System Bias:	≤ 4 percent of the mean value of the	
	reference method test data	
5) Procedure for Zero and Span Calibration Check:	all system components checked	
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value	
7) Span Calibration Drift (24-hour):	≤5 percent of span value	

8) Response Time (90 percent response to a step change): ≤180 seconds

9) Operational Test Period: ≥168 hours without corrective

maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

#### **RELIABILITY:**

Oxygen

#### **INSTALLATION:**

The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

#### **PARAMETERS**

#### **SPECIFICATION**

1) Range (percentage): 0 - 20 or 0 - 25

2) Calibration Gas Ports: close to the sample point

#### **PERFORMANCE:**

The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	<b>SPECIFICATION</b>
PARAMETERS	SPECIFICATION

1) Span Value (percentage): 2 times the average normal

concentration of the source

2) Relative Accuracy: ≤10 percent of the mean value of the

reference method test data

3) Calibration Error: 0.25 percent  $O_2$ 

4) System Bias:  $\leq$  4 percent of the mean value of the

reference method test data

5) Procedure for Zero and Span Calibration Check: all system components checked

6) Zero Calibration Drift (24-hour): ≤ 0.5 percent O<sub>2</sub>

7) Span Calibration Drift (24-hour):  $\leq 0.5$  percent  $O_2$ 

8) Response Time (90 percent

response to a step change): ≤ 90 seconds

9) Operational Test Period: ≥ 168 hours without corrective

maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

#### **RELIABILITY:**

Hydrogen Chloride

#### **INSTALLATION:**

The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

#### PARAMETERS

#### **SPECIFICATION**

1) Range (parts per million, ppm):  $0 \text{ to } \ge 100 \text{ ppm}$ 

2) Calibration Gas Ports: close to the sample point

#### **PERFORMANCE:**

The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

#### PARAMETERS SPECIFICATION

1) Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source

2) Relative Accuracy: ≤ 20 percent of the mean value of the

reference method test data or  $\pm 5$ 

ppm whichever is greater

3) Calibration Error: ≤ 2 percent of actual concentration

4) System Bias:  $\leq$  4 percent of the mean value of the

reference method test data

5) Procedure for Zero and Span Calibration Check: all system components checked

6) Zero Calibration Drift (24-hour): ≤ 5 percent of span value

7) Span Calibration Drift (24-hour): ≤ 5 percent of span value

8) Response Time (90 percent

response to a step change):  $\leq 240$  seconds

9) Operational Test Period: ≥168 hours without corrective

maintenance

#### **CALIBRATION:**

The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

#### **RELIABILITY:**

Nitrogen Oxides

#### **INSTALLATION:**

The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

#### PARAMETERS SPECIFICATION

1) Analyzer Operating Range (parts per million, ppm): 0 to ≥200 ppm

2) Calibration Gas Ports: close to the sample point

#### **PERFORMANCE:**

The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

#### PARAMETERS SPECIFICATION

1)	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2)	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3)	Calibration Error:	≤ 2 percent of actual concentration
4)	System Bias:	≤4 percent of the mean value of the
		reference method test data
5)	Procedure for Zero and Span Calibration Check:	all system components checked
6)	Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7)	Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8)	Response Time (90 percent	
	response to a step change):	≤ 240 seconds
9)	Operational Test Period:	≥ 168 hours without corrective maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

#### **RELIABILITY:**

Sulphur Dioxide

#### **INSTALLATION:**

The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

#### **PARAMETERS**

#### **SPECIFICATION**

1. Range (parts per million, ppm): 0 to ≥100 ppm

2. Calibration Gas Ports: close to the sample point

#### **PERFORMANCE:**

The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

#### **PARAMETERS**

#### **SPECIFICATION**

1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of

the source

2. Relative Accuracy: ≤ 10 percent of the mean value of the

reference method test data

3. Calibration Error: ≤ 2 percent of actual concentration

4. System Bias:  $\leq 4$  percent of the mean value of the reference

method test data

5. Procedure for Zero and Span Calibration Check: all system components checked

6. Zero Calibration Drift (24-hour): ≤ 2.5 percent of span value

7. Span Calibration Drift (24-hour):  $\leq 2.5$  percent of span value

8. Response Time (90 percent

response to a step change): ≤ 200 seconds

9. Operational Test Period: ≥168 hours without corrective maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

#### **RELIABILITY:**

**Total Hydrocarbons** 

#### **INSTALLATION:**

The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

#### PARAMETERS SPECIFICATION

1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °C minimum at the corona of
		the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

#### **PERFORMANCE:**

The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

#### PARAMETERS SPECIFICATION

1.	Span Value (nearest ppm equivalent):	2 times the average normal
2.	Relative Accuracy:	concentration of the source ≤ 10 percent of the mean value of the reference method test data or ± 5
3.	System Bias:	ppm whichever is greater ≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check	_
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent	
	response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

#### **RELIABILITY:**

**PARAMETER:** Opacity

**INSTALLATION:** The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		<b>SPECIFICATION</b>
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

#### **PERFORMANCE:**

The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity
		of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time	≤ 10 seconds
	(95 percent response to a step change):	
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

#### **CALIBRATION:**

The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

#### **DATA RECORDER:**

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

#### **RELIABILITY:**

#### Moisture, Hydrogen Fluoride and Ammonia

#### **Selection and Installation**

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

- a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.
- b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

#### **Test Procedures**

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

#### **SCHEDULE "G"**

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

#### East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;
- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;
- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;
- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;
- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m³ at elevation 95.0 m masl, an active storage capacity of 3,099 m³ at 96.70 m masl elevation, and total storage capacity of 4,107 m³, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

#### West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below:
- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;
- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;
- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m³ at elevation 95.0 m masl, an active storage capacity of 2,054 m³ at 96.50 m masl elevation, and total storage capacity of 2,677 m³, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

*The reasons for the imposition of these terms and conditions are as follows:* 

#### <u>GENERAL</u>

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

#### SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

#### **SIGNS and SITE SECURITY**

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

#### SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

#### **EQUIPMENT and SITE INSPECTIONS and MAINTENANCE**

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

#### **PERFORMANCE REQUIREMENTS**

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

#### TESTING, MONITORING and AUDITING

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

#### NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

#### **STAFF TRAINING**

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

#### COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

## <u>CONTINGENCY and EMERGENCY RESPONSE PLAN</u> and <u>EMERGENCY</u> SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

#### SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

#### **RECORDS KEEPING**

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

#### **REPORTING**

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

#### PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

#### **ADVISORY COMMITTEE**

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

#### **CLOSURE of the SITE**

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

<u>Ontario Water Resources Act</u>, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

- 1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The Certificate of Approval number;
- 6. The date of the Certificate of Approval;
- 7. The name of the Director;
- 8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

<u>AND</u>

The Director
Section 9 and 39, Environmental Protection Act
Section 53, Ontario Water Resources Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*Section 39, *EPA*Section 53, *OWRA* 

MW,QN,SH/

c: District Manager, MOE York-Durham Regional Director, MOE Central Region

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#### Ministry of the Environment Ministère de l'Environnement

#### AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX Notice No. 1

Issue Date: August 12, 2014

The Regional Municipality of Durham 605 Rossland Rd E 5th Floor Whitby, Ontario L1N 6A3

and

The Regional Municipality of York 17250 Yonge Street Newmarket, Ontario L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership 445 South Street Morristown, New Jersey United States of America 07960

Site Location: Durham York Energy Centre

72 Osbourne Rd Lot 27, Concession Broken Front, Part 1 Clarington Municipality, Regional Municipality of Durham

L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

- 2. The following Conditions are amended to read as follows:
- 2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.
- 4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

- (i) The storage duration is limited to a maximum of seven (7) days.
- (ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The notification shall include the duration of the extension and the reasons.
- 3. The following Conditions are added:
- 7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.
- 11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).
- 4. The following documents have been added to Schedule "A":
- 4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.
- 5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".
- 6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.
- 7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served

upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- 1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The environmental compliance approval number;
- 6. The date of the environmental compliance approval;
- 7. The name of the Director, and;
- 8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

\* Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of
the Environmental Protection Act

MW/

c: District Manager, MOE York-Durham n/a, The Regional Municipality of Durham

#### **Content Copy Of Original**



#### Ministry of the Environment Ministère de l'Environnement

#### AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX Notice No. 2

Issue Date: October 24, 2014

The Regional Municipality of Durham 605 Rossland Rd E 5th Floor Whitby, Ontario L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership 445 South St Morristown, New Jersey USA 07960

Site Location: Durham York Energy Centre

1835 Energy Drive

Clarington Municipality, Regional Municipality of Durham

L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre 1835 Energy Drive Clarington Municipality, Regional Municipality of Durham L1E 2R2

- 2. The following definitions have been added:
- "Operator" means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

- "Regions" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;
- 2. The following definition has been amended to read as follows:
- " **Site** " means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;
- " Owner " within the context of this Approval, means the Regions and the Operator;
- 3. The following Conditions have been amended to read as follows:

#### "General: Change of Ownership" Conditions 1.(14) and 1.(15):

- (14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:
  - (a) the ownership of the Site;
  - (b) the operator of the Site;
  - (c) the address of the Regions;
  - (d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification:
  - (e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.
- (15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

## "Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

- 2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.
  - (ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.
  - (iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

#### "Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

#### "Closure of the Site" Conditions 18.(1) and 18.(2):

- (1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.
- (2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.
- 4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.
- 5. The following documents are added to Schedule "A":
- 8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:
  - (a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.
    - (b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"
    - (c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"
- 9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".
- 10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant,

including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- 1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The environmental compliance approval number;
- 6. The date of the environmental compliance approval;
- 7. The name of the Director, and;
- 8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

\* Further information on the Environmental Review Tribunal 's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014
Tesfaye Gebrezghi, P.Eng.

Tesfaye Gebrezghi, P.Eng. Director appointed for the purposes of Part II.1 of the *Environmental Protection Act* 

MW/

c: District Manager, MOE York-Durham Leon Brasowski, Covanta Energy Corporation

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### Ministry of the Environment and Climate Change Ministère de l'Environnement et de l'Action en matière de changement climatique

#### AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX Notice No. 3

Issue Date: December 23, 2015

The Regional Municipality of Durham 605 Rossland Road Level 5 Whitby, Ontario L1N 6A3

Site Location: Durham York Energy Centre

1835 Energy Dr Lot 27, Concession Broken Front, Part 1 Clarington Municipality, Regional Municipality of Durham

L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

The following Conditions are revoked:

#### 7. TESTING, MONITORING and AUDITING

#### **Noise Monitoring - Acoustic Audit**

#### (5) The Owner:

- (a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director:
- (b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

#### (6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

#### All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

### This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- 1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The environmental compliance approval number;
- 6. The date of the environmental compliance approval;
- 7. The name of the Director, and;
- 8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and

M5G 1E5

Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of December, 2015

lan Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of
the Environmental Protection Act

HM/

c: District Manager, MOECC York-Durham Kathryn Katsiroumpas, Valcoustics Canada Ltd.

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### Ministry of the Environment and Climate Change Ministère de l'Environnement et de l'Action en matière de changement climatique

#### AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX Notice No. 4

Issue Date: February 24, 2016

The Regional Municipality of Durham 605 Rossland Road East, Level 5 Whitby, Ontario L1N 6A3

The Regional Municipality of York 17250 Yonge Street Newmarket, Ontario L3Y 6Z1

TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership 445 South Street Morristown, New Jersey USA 07960

Site Location: Durham York Energy Centre

1835 Energy Dr Lot 27, Concession Broken Front, Part 1 Clarington Municipality, Regional Municipality of Durham

L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for a Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, , as follows:

The following Conditions are revoked:

#### 7. TESTING, MONITORING and AUDITING

#### **Noise Monitoring - Acoustic Audit**

- (5) The Owner:
  - (a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director:
  - (b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233*

and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

#### (6) The Director:

- (a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;
- (b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

#### All other Terms and Conditions remain the same.

The reason for this amendment to the Approval is to address the information provided in the following documents:

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated May 8, 2015 and signed by Kathryn Katsiroumpas, P.Eng.; and

Acoustic Audit Report prepared by Valcoustics Canada Ltd., dated November 23, 2015 and signed by Kathryn Katsiroumpas, P.Eng.

### This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- 1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The environmental compliance approval number;
- 6. The date of the environmental compliance approval;
- 7. The name of the Director, and;
- 8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

**AND** 

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of February, 2016

Ian Greason, P.Eng.
Director
appointed for the purposes of Part II.1 of
the Environmental Protection Act

HM/

c: District Manager, MOECC York-Durham Kathryn Katsiroumpas, Valcoustics Canada Ltd.

#### **Content Copy Of Original**



### Ministry of the Environment and Climate Change Ministère de l'Environnement et de l'Action en matière de changement climatique

#### AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX Notice No. 5

Issue Date: March 14, 2016

The Regional Municipality of Durham 605 Rossland Rd E 5th Floor Whitby, Ontario L1N 6A3

and

The Regional Municipality of York 17250 Yonge Street Newmarket, Ontario L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership 445 South St Morristown, New Jersey USA 07960

Site Location: Durham York Energy Centre

1835 Energy Dr Lot 27, Concession Broken Front, Part 1 Clarington Municipality, Regional Municipality of Durham

L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

- I. The following conditions have been amended to read as follows:
- 2. SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE
- (5) Storage Restrictions:

#### Solids:

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. (d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals,

shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation.

- (e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.
- (f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.
- (j) A maximum of 65 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.
- (k) A maximum of 105 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.
- Liquids: (I) (i) A maximum of 57 cubic metres of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the Residue Building.
- (8) (a) Waste received at the Site shall be processed within six (6) days from its receipt at the Site.
  - (b) Emergency storage of Waste requirements:
    - (i) On an emergency basis only, the storage duration of Waste inside the tipping pit may be extended beyond the limit set out in Condition 2.(8)(a), above, subject to compliance with the following requirements:
      - (A) prior to the start of the emergency storage of Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste will be stored longer than six (6) days from its receipt;
      - (B) any additional information that the District Manager may require shall be submitted within a time period acceptable to the District Manager;
      - (C) the proposed preventative measures for emergency storage of Waste as identified in the Operations and Maintenance Manual shall be implemented upon commencement of the emergency storage of Waste and shall remain in effect for the entire duration of the emergency storage, unless otherwise advised by the District Manager; and
      - (D) the Owner shall notify, in writing, the District Manager when emergency storage is no longer required.

#### 5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

- (p) all measures deemed necessary to prevent an occurrence of an adverse effect from the emergency storage of Waste.
- II. The following section of Schedule "F" has been amended to read as follows:

#### **PARAMETER:**

**Total Hydrocarbons** 

#### **INSTALLATION:**

The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler or at any other location that has been determined in consultation with the Ministry to be suitable/equivalent for the determination of Total Hydrocarbons leaving the combustion zone of each Boiler and has been approved by the Director. The Total Hydrocarbons Monitor shall meet the following installation specifications:

#### PARAMETERS SPECIFICATION

- 1. Detector Type: Flame Ionization
- 2. Oven Temperature: 160 o C minimum
- 3. Flame Temperature: 1800 o C minimum at the corona of the hydrogen flame
- 4. Range (parts per million, ppm): 0 to 3 200 ppm
- 5. Calibration Gas: propane in air or nitrogen
- 6. Calibration Gas Ports: close to the sample point

#### PERFORMANCE:

The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

#### PARAMETERS SPECIFICATION

- 1. Span Value (nearest ppm equivalent): 2 times the average normal concentration of the source
- 2. Relative Accuracy: £ 10 percent of the mean value of the reference method test data or  $\pm$  5 ppm whichever is greater
- 3. System Bias: £ 4 percent of the mean value of the reference method test data
- 4. Noise: £ 1 percent of span value on most sensitive range
- 5. Repeatability: £ 1 percent of span value
- 6. Linearity (response with propane in air): £ 3 percent of span value over all ranges
- 7. Calibration Error: £ 2 percent of actual concentration
- 8. Procedure for Zero and Span Calibration Check: all system components checked on all ranges
- 9. Zero Calibration Drift (24-hours): £ 2.5 percent of span value on all ranges
- 10. Span Calibration Drift (24-hours): £ 2.5 percent of span value
- 11. Response Time (90 percent response £ 60 seconds to a step change):
- 12. Operational Test Period: 3 168 hours without corrective

maintenance

#### **CALIBRATION:**

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

#### DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

#### **RELIABILITY:**

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

- III. The following Item #4 in Schedule "A" has been amended to read as follows:
- 4. Letter dated October 31, 2013 from Mirka Januszkiewicz, The Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", excluding a reference to the Loss-on-Ignition test method on page 6, prepared by Golder Associates and dated June 2014.
- IV. The following document has been added to Schedule "A":
- 5. Letter dated February 29, 2016 from Leon Brasowski, TransRiver Canada Incorporated, to Dale Gable, Ministry of the Environment and Climate Change, requesting change to the total hydrocarbon monitor location as reviewed and accepted by the Ministry's Standards Development Branch.

The reasons for this amendment to the Approval are as follows:

- 1. to remove the storage duration limits on storage of recovered ferrous and non-ferrous metals since such storage does not pose an environmental risk;
- 2. to increase the amounts of cement, pozzolan and aqueous ammonia approved for storage at the Site since the currently approved amounts result in partial filling of the tanks, necessitating more frequent deliveries resulting in increased truck traffic and a chance of interrupting fly ash and flue gas treatment;
- 3. to revise the protocol for an emergency storage of the incoming Waste so that the Owner is able to deal more effectively with emergency situations occurring at the Site while providing more flexibility to the Districting Manager to oversee management of such situations;
- 4. to remove a reference to an incorrect bottom ash testing method erroneously included within the text of the DYEC Ash Sampling and Testing Protocol included as Item #4 in Schedule "A" in order to ensure that only the approved testing method for compliance testing is referenced in the supporting documentation.
- 5. to approve the revised location of the Total Hydrocarbons Monitor following the Ministry's acceptance of the results of the test program in which two (2) Total Hydrocarbons Monitor monitors were operated in the existing and the proposed locations simultaneously.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- 1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

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The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The environmental compliance approval number;
- 6. The date of the environmental compliance approval;
- 7. The name of the Director, and;
- 8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment and Climate Change 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of March, 2016

Dale Gable, P.Eng.
Director
appointed for the purposes of Part II.1 of
the Environmental Protection Act

MW/

c: District Manager, MOECC York-Durham

n/a, TransRiver Canada Incorporated operating as Covanta Durham York Renewable Energy Limited Partnership



#### **APPENDIX 4**

Particulate and Metals Field Data Sheets (30 pages)

# ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 中	Particulate/Metals
Test Date Nov 9, 2020	$\omega v_0$
Test Location	APC Outlet No.
Operator Signature	

Pitot Factor 851		
DGMCF Jacq		
Barometric Pressure	5. K	"Hg
Static Pressure - 8.83		"H20
Nozzle Size 12573		inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	른	inches
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Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Probe Liner (Glass)/ Metal /Teflon / Other\_

Site Diagram

Glass Metal / Other\_ Nozzle

None / Metal (Teflon) Other Pitot Leak Checked? (Yes) Union

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Probe / Pitot

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Probe No.: Page

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Incline Manometer Comb.Gas.Analyzer

Control Box **Trendicator** 

Micromanometer

Barometer Calipers

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Carbon Monoxide	Had

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		Plant Location:	Courtice, Ontario	ntario			Test Location:		APC Outlet No.	<b>10</b> .	NOTANCIAL REPRESENTATION OF THE PROPERTY OF TH	The second secon	- 1
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Clock   Meter   0.P   Desired   Temp   Tem			Dry Gas	Pitot		Stack	Probe	Oven	Imping	er Temp	Meter	.Temp	Meter	bumb
Time   R <sup>3</sup>   "H <sub>1</sub> O   cfm  "F  "F  "F  "F  "F  "F  "F  "F  "H <sub>2</sub> O   Cfm  "F  "F  "F  "H <sub>2</sub> O   Cfm  "F  "H <sub>2</sub> O   Cfm  "F  "F  "F  "F  "F  "F  "F  "F  "F  "	Point	<u> </u>	Meter	۷۵	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	inlet	Pressure	Vacuum
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Project No.:	Operator: 八八	

# ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	#2 Particulate/Metals
Test Date	* Nov. 9/2020
Test Location	APC Outlet No.
Operator Signature	ture AAM

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Impinger Box No.: Meter Box No.:

Project No .:

Probe No.: Page

Pitot Factor	1283	
DGMCF	20,00	
Barometric Pressure	sure DD D1	"Hg
Static Pressure	2,43	"H20
Nozzle Size	.7.2.4.2	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	17	inches

Reading Interval	2.5
Number of Ports	more consistence and consisten
Number of Points/Port	12

Probe Liner (GTass)/ Metal /Teflon / Other\_

Site Diagram

Glass/ Metal / Other Nozzle

None /Metal / Teflon / Other\_

Union

Pitot Leak Checked? (Yes

Notes:

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Combustion Gas Concentration

Oxygen S:75	%
Carbon Dioxide しこし子	%
Carbon Monoxide (<) 🔾	mdd

Measuring Device	MII Numbers
Probe / Pitot	S8803769
Trendicator	
Control Box	COR 2009 4
Incline Manometer	COS 2009 4
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	
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		Plant Location:	Courtice, Ontario	ntario			Test Location:	-	APC Outlet No.	lo.			
	*	*	*		*			*		*	*	*	*
		Dry Gas	Pitot		Stack	Probe	Oven	moing	Impinger Temp	Meter	Meter Temp	Meter	Pump
Point	00 00 00 00 00 00 00 00 00 00 00 00 00	Weter	ΔР	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	Inlet	Pressure	Vacuum
(beliagonna documen	T.	en dual dual	"H <sub>2</sub> 0	£	<u></u>	<u>u</u> .	<u>LL</u>	Ľ.	Ŀ	LLo	<u>.</u>	H O	"Hg Gauge
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	10	05.37	90	F	290	253	258	e S	727	72	7.5	Ñ	M
	12.5	75.85.	967	F.	28%	255	2.58	85	225	2	22	ふ	~
m	15	150.4	881	35	1.82	257	0%	87	122	2	\$7.	2,0	M
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រភ	30	0 NS	0	% ( )	33	000	() () ()	80	22,27	92	Š	9/::/	M
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ပ	37.5	76.30	\ \ 	75 g	28.6	93	7,5%	<i>S</i>	200	32	Y	1,55	Μ
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Secretaria de la companya del companya de la companya del companya de la companya del la companya de la company						Andrew Comments of the Comment	- CONTRACTOR CONTRACTO	PATRICIA CONTINUES CONTINU		And delication of the Control of the			A PARTICULAR AND

Traverse:	
Start Time: ારુ. 2વ	$[3:24]$ initial Leak Check: , $006$ cfm@ ( ${\cal F}$ "Hg
Finish Time:	Final Leak Check: cfm@ "Hg

Project No.: 22050 Operator:  $\hbar \sqrt{JB}$ 

Project No.

Dry Gas	Date: A.	*	Disnt	Covanta DVEC	VEC		Toc	No.		Darticulate/Motals	Motale	NAME OF THE PROPERTY OF THE PR	Dage 3	r,
Color	Nate: Nate:	4.200	01224		, to the contract of the contr				7.	A DC Outlot N	Cimona d	-	,	: 1
Clock   Mater   Pitot   Proble   Over   Impliage Temp   Meter   Proble   Over   Impliage Temp   Pitot   Proble   Over   Impliage Temp   Pitot   Pito			Mant Location:	Coursee, O	ntario	***************************************	THE PROPERTY OF THE PERSON NAMED OF THE PERSON	lest rocatio	***	APC Cutter i	MG.	APPRILITY OF THE PROPERTY OF T	***************************************	
Clock   Mater   Lab   Stack   Probe   Outen   Impiger Termp   Mater   Time   Mater   Lab   Termp   T		*	***************************************	*		*			*		*	*	*	*
Time   Ref.   No.   Cont.   No.   Cont.   No.   Cont.   No.   Cont.   No.   Cont.   No.   Cont.   Co			Dry Gas	Pitot		Stack	Probe	Oven	Imping	er Temp	Mete	rTemp	Meter	Pump
Time	2	Clock	Meter	Δ D	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	<u>5</u>	Pressure	Vacuum
825       788       252       244       235       178       1	ं य.	Time	£	O,H.	<b>J</b>		L.	u.	LL.	•	ide o	Ľ.	ΔH "H <sub>2</sub> 0	"Hg Gauge
55       778, 74       7,68       288       252       74       77       76       77	co	52.5	177.00	040	89"	288	252	25%	77	230	67		9//	M
575 786,43 3, 45 1.8 260 242 44 230 79 77 76 60 785 785 240 261 262 744 1232 79 77 77 76 60 785 785 240 261 262 744 1232 79 77 77 77 75 75 75 75 75 75 75 75 75 75		55		P.:	Х У У	288	X82	0°37	I I	222	52	C	9	M
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		Plant Location:	Courtice, Ontario	ntario			Test Location:		APC Outlet No.	<u>.</u>	na-niigesii sea day saana ahaa ahaa ahaa ahaa ahaa ahaa aha		
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				Management of the second of th					Appendix and a second s	Water Control of the	VOTESTA SPECTAL SPECTAL SPECTAL SPECIAL SPECIA	AND COMMENTAL OF THE PROPERTY OF THE PROPERTY OF THE PARTY OF THE PART	

Project No.: Operator :

# ORTECH Consulting Inc.

22050

Project No .:

8000 1, of 5

Impinger Box No.:

Meter Box No.:

Probe No.: Page

Plant Location Courtice, Ontario  Test No.: 3 Particulate/Metals  Test Date November 10	
November 10	
November 10	
	2020

		the same of the sa
Pitot Factor	8h8 '	
DGMCF	7000	
Barometric Pressure	るる	"Hg
Static Pressure	নি ক	"H20
Nozzle Size	159%	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	Ę	inches
The second secon		

Reading Interval	2.5	
Number of Ports	7	
Jumber of Points/Port	12	-

Probe Liner (Glass / Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metal / feflon / Other\_

Union

Pitot Leak Checked? (Yes)

Notes:

Particulate Gain

mg	mg
2.0	91
Fite	Probe

Moisture Gain

හා	0.0
CWTR SSL 1	WCBDA O.F.C

Combustion Gas Concentration

Oxygen S.39	%
Carbon Dioxide ( ( ) 구우	%
Carbon Monoxide	mdd

Cena do MII Numbers COE 20090 08 00 Z Jos 1304011 Measuring Device Comb.Gas.Analyzer Incline Manometer Probe / Pitot ≤₽4 Micromanometer Control Box Trendicator Barometer Calipers

Plant Location:   Covanta DYEC	vanta DVEC           urtice, Ontario         *           *         *           Pitot         Stack           Δ P         Desired         Temp           "H <sub>2</sub> O         cfm         ° F           "H <sub>2</sub> O         cfm         ° F           "A         A         287           "A	Probe Temp	Test Location:	A Particu	Particulate/Metals APC Outlet No	energianisma energ	Page 2	0f 5
# * * * * * *  * * * * * * *  Clock	ired m m m red 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		Fest Location:	APCOL		eneralisecumente de la companya de l		THE PROPERTY OF THE PROPERTY O
## ## ## ## ## ## ## ## ## ## ## ## ##	# AP Desired AP Cfm H20 cfm 7-1 178 2 7-1 178 2 7-1 178 2 7-1 178 2 7-1 178 2 7-1 178 2 7-1 178 2	Probe Temp			*	4		
Clock Meter AP Pitot  Time ft³ "H20  0 13,572 ,71  5 17,574 ,71  10 21,56 ,71  11.5 22,574 ,71  12.5 23,56 ,70  20 21,60 ,68  22.5 33,57 ,10  22.5 33,57 ,10  23.5 33,57 ,10  23.5 33,57 ,10  24.60 ,68  25.5 33,57 ,10  25.5 33,57 ,10  26.8	A P Desired  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Probe Temp °F		***		•	*	*
Clock Meter $\Delta P$ Time $tt^3$ "H <sub>2</sub> O  0 1),572 ,71  2.5 15,54 ,71  10 21,56 ,71  12.5 23,54 ,71  17.5 24,62 ,68  20 24,60 ,68  20 24,60 ,68  21.5 35,56 ,68  22.5 35,56 ,68  22.5 35,46 ,68  30 37,41 ,68  30 37,41 ,68	4 Desired  14.0 cfm  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2  17.1 178 2	E .	Oven	Impinger Temp		Meter Temp	Meter	dmnd
Time ft <sup>3</sup> "H <sub>2</sub> O   13,522	14,0 cfm 178 2 178 2 178 2 178 2 178 2 178 2 178 2 178 2	<u>LL</u>	Temp	Outlet Inlet/Trap	Trap Outlet	# E	Pressure	Vacuum
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5 日 5 日 5 1 1 5 5 1 1 1 1 1 1 1 1 1 1 1	25 25 25 25 35 25 2 25 25	197	283	202	# %	44	22	55
7.5   fl. 55   6.70   10   21,56   12.5   12	St.   Ot	262	253	61 227	7 - 77	7.0	2.15	SS.
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12.5 23, 5年 17.1 ; 15. 25, 60 1.7.2 ; 72 2.5 20 34, 62 48 2.5 31, 55 46 2.5 35, 46 68		957	250	522 83	なーと	2%	772	5.57
15 25,60 , 72 , 72 , 20 , 20 , 20 , 20 , 20 , 2	•	23.2	253	57 229		88	2,2	5.5/
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22.5 31,555 ,70 , 20 , 25 25,51 , 68 , 68 , 68 , 68 , 68 , 68 , 68 , 6	\$ \$ 3	25.7	2.50	27 22	St. 1%	8.4	12,05	2.5
25 33,5( ,68 , 27.5 35,46 ,68 , 30 37,4( ,68 , 32.5 34,36 ,68 ,	70	257	251	52 28	82   3	<i>%</i>	77	5.5
27.5 35,46 , 68 ; 30 37,41 ,68 ; 32.5 35,36 ,68 ;	89	75.7	2.50	53 223	3 79	71	2.05	5.5
30 37,41 .68 . 32.5 31,36 .68	76	257	252	53 22	5 1 79	16	12.05	5.50
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	29	257	251	32 SS		42	2.05	\ S
*	, 65   H 283	257	152	272 55	75	2	5,0	5.5
6 37.5 43,21 65 76		952	7.51	53 221	1 80 1	43	2.0	13
		1257	252	53 224	08 1	2,	7.02	\S\(\sigma\)
tt   99'   90'th   45'e		257	250	53 25	\$ \$ \$	20	7,6%	
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22050 Project No.: Operator:

Date:	0000	÷ c	Covanta DVEC	VEC			Tock No.	۲	Particulate/Metals	Motals		0000	S. C.
502	l	Plant Location:	Courtice, Ontario	ntario	- AND THE PROPERTY OF THE PROP	Consequence of the Consequence o	Test Location:		APC Outlet No.	10.		• •	-1
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evenimentalena Artikanon de seconomico de se		Dry Gas	Pitot		Stack	Probe	Oven	Imping	Impinger Temp	Meter	Meter Temp	Meter	Dump
Point	Clock	Meter	ΔV	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	je	Pressure	Vacuum
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8	52.5	2h h2	×.		787	25%	7.7	52	212	08	2 2	8	36
<b>Персона при на применения в п</b>	55	56, 18	9.	3.	282	257	253	S	22	80%	8	2.0	13.6
NAME OF THE PROPERTY OF THE PR	57.5		73 "	K	283	432	254	55	122	8	3.6	2.0	\ \ \ \
5	09	60, 12	AND THE PERSON NAMED AND THE P	Q.,	283	4.52	7.5	3	27	8	8	272	Q
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The same of the sa	20	2000	***************************************	18;	284	257	250	53	223	0 8x	42	7.7	O
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T	75	47.18	97.	78.	ክጽጌ	257	254	53	225	08	2)	2,3	<b>9</b>
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12	82.5	\$\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3	2%	7.84	257	24%	5.3	አን	28	-25	2,2	9
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22050 Project No.: Operator :

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Date: Nov. (0	0202 0		Covanta DYEC	YEC			rest No.:	^	Particulate/Metals	/letals		Page 4	of o
Parvey parametric process and parametric proc	ownerskiedekaktorred kopijacijnerakisistoorrigitisestr	Plant Location:	Courtice, Ontario	ntario			Test Location:		APC Outlet No.	0.1			
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Point	Clock	Meter	4	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	met	Pressure	Vacuum
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Project No.: Operator :

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Time   R <sup>2</sup>   "H <sub>2</sub> O dm	Point	Clock	Meter	ΔP	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	Inlet	Pressure	Vacuum
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57.5       130, 74       ,64       ,75       287       250       571       221       721       721       726       287       1.97       89       1.97       1.96       36       266       ,76       287       250       251       221       721       721       726       287       1.27       721       221       246       88       1.20       38       2.0       88       2.0       88       2.0       88       2.0       38       3.0       3		55	128,89	733	j.	787	257	249	5	127	2	8√	23	O
6.55   134,68   1,66   176   128   126   120   570   571   126   887   1.9   6.55   134,556   1,66   176   128   125   121   121   126   888   1.0   6.55   138,39   1,66   176   128   125   121   121   121   121   128   7.5   140,71   1,68   176   128   125   121   121   121   121   121   7.5   141,12   1,68   174   128   125   121   121   121   121   7.5   141,49   1,68   174   128   125   121   121   121   121   8.5   141,49   1,68   1,74   128   125   121   121   121   8.5   121,74   1,68   1,75   128   125   8.5   121,74   1,64   1,75   128   8.5   121,74   1,64   1,75   128   8.5   121,74   1,64   1,75   128   8.5   121,74   128   128   8.5   121,74   128   128   8.5   121,74   128   128   8.5   121,74   128   8.5   121,74   128   8.5   121,74   128   8.5   121,74   128   8.5   121,74   128   8.5   121,74   8.5   1		57.5	130, 23	23.	3	187	226	250	15	12	92	84	1.95	9
655   134, 576   14, 64, 746   1287   1252   1212   1212   1248   1288   12.0	6	09	132,68		3	787	256	230	15	172	76	88	0	O
65       134, 34       36       256       257       251       252       252       252       253       256       257       253       258       256       257       253       258       258       258       258       252       253       253       253       253       253       253       253       253       253       253       253       253       253       254       253 <th< td=""><th>epiteman de la companya de la compan</th><th>62.5</th><td></td><td>300</td><td>24.</td><td>182</td><td>256</td><td>872</td><td>5</td><td>122</td><td>97</td><td>88</td><td>2.0</td><td>Q</td></th<>	epiteman de la companya de la compan	62.5		300	24.	182	256	872	5	122	97	88	2.0	Q
70.5       138,39       36.       36.       36.       36.       36.       37.       123,39       36.       37.	AND THE PROPERTY OF THE PROPER	69		99,	24.	987	256	252	72	777	76	88	2.0	S.
70    140, 31    , 64    ,74    287    225    247    51    215    746    88    22     72.5    141, 12    , 64    ,74    285    225    247    51    216    746    88    .25     73.5    144, 12    , 68    ,74    286    255    250    52    213    746    88    2.05     80.6    147, 94    , 68    ,74    286    256    248    53    213    746    88    2.05    6	10	67.5		99 °	94.	982	256	757	5	223	3.6	88	7	Q
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715   144, 17   1.69   1.47   1.26   2.57   2.51   2.12   1.40   1.45		72.5	7.53	9,7	13	285	255	ડાત્	5	27	29	88	7	9
77.5       146, e 6       68       34       2.86       2.55       2.70       52       2.02       48       2.05 <th< td=""><th>17</th><th>75</th><td>72 77</td><td>89.</td><td>ţ.</td><td>286</td><td>255</td><td>251</td><td>75</td><td>220</td><td>9+</td><td>88</td><td>2.05</td><td>O</td></th<>	17	75	72 77	89.	ţ.	286	255	251	75	220	9+	88	2.05	O
85 20.5 88 94 255 28.5 28.5 32 22.5 88.8 24. 88.		77.5	2000	893	4	987	255	252	25	573	92	88	2.05	Q
82.5   144, 93   66   74   236   255   250   74   321   750		80	7	63,	14	982	952	Sh2	53	222	97	88	2.05	B
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Project No.: Operator:

# ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date	November 9 2020
Test Location	APC Outlet No. 2
Operator Signature	

4 Spries

Page Probe No.: Meter Box No.: Impinger Box No.:

Project No.:

Pitot Factor	87×,	COLONIA DE CONTRA CONTRA DE CO
DGMCF	500	
Barometric Pressure	30.50	"Hg
Static Pressure	758	"H20
Nozzle Size	1597	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	든	inches
Personal particular delegations and production of the second content of the second conte	ingental des processions of the contract of th	and the second s

/Port	2	2	2
	Reading Interval 2.5	Number of Ports	Number of Points/Port 12

Probe Liner Glass / Metal /Teflon / Other\_

Site Diagram

Nozzle Glass / Metal / Other

Union None /Metal /Teflon / Other\_

Pitot Leak Checked? Yes No

Notes:

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Combustion Gas Concentration

%	%	mdd
	1000	100
куgen	Carbon Dioxide	Carbon Monoxide
OXV O	Cark	Cark

Measuring Device	MII Numbers
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Probe / Pitot ኗቦų	S040 E
Trendicator	co E 20090
Control Box	COR 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Evo. Cameda
Calipers	R03906

# # # # # # # # # # # # # # # # # # #	# *  *	Ontario  Desired  cfm  .81  .81  .74  .74  .74  .74	* Stack Temp °F 2.87- 2.87- 2.87- 2.87- 2.87-	Probe Temp	Test Location:		APC Outlet No. 2  * Impinger Temp	10. <u>7</u>	*	* *	*
Clock Time 0 0 2.5 5 7.5 10		Dontario Desired cfm .81 .81 .74 .74	* Stack Temp °F 2.87 2.87 2.87 2.87	Probe Temp °F	Test Location		APC Outlet N		*	***	*
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Time  0 2.3, 2.5 25, 7.5 27, 10 31, 12.5 23,	3-282		787 787 286	u.	Temp	Outlet	Inlet/Trap	Outlet	inlet	Pressure	Vacuum
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5 23, 7.5 24, 10 34,			287	53	200	X	\$	12	X	\chi_2	
7.5 24, 10 31,				7,60	253	55	228	752	4.8	7.7	5
<u> </u>			286	2.59	53.7	25	232	152	70	7.7	7
77	*	- - - - - - - -	287	2.58	251	25	232	7.54	8	7.7	<b>√</b> ∽
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3 15 35	36 + 13	28,4	7.86	252	5.03	15	231	7.0	80 T	7.7	S,
17.5 37,39	2	78	182	256	252	2.1	231	76	8	2.3	<u></u>
20 39,49	•	783	78.7 78.7	256	250	51	228	7-6	5/2	2.3	7
4 22.5 %4(,5-4)	37.	12°,	- 787	957	152	50	227	7.6	0	2.3	5
25 43,54	24,	187	288	952	252	2,5	ta	ナナ	(J.,)	2.3	12
£27.5 45° 67	1. t. 2	\$,	288	252	157	49	29	1 2 1	76	23	<i>z</i> 2
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Project No.: Operator:

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Figure   Courtice Outside   Courtice   Courti	Date: 6/6.	8000	0 274.	Covanta DVFC	VEC			Test No:		Particulate/Metals	Aptais	AND COMPANY OF THE PROPERTY OF	9969	o N
Clock Meter         Dry Gass         Prior Probe Probe         Over Impliger Temp         Meter Temp Probe Meter Temp         Notes Temp Probe Probe Temp         Notes Temp Probe Temp         Notes Temp Probe Temp         Notes Temp Probe Temp Probe Temp         Notes Temp Probe Temp Prob Temp Probe Temp Probe Temp Probe Temp Probe Temp Prob		1		Courtice, Or	ntario			Test Location	n:	APC Outlet N	10.			1
Time		*	*	*		*			*	Company of the Compan	*	**	*	*
Clock   Meter   AP   Desired   Temp	- Propriestor -	Andreas Commence and Andreas A	Dry Gas	Pitot	Management of the state of the	Stack	Probe	Oven	Imping	er Temp	Meter	Temp	Meter	Pump
Time	P O E O	Clock	Meter	ΔP	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	Inlet	Pressure	Vacuum
5.5       67, 74       74       7.81       2.54       2.55       478       7.17       74       7.11       7.14       1.15       1.14       1.15       1.14       1.15       1.14       1.15       1.14       1.15       1.14       1.15       1.14       1.15 <td< th=""><th>OSTONOMICA MARKANIA DE CONTRACTOR DE CONTRAC</th><th>E e e</th><th>E.</th><th>"H<sub>2</sub>O</th><th>Ē</th><th><u>L</u>.</th><th><b>;</b>-</th><th>LL.</th><th><u>ц.</u> °</th><th>LL.</th><th>u.</th><th><b>U.</b>.</th><th>ΔH "H<sub>2</sub>0</th><th>"Hg Gauge</th></td<>	OSTONOMICA MARKANIA DE CONTRACTOR DE CONTRAC	E e e	E.	"H <sub>2</sub> O	Ē	<u>L</u> .	<b>;</b> -	LL.	<u>ц.</u> °	LL.	u.	<b>U.</b> .	ΔH "H <sub>2</sub> 0	"Hg Gauge
555         674, 11         1,41         1,44         1,45         1,55         <	00	52.5	1 2		Į.	281	15.2	0,7	87,	ナな	33	表	7.7	5
57.5       69, 83       ,77       780       237       275       253       472       210       788       247       217       218       <		55	67.73	1	\F.	289	422	255	% 2	375	2	3	7.2.	\^
625 74,03 .81 .85 .289 250 48 223 78 74 2.5 625 74,03 .81 .85 .289 259 248 248 248 248 255 72 72,5 .89, .81 .85 .289 259 48 221 .78 .79 .75 72 80,53 .81 .82 .289 259 259 48 221 .78 .75 72 82,73 .82 .83 .289 259 259 48 223 79 .26 73 84,43 .82 .83 .289 259 259 48 223 79 .26 74 82, 12 .82 .83 .289 259 259 49 .25 .79 .79 75 84,41 .82 .83 .289 258 259 49 .25 .79 .79 .75 80 89,41 .28 .28 .28 .28 .25 .29 .49 .25 .26 80 89,41 .28 .28 .28 .28 .27 .28 .29 .29 .29 .26 80 89,41 .28 .28 .28 .27 .28 .29 .29 .29 .20 80 99,42 .22 .28 .28 .27 .28 .27 .27 .27 .27 .27 .27 .27 .27 .27 .27	THE	57.5	69, 83	12.	Q%;	239	25.7	253	かせて	230	22	53	2,25	5
625 74,63 .81 85 289 257 423 48 221 78 95 25   675 78,18 .81 .82 289 257 48 221 78 95 25   70 80,57 .82 280 278 278 279 448 222 79 95 2.6   72 82, 72 .83 280 278 279 448 223 79 95 2.6   73 84,95 .88 287 278 279 49 225 79 97 2.5   80 81,42 .85 .87 288 258 259 49 225 79 97 2.5   82. 90 91, 22 .85 .87 288 258 259 49 25 25   83.5 90 91, 22 .85 287 278 278 49 25   83.5 90 91, 22 .85 278 278 278 279 49 25 26   83.5 90 91, 22 .85 287 278 278 279 49 25 26   83.5 90 91, 22 .85 288 258 258 259 49 25 25   83.5 90 91, 22 .85 288 258 258 259 49 25 25   84.5 28.5 28.5 28.5 258 258 259 49 25 25   85.5 90 91, 22 .85 288 258 258 259 49 25 25   85.5 90 91, 22 .85 288 258 258 259 49 25 25   85.5 90 91, 22 .85 288 258 258 259 49 25 258 258 259 259 259 259 259 259 259 259 259 259	6	09	76,88	193	\&\	2.2%	252	2.50	83	523	82	Ьb	5.5	55
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7.5       7.8       7.5       7.5       7.5       4.8       2.5       7.5       7.5       4.8       7.5       7	Antonial Dictit Bullion in Control (Action in Contr	65	2, 6, 18	The second secon	38.	289	43	253	30	22	7-8	95	52	5.5
70 86,73 ,88 ,28 240 257 148 122 74 95 2.6  72.5 82, 73 ,87 289 278 277 148 225 79 95 2.6  73.5 84,43 ,87 289 289 278 273 148 223 79 95 2.6  80 89,41 ,87 289 288 288 257 48 225 79 15 2.6  82.5 91,42 289 288 288 258 257 49 25 2.6  83.5 91,42 288 288 258 258 259 49 25 2.6  85.6 92,5 189 288 288 258 259 49 25 2.6  86.6 13,92 288 288 258 258 259 26 259 26  87.5 90 98,12 288 258 258 258 259 259 26  87.5 90 98,12 288 258 258 259 259 259 26	10	67.5	75,52	200	33	286	252	552	% 5	182	8t	53	9.2	5.5
72.5 82, 7.3 1, 8.4 1.84 2.78 2.57 14 2.55 7.5 7.5 7.5 8.6 1.8	ACT AND ACT OF THE PARTY OF THE	70	\$ 08	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	88.	220	852	25.2	%) T	228	7	38	97	5,5
75       84, \$1       75       94, \$25       283	Temporal Anna Company	72.5	82.73	\	484	289	25%	いい	20	225	7.6	32	92	5.5
80       84       1.83       2.88       2.58       2.57       48       1.8       48       2.8         80       81       1.0       1.8       2.8       2.8       2.58       2.57       49       2.15       2.6         81       61       62       38       38       38       38       38       38       38       36       30       49       2.17       49       45       2.16       30         80       90       90       90       90       40       20       20       40       20	Taxana and an	75	84,43	18.	881	289	252	332	215	\(\gamma_2\)	7-9	95	ナンナ	5.5
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48, 22 38 258 Wg Wg 228 258 46 20 24 26 26 26 26 26 26 26 26 26 26 26 26 26	ECOLORIS CENTRAL PROGRAM PROGR	85	93,92	1	\$	288	227	122	57	ナンス	1.9	759	9.2	いい
38	- A CONTRACTOR OF THE PROPERTY	87.5	76.67			882	2.5%	∞ ≱	ざさ	222	7.9	5.2		
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	emana de mandio professora de desposo de la compansión de la compansión de la compansión de la compa	MANUTON CANCELLE CONTRACTOR CANCELLE CONTRACTOR CANCELLE	Annual programment of the control of	mandetta-majdetta-majdette-te-te-te-te-te-te-te-te-te-te-te-te										
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	Red Company and Company of the Compa	Garage Anna Control Co	- ALL-ALL TEXT - ALL-	eradirumantekimusekkirjinokaadekimantekitikokkirjinokaadekiman						12				
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	Anna de la companya d	Control of the contro	Assembly-Mainteonniss processes entransphilade entr											

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A MARIE PROFESSOR AND	Initial Leak Check:	家! うと Final Leak Check: 、
Traverse:	Start Time:	Finish Time: (x; 32

Project No.: Operator :

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Date: 866	307	riain.	COVAIITA	ָרָ בּיני		THE PROPERTY OF THE PROPERTY O	1 534 140	}	rainculaic/	victors	ageriores de la composition della composition de	rage 4	- 1
		Plant Location:	Courtice, Ontario	ntario	AND THE RESIDENCE OF THE PERSON NAMED OF THE P		Test Location:		APC Outlet No.	0.0			
	斧	*	*		*			*		*	*	*	*
		Dry Gas	Pitot		Stack	Probe	Oven	Imping	Impinger Temp	Meter	Weter Temp	Meter	pump
Pois	Clock	Meter	0	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	Inlet	Pressure	Vacuum
Advensora	H B B	£3	0 1 1	ctm	받	<u> </u>	L	il.	LL.	LL.	<u>1</u>	HØ	<u></u>
										A CONTRACTOR OF THE CONTRACTOR		.H20	Gauge
~	0	79/86	X	â	282	25.2	152	2	591	#	83	2.5	5,5
r	2.5	100,79	28.	>&*	288	259	37.0	15	٤١٤	R	8	2,5	\$,5
	ľ	102, 93	78,	>&?	287	2.59	523	5	223	7.7	C.S.	2,5	5.5
7	7.5	८० ' <u>५</u> ०।	08 .	<b>Б</b> %"	787	760	252	して	972	77	<i>%</i>	2,45	5.5
	10		5%	C3:2	1.87	5.5°C	250	2	223	L.L	42	5.2	S
	12.5	2.50	5% 1	(K)	7.87	2.59	157	81,	221	7.17	3	5.5	9
m	15	(11,52	5%	(S)(S)	2.87	1.557	152	争	224	77	93	2.5	9
	17.5	69. [1]	(%)	58.	1.87	259	249	85	230	Lilan	93	2.5	2
	20	98'511	Ş	5%,	7.67	2.58	251	85	229	7.1	33	2/3/	9
4	22.5	[0.8]]	7.	K.	287	259	251	% 48	230		<b>G</b> 3	2.0	N N
	25	16:41	8L:	:83	137	25%	249	48	22%	78	õ	2,2	53
	27.5	[ ] A	.79	183	7.82	258	251	8h	227	L	£.	7.3	2,2
ហ	30	124.62	?	.82	1%7	258	250	Z.	230	F	~	رن زن	55
	32.5	90.97)	5.	783	287	259	242	78	230		33	2.2	5.5
	35	Dgjo	7	35	782	258	ā	<b>%</b>	5,73	F	S.	2.2	SS
9	37.5	F1,0(1	59,	961	287	25.5	2,50	48	229		<u>6</u>	2.0	55.
	40	127,63	59	20	787	258	b\.2	みか	727	CL	93	0 N	5
	42.5	133.97	59,	38.	287	258	252	华	22.6		3	7,0	5,5
7	45	135, 86	73	9(_)	261	252	25	X,	K	bus hases	5	0,7	12 10
i e	47.5	(Tr. 1)	5	C,	L87	357	8 6 7	815	226		8	7	5.5
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	Hg.	M, 9
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	Initial Leak Check:	Final Leak Check:
The second secon	18:38	20.0%
l raverse:	Start Time:	Finish Time: 20

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Project No.:	THE SECRETARIES OF THE SECRETARI	C	
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Clock   Pictor   Pi		-	The state of the s			9 I N			respondente en	9	State of the State	- CONTROL OF THE CANADACTOR OF THE CONTROL OF THE C		
Plant Location: Countice, Ontario   Plant Location: APC Counter, Nater   Plant Location: Stack   Probe   Oven   Impiriger Temp   Temp   Temp   Outlet   Inlet/Trap   Outlet	Date: NoV.	2002 }	Fiant:	Covanta	יובינ			lest No.:	•	raruculate/n	/letais		rage ગ	n Š
Clock   Meter   Picot   Stack   Probe   Oven   Impinger Temp   Oven   Impinger Impinge			Plant Location:	Courtice, O	ntario			Test Location		APC Outlet N	0. 2			
Clock   Dry Gas   Pitot   Stack   Probe   Oven   Impiriger Temp		*			Net Charles and the Control of the C				*		*	*	*	*
Clock   Meter   AP   Desired   Temp   Temp   Temp   Outlet   Intex/Trap   Time   Temp   Temp   Outlet   Intex/Trap   Temp   Temp   Temp   Outlet   Intex/Trap   Temp   T	**************************************	The same of the sa	Dry Gas	Pitot		Stack	Probe	Oven	Imping	ger Temp	Meter	Meter Temp	Meter	Pump
Time   ft	Point	Clock	Meter	۵ م	Desired	Temp	Temp	Temp	Outlet	inlet/Trap	Outlet	n e	Pressure	Vacuum
52.5         2.88         2.88         2.88         2.88         2.88         2.88         2.88         2.81         4.45 <th< th=""><th>na a standarda da Angela d</th><th>9</th><th>E 32</th><th>"H<sub>2</sub>0</th><th><b>J</b></th><th></th><th>ii.</th><th>laten o</th><th>L</th><th>LL.</th><th>L.</th><th>Li.</th><th>"H<sub>2</sub>O</th><th>"Hg Gauge</th></th<>	na a standarda da Angela d	9	E 32	"H <sub>2</sub> 0	<b>J</b>		ii.	laten o	L	LL.	L.	Li.	"H <sub>2</sub> O	"Hg Gauge
The color of the	8	52.5	31	55	5	288	258	251	T. C.	22.8		93	7.7	55
152   152   158   15		SS	143.59	\$9.	96	288	258	27	27	122		٩ >	13.1	55
60         (38         281         78         281         282         (78         281         282         (79         (71         (71         (71         (71         (71         (71         (72         (72         (72         (72         (72         (72         (73         (74         (75         (72         (72         (73         (74         (72         (72         (73         (74         (72         (72         (72         (73         (74         (74         (72	Tradateure des hamps son services des services des services des services de la companya de la co	57.5	145.53	89)	× .	887	7.57	25.1	87	977	7	વેડ	2.4	SS
	5	09	(F) (F)	2	, 78	7.87	2.58	251	Ŧ	22		<u>~</u>	7.7	5.5
	NATIONAL PROPERTY OF THE PROPE	62.5	J	2,	9/1	2,8%	25	57.2	49	22.1	77	66	22	9
	CHESTAGE CHESTAGE CONTRACTOR CONT	65	-7 \S	200	5/2	287	251	2.50	T	227	7.7	43	2.2	9
7.5. 49 Py C S2 R3 28 元、 84 S27 725 725 725 725 726 735 元、 84 S27 725 725 725 725 元	9	67.5	153.49	Ē	M	28)	257	249	49	227	1.1	8	2.2	<b>-</b> 20
7.5 (57. 49 225 72. 72. 73. 68. 51. 49, 22. 75. 75. 75. 12. 12. 12. 12. 12. 12. 12. 12. 12. 12		70	155.49	74.	28	1.87	257	24.6	lah)	22.5	1.2	رل	2,2	9
75		72.5	\$ <u>E</u> S	7	08)	122	7.57	252	49	226	7	ઢ	2.2	
1. 1	=======================================	75	68, 93		0.83	287	25.3	25(	5	22%	lus Ime	ઇ	2.2	9
80	Name of the Contract of the Co	77.5	161.48		.73	2%6	727	5- N	7.5	972	F	۵)	2.2	9
85.5 (53 46 つつ つつ 2%6 251 55 5.28 (27 37 77 77 77 77 77 77 77 77 77 77 77 77		80	(63.47)	F	المار ،	286	257	2.53	Se	226	77	2 3	2.2	્
10   10   186   250	12	82.5	95.59	2	s r	7%6	152	251	05	227	L.	ر م	2.2	9
169.47   100   100   256   250   50   255   25		25	22.45	2	, 7d	286	253	252	05	227	77	93	2.2	0
0 F 1 L	Anna contraction of the contract	87.5	24.691	2	519	286	957	250	05	22.5		و د	2.2	9
	AND THE PROPERTY OF THE PROPER	06	07-1			X								
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		the state of the s		Consideration of the second of										

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Project No.:	Operator:	

# ORTECH Consulting Inc.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date Nov 16 2020	3 2020
Test Location	APC Outlet No. 7
Operator Signature / 3	8/

7000 JOS

Meter Box No.: Revn Impinger Box No.: 9

Page Probe No.:

Project No .:

Pitot Factor 285			
DGMCF , 949			
Barometric Pressure	する	ナナ	"Hg
Static Pressure ニター らら	τ 3		"H20
Nozzle Size 2573	8		inches
Stack Diameter		4.5	feet
Length			feet
Width			feet
Port length:		हरूर्व इस्त्र	inches

Reading Interval	2.5	
Number of Ports	7	
Number of Points/Port	12	

Probe Liner Glass / Metal /Teflon / Other\_\_\_

Nozzle (Glass) Metal / Other

Union None /Metal / Teflon / Other\_

Pitot Leak Checked? (Yes) No

Notes:

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Filter	25.00	mg
Probe	22	mg

Moisture Gain

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Combustion Gas Concentration

	Oxygen 8.20	%
i Nasi	Carbon Dioxide \\\\	%
	Carbon Monoxide \S.\	mdd

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	1948-298
Trendicator	
Control Box	4200 3000
Incline Manometer	4200 ESD)
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	
Service and the contract of th	

Nozzle Measurements	orsa,	1575	arss,	2575	1273
	₹	2	່ ກ່ ຕາ	4	Average:

Compression processes for an absorption of the contract modern	versus in promotional concessive is promotional species of the second	на вители достолно на начално на принце на при	**************************************	***************************************			***************************************	SHEED-CANAL PROPERTY OF THE PR	**************************************		***************************************		
Date: NGL CO 2020	10,707.0	Pant:	Covanta DYEC	YEC			Test No.: 2	_1	Particulate/Metals	Metals		Page 2	<b>១</b> ខ
Assurance de la constant de la const	on terminal from Demokration and the committee	Plant Location:	Courtice, Ontario	ntario			Test Location:	n:	APC Outlet No	۷o. کے			
	*	*	*		*			*		*	*	*	*
The state of the s		Dry Gas	Pitot		Stack	Probe	Oven	Imping	Impinger Temp	Mete	Meter Temp	Meter	Pump
÷.	Clock	Meter	Q	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	Inlet	Pressure	Vacuum
anne se proposition de la constantion	E E	e 4	"H <sub>2</sub> 0	cfm	Lin.	Ľ	<b>!</b>	Ľ.	<u>.</u>	LL.	LL C	T (	F .
												М2О	Gauge
+	0	57 338 8	0 8;	50,	287	768	22	8	23.0	F	2/2	067	8.0
	2.5	868,29	(S & )	ν. Γ.	たるさ	200	250	Q (V	12.2	S		1.90	0
	S.	870.12	1000	.73	283	200	722	<u></u>	210	7 7	Uhman	06.7	<i>0</i> vi
7	7.5	16/11/8	787	13	123	7602	250	3	061			7.90	W 0,0
	10	873.82	, 82	173	2 02	702	0.58	و ر	7×	J.	Ο Γ	1.90	0 M
	12.5	872 GG	. 83	27,	88	787	258	JV Z	. T (%)		р 1	1.90	O ∾
m	15	87.77.8 1	^  -	11(	790	ب چ	しいり	ゔ	(%)	0	9 [	08:/	3,0
	17.5	18'32	31.		296	7.0%	8.50	2	881	2	01	08/	ر اک
	20	881,09	ر. 8	ř	290	200	000	2	J & /	0	0	7.80	0
4	22.5	1882 87	\ 0 -	ふり、	3	و 2	٥ رز ا	<u>z</u>	88		Ø	Quis'/	0
	25	かんご カペー	\S 	59.	290	Š	25%	¥	2		0	) ) ) )	0
	27.5	47. 988	\s	\g	977	183	CS	ر د	\$ \$	C	0	7.50	0,0
· L	90	887.82	83	3	C	2,5	760	V T	190	22	0	どろい	2,0
	32.5	アイン 58%	۲۸ ع	<u> </u>	280	707	260	2. N	600	200	78	1.4%	3,0
	ស	00 J	<b>0</b> 3	უ ტ	5	ر د د	7.5%	50	190	72	l Common	1.88	000
9	37.5	892,61	+5	~	040	なられ	707	7	000	27	F	011	0,0
	40	† 7. 12.0X	2	73	296	すりろ	2.60	2 V	190	22	11	270	200
	42.5	895,75	<u> </u>	700	2007	597	S	2 /v	19.7	13	7	057	0
7	45	897.31		100	290	502	260	2	200	22	ř	1,000	3,0
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	20	15. 88.	159	, 6×	240	7.02	260	757	182	15	<u>ر</u>	50	ő

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Project No.: Operator : ১৫

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22050 Project No.: Operator: ∭

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Project No.: Operator: 入阁

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22050

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date Nou 16	Test Date Nov 16 2220
Test Location	APC Outlet No.
Operator Signature	30 27

Pitot Factor (857)			
DGMCF , २१५५			1
Barometric Pressure	J.	"Hg	
Static Pressure ー そんしゃ	¥.	"H20	
Nozzle Size ころつろ		inches	· S
Stack Diameter	4.5	feet	
Length		feet	
Width	:	feet	
Port length:	6-4 6-4	inches	

2.5	7	12
Reading Interval	Number of Ports	Number of Points/Port

Probe Liner (Glass / Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metal / (fellop) / Other\_ Union

Pitot Leak Checked? (Yes)

Notes:

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Particulate Gain

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1000 T 2000

Probe / Pitot

Trendicator Control Box

7007 US 2007 JUD

Comb. Gas. Analyzer

Micromanometer

Barometer Calipers

Incline Manometer

Mil Numbers

**Measuring Device** 

(SE 20094

Meter Box No.: Teem

Probe No.: Page

Impinger Box No.:

Project No.:

Moisture Gain

	CWTR (CO.)	ha l
100	MCBDA (イン) B	no l

Combustion Gas Concentration

Oxygen	28° 8	%
Carbon Dioxide	10.0	%
Carbon Monoxide	ナシ	mdd

Average: ,7572 12510 21521 8

Nozzle Measurements	,2570	31521
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Project No.: Operator :

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#### **APPENDIX 5**

Particle Size Distribution Field Data Sheets (12 pages)

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particle Size
Test Date	NNEMBER 10, 2020
Test Location	APC Outlet No. 1
Operator Signature	ē

Pitot Factor	のながら	
DGMCF (	200.0	
Barometric Pressure	まる	"Hg
Static Pressure	800	"H20
Nozzle Size	Ē	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	7	inches

	2	t 12
Reading Interval	Number of Ports	Number of Points/Port

Probe Liner Glass / Metal /Teflon //Other PFA

Glass (Metal )Other\_ Nozzle

None (Metal) Teflon / Other\_ Union

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Notes:

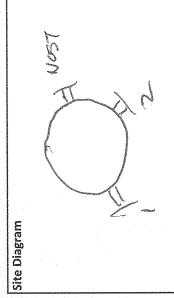
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WCBDA

Oxygen 8.36	%
Carbon Dioxide 10,93	%
Carbon Monoxide (3.8	mdd



Project No.:			22050	
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Probe No.:				
Meter Box No.:	::0			

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Measuring Device	Probe / Pitot	Trendicator	Control Box	Incline Manometer	Comb.Gas.Analyzer	Micromanometer	Barometer C	Calipers
MII Numbers			) (32)					

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Probe No.: Page

Impinger Box No.: Meter Box No.:

Plant	Covanta DYEC	-
Plant Location	Courtice, Ontario	
Test No.:	2 Particle Size	
Test Date	NOJEMBER 10, 2020	
Test Location	APC Outlet No	
Operator Signature	ture O - D / K = -	

Pitot Factor	S. S.	
DGMCF	1	
Barometric Pressure	ゆれてあ	H E
Static Pressure	り で ・	"H2O
Nozzle Size	07-12-40	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	T	inches

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Reading Interval	<b>Number of Ports</b>	<b>Number of Points/Port</b>

Sue Co	7	12
Reading Interval	Number of Ports	Number of Points/Port

Probe Liner Glass / Metal /Teflon /Other)

Glass / Metal / Other\_ Nozzle

None (Metal /) eflon / Other Union

Pitot Leak Checked? (Yes

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Site Diagram

	Measuring Device	MII Numbers
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	Nozzle Measurements
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Page	Page	Plant	Covanta DYEC						Proje	Project No.:	22050
Probe Note of Particle Size   Probe Note Note Note Note Note Note Note Not	Probe Note Note   Properties	Plant Location	Courtice, Ontario		Alexandria de la companya del companya de la companya del companya de la companya del la companya de la company				Page		
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Filter mg	Filter mg  Moisture Gain  Moisture Gain  Moisture Gain  Moisture Gain  Filter Gain  Moisture Gain  Moisture Gain  Moisture Gain  Filter Gain  Moisture Gain  Filter Gain  Moisture Gain  Control!  WCBDA S.C. g  Filter Comb.G  Control!  Moisture Gain  Comb.G  Control!  Moisture Gain  Comb.G  Control  Contro		and the second s				į			Measuring Device	
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Combustion Gas Concentration   Galipers	In the linches of Ports 2  Ear of Ports 2  Ear of Points/Port 12  Carbon Monoxide N. 2 9  Carbon Monoxide N. 2 9  Liner Glass / Metal / Teflon / Other  None / Metal / Metal / Teflon / Other  None / Metal	Length	улитерия при	feet		WCBDA	0,0	6.0		Micromanometer	
ngth:     11 inches     Combustion Gas Concentration     Carbon Dioxide     Carbon Dioxide     Carbon Dioxide     Carbon Monoxide     Carbo	Till inches Combustion Gas Concentration  Carbon Dioxide  By 13  By 14  Carbon Monoxide  Ca	Width	живания при	feet						Barometer	<b>)</b>
Carbon Dioxide   Carbon Dioxide   Carbon Dioxide   Carbon Dioxide   Carbon Monoxide   Carbon Monoxid	Carbon Dioxide   Carbon Dioxide   Carbon Dioxide   Carbon Dioxide   Carbon Dioxide   Carbon Monoxide	Port length:		ches		Combustion Ga	is Concentration			Calipers	
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Liner Glass / Metal / Teflon / Other Glass / Metal / Other Glass / Other	Liner Glass / Metal / Teflon / Other  Glass / Metal / Teflon / Other  None/Metal / Teflon / Other  Beak Checked? Yes No	Reading Interval	と収る	CATEGORIA		Carbon Dioxide	91.0	%		Nozzle Mea	surements
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Liner Glass / Metal / Teflon / Other  Glass / Metal / Teflon / Other  None / Metal / Teflon / Other  eak Checked? Ves No	Liner Glass / Metal / Teflon / Other Glass / Metal   Other Glass / Metal   Other Glass / Metal   Teflon / Other Glass / Wes No	Number of Points/Pc	defendentier op de gewone g	and the second		Kuspisanelukounalukoistississississississississississississi				2	
Glass / Metal / Dither Jother Site Diagram  Glass / Metal / Other Site Diagram  None / Metal / Other Site Diagram  None / Metal / Other Site Diagram  None / Metal / Other Site Diagram	Glass / Metal / Terlon / Other			7		Control of the Contro		AS ALUDOJANNIKA MATORIAN IMBERIJASKI BRRANIKA JALAKVI KONSKRIVA KAJOSI SEKON	· · · · ·	8	венимменне неменентельной переводительной переводительном переводительном переводительном переводительном переводительном переводительном пере
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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particle Size
Test Date	NOVEMBER 9, 2020
Test Location	APC Outlet No.
Operator Signature	ture 7 / L

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Pitot Factor 0.849	S)	
DGMCF 0, 0972	~	
Barometric Pressure 3℃.	10	F F
Static Pressure $-\mathscr{C}$ .	. 2	"H20
Nozzle Size / (177) (	ni .	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	 -	inches

	Reading Interval ${\mathcal Q}_{\mathcal U}$	umber of Ports	umber of Points/Port 12
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Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / (Metal / Other

Union None/Metal / Jeflon / Other\_

Pitot Leak Checked? / Yes / No

Notes:

Particulate Gain

SOMEONIC CONTRACTOR	mg	mg	The second secon
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#### Moisture Gain

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#### Combustion Gas Concentration

%	Carbon Dioxide // 0.7

Site Diagram

Project No.:	22050
Page	1 of
Probe No.:	Ph. 25/0
Meter Box No.:	2 NB22
Impinger Box No.:	100

Measuring Device	MII Numbers
Probe / Pitot	SOLONO
Trendicator	6
Control Box	11.000 m
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	のおうらな
Calipers	C28827

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22050 Project No.: Operator :

22050 1 of

Project No.:

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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 Particle Size
Test Date	November 9, 2020
Test Location	APC Outlet No
Operator Signature	

Pitot Factor	0 24 2	
DGMCF	しての。	
Barometric Pressure	で あ	gH"
Static Pressure	- 26.2	"H2O
Nozzle Size	ر ا	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	T	inches

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oer of Points/Port	12
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Reading Interval	and the
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal / Teflon / Other

Site Diagram

Glass // Wetal /Other\_ Nozzle None (Metal / Feflon / Other\_ Union

Pitot Leak Checked?

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2

**MII Numbers** 

Measuring Device

Impinger Box No.:

Meter Box No.:

Probe No.: Page

226

Probe / Pitot

Control Box Trendicator

Bm	Probe	
mg	Filter	
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#### Moisture Gain

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CWTR	2

Comb. Gas. Analyzer Incline Manometer

Micromanometer

Barometer

Calipers

#### Combustion Gas Concentration

Oxygen	%
Carbon Dioxide // / / 3	%
Carbon Monoxide	mda

3 3 4		Nozzle Measurements
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Point	Clock	Meter ft³	0°H	Desired	Temp °F	Temp	E .	Outlet °F	miet/Trap °F	Outlet °F	j r	Pressure DH	Vacuum "Hg
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22050 1 of

Project No.:

Impinger Box No.:

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Page Probe No.:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Particle Size
Test Date	02/6 100
Test Location	APC Outlet No.
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		STATE OF THE PARTY
Pitot Factor	みても、	
DGMCF	7.50	
Barometric Pressure	8 K	"Hg
Static Pressure	C 0 0 -	"H20
Nozzle Size		inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	end (md	inches

Reading Interval	and the second s
Number of Ports	7
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other Aff

Nozzle Glass //

Glass / Métal / Other\_

None (Metal / Teflon / Other

Union

Pitot Leak Checked? / Yes

Notes:

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#### Combustion Gas Concentration

Oxygen	00	%
Carbon Dioxide	450	%
Carbon Monoxide	9.00	mdd

Site Diagram

Measuring Device MII Numbers
Probe / Pitot SEE
Trendicator
Control Box
Incline Manometer
Comb.Gas.Analyzer
Micromanometer
Barometer
Calipers

	Nozzle Measurements
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**APPENDIX 6** 

SVOC Data Sheets (30 pages)

22050

Project No.:

Probe No.:

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Impinger Box No.: Meter Box No.:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	November II 2010
Test Location	APC Outlet No.

Pitot Factor	Š	
DGMCF	100-	
Barometric Pressure	TO TO	gH"
Static Pressure	60 K-	"H20
Nozzle Size	1597	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	7	inches

Reading Interval	ഗ
lumber of Ports	7
umber of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metal /Tefloh / Other\_ Cu.o.

Pitot Leak Checked? (Yes

Notes:

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Measuring Device	MII Numbers
Probe / Pitot 574	COE 20 112
Trendicator	COLE 20090
Control Box	COE 20090
Incline Manometer	06000 300
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Day Careda
Calipers	8

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Date: Nov.	2020		Covanta DYEC	EC			lest No.:	-	SVOC			7 986 4	o o
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Project No.:

S. J. S.

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	November 11 2020
Test Location	APC Outlet No.
Onorator Signatura	

Pitot Factor 849	
DGMCF	
Barometric Pressure 39,55	J. Hg
Static Pressure ~ 4,52	"H20
Nozzle Size 、 ふもち	inches
Stack Diameter 4.5	feet
Length	feet
Width	feet
Port length: 11	inches

Reading Interval	ហ	
Number of Ports	7	
Number of Points/Port	12	

Probe Liner (Glass / Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metal / (eflon) Other\_ Grion

Pitot Leak Checked? ( Yes

Notes:

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Oxygen	OT 00	%
Carbon Dioxide	1800	%

Average:

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Micromanometer

Barometer

Calipers

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Incline Manometer Comb.Gas.Analyzer

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Trendicator Control Box

Probe / Pitot ≤⊋A

MII Numbers

Measuring Device

Impinger Box No.:

Meter Box No.:

Probe No.: Page

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Project No.: Operator:

Pitot   Stack   Probe   Oven   Impings	Date: Nev	11 2000		Covanta DYEC	EC			Test No.:	2	SVOC			Page 3	of 5
Clock   Weeter   Time   Time   Temp   Temp   Temp   Temp   Temp   Temp   Temp   Weeter   Temp   Weeter   Temp   Temp   Temp   Temp   Weeter   Temp   Weeter   Temp   Temp   Temp   Weeter   Temp   Weeter   Temp   Weeter   Temp   Weeter   Temp   Weeter   Temp   Temp   Temp   Weeter   Te			Plant Location:	Courtice, Or	ntario			Test Locatio	n:	APC Outlet I	Vo.	**************************************	was contracted from the properties of the contracted from the state of the contracted from the	DANSE DE LA CONTRACTOR DE
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Date: West	Con .	ine.	Covanta DYEC	J			lest No.:	~	SVOC			ກ ກິດ ລັ	ص م
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Project No.:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Semi-Volatile Organic Compounds
Test Date	November 12 2020
Test Location	APC Outlet No.
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Pitot Factor , 8 449	
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Static Pressure	"H20
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Stack Diameter 4.5	feet
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Width	feet
Port length:	inches

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Probe Liner Glass / Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metak/Tellon / Other\_ Union

Š Pitot Leak Checked? Yes

Notes:

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Measuring Device

Impinger Box No.:

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Probe / Pitot 57A

COE 200 90 COE 20090

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Incline Manometer Comb.Gas.Analyzer

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元三人

Barometer

Calipers

Micromanometer

Bu	mg		8	8
Filter	Probe	Moisture Gain	CWTR 699	WCBDA

Combustion Gas Concentration	
Oxygen 3 45	%
Carbon Dioxide (⇔, ⊖\S	%
Carbon Monoxide 🔰 😤	ppm

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NOZZIE ME	Nozzle Measurements
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Project No.: Operator:

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							Operator:	JAN.		
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Project No .:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date No. 11, 2020	2010c
Fest Location	APC Outlet No
Operator Signature	

Pitot Factor 851		
DGMCF . 9444		
Barometric Pressure	で の で の	gH"
Static Pressure 29,	07/8/20	"H20
Nozzle Size / 2 g ( )		inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

THE PROPERTY OF THE PROPERTY O		-
Reading Interval	ហ	
Number of Ports	7	
Number of Points/Port	12	

Number of Points/Port 12

Probe Liner (135) Metal /Teflon / Other\_\_\_\_\_

Site Diagram

Nozzle (flass) / Metal / Other\_\_\_\_

Union None /Metal / Teffon/ Other\_

Pitot Leak Checked? (Ves)

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82537B

Probe / Pitot

COE 20094

Comb. Gas. Analyzer

Micromanometer

Barometer

Calipers

Incline Manometer

Trendicator Control Box

MII Numbers

Measuring Device

Meter Box No.: 128m

Page Probe No.: Impinger Box No.: (♥

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### Combustion Gas Concentration

Oxygen 会プラ	%
Carbon Dioxide (つ. ) 子舎	%
Carbon Monoxide	maa

Nozzle Measurements

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Project No.: Operator:

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22050

Project No.: 22 Operator: \( \mathre{G} \) \( \alpha\_{\mathre{G}} \)

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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date NOV W, 2020	2010
Test Location	APC Outlet No. 2
Operator Signature	

Pitot Factor / 85-1	
DGMCF qqq	-
Barometric Pressure 의유 . SH	"Hg
Static Pressure -9,52.0	"H20
Nozzle Size $$	inches
Stack Diameter 4.5	feet
Length	feet
Width	feet
Port length:	inches
THE RESIDENCE AND ADDRESS OF THE PROPERTY OF T	Charles of the Party of the Control

Number of Ports	2
Number of Points/Port	12

Probe Liner (Glass)/ Metal /Teflon / Other\_\_\_\_

Site Diagram

Nozzle Glass/ Metal / Other\_

Union None / Metal / Weffon Other\_

Pitot Leak Checked? (Ves.)

Notes:

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## **Combustion Gas Concentration**

Average: 2513

Measuring Device	MII Numbers
Probe / Pitot	<b>58名3</b> 天
Trendicator	
Control Box	いる可能の
Incline Manometer	COE 2009M
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

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COPE 200 44

Meter Box No.: Team 1

Page Probe No.: Impinger Box No.: 1つ

Project No .:

Date: NAV 11 222	1 2 P. 2 A.	<u></u>	Covanta DYEC	<u>س</u>			Test No.:	2	SVOC			Page 2	ot ot
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22050 Project No.: Operator :

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Date: 11 32 3	A 400 A 60 81	Plant:	Covanta DYEC	'n.			Test No.: ~		SVOC			Page 4	o, N
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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	Now 12/20 20
Test Location	APC Outlet No
Onerator Signature	The second secon

Pitot Factor	.88.	
DGMCF	500.	
Barometric Pressure	Ire So Co	"Hg
Static Pressure	19.6%	"H20
Nozzle Size	. 2573	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

THE PROPERTY OF THE PROPERTY O	-		-	-	1
Reading Interval		R)			
Number of Ports		N			
Number of Points/Port		<b>E</b>	6		

Probe Liner (Glass)/ Metal /Teflon / Other\_

Site Diagram

Glass / Metal / Other\_ Nozzle

None /Metal /(Teflon / Other\_ Union

Gain	
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Particulat	

	mg

SBBSHA

Probe / Pitot

COG 5004 COC 20094

Control Box Trendicator

Comb.Gas.Analyzer Incline Manometer

Micromanometer

Barometer Calipers

MII Numbers

Measuring Device

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Probe No.: Page

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## Combustion Gas Concentration

Oxygen B. CD	%
Carbon Dioxide // <	%
Carbon Monoxide / → . ○	mdd

	Nozzle Measurements
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Average:	2513

Pitot Leak Checked? Kes

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Point	Clock	Meter	4	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	i i	Pressure	Vacuum
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22050 Project No.: Operator :

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Finish Time:		Final Leak Check:		cfm@	"Hg	Finish Time:			Final Leak Check:	neck:	Team control and the control a	cfm @	"Hg
										Droiort No.		22050	
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### **APPENDIX 7**

Acid Gas Field Data Sheets (12 pages)

Project No.:

Page Probe No.: 100m

Meter Box No.: Impinger Box No.:

Plant Location Courtice, Ontario  Test No.:   M26A  Test Date   Vovember 9 2020  Test Location APC Outlet No.	Plant	Covanta DYEC
1 M26A November ion APC Outlet No. 1	Plant Location	Courtice, Ontario
November APC Outlet No. 1	Test No.:	M26A
	Test Date	
	Test Location	APC Outlet No.

Pitot Factor	, 848	
DGMCF	1,00,1	
Barometric Pressure	TO B	я Н В
Static Pressure	8.43	"H20
Nozzle Size	159%	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

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Reading Interval						N				
Number of Ports						æ	simple.			
Number of Points/Port	s/P(	Ę			No.	2	-ande			- 1

Probe Liner Glass / Metal /Teflon / Other\_\_\_

Nozzle Glass/ Metal / Other\_

Union None / Metal KTeflon / Other\_

Pitot Leak Checked? Yes No

Notes:

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## Combustion Gas Concentration

%	Carbon Dioxide
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Site Diagram

Probe / Pitot Spy   Botoll    Trendicator   CoE 20090    Control Box   CoE 20090    Incline Manometer   CoE 20090    Comb.Gas.Analyzer    Micromanometer    Barometer    Barometer    Barometer    Bo3906	Measuring Device	MII Numbers
	Probe / Pitot $arsigma  ho arphi_q$	Rottoll
	Trendicator	05002 300
	Control Box	COE 20090
	Incline Manometer	COE 200 40
anometer ter	Comb.Gas.Analyzer	
.er	Micromanometer	
	Barometer	
	Calipers	303906

Nozzle Measurements	635	635	650	282	159
Nozzle Me	7	2 , ,	ر د	4	Average: 72

200	3	200	Covanta DYEC	۳			Test No.:	Newson	M26A			Page 2	~ ⊙ •
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Point	Clock	Meter	Q D	Desired	Temp	Temp	Temo	Outlet	Inlet/Trap	Outlet	nlet	Pressure	Vacuum
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Project No.:

Probe No.:

Impinger Box No.: Meter Box No.:

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Plant Location	Courtice, Ontario
Test No.:	M26A
Test Date	Movember 9 2020
Test Location	APC Outlet No.
Operator Signature	8

Pitot Factor	* 3	
DGMCF	300:1	Tapa de la composition della c
Barometric Pressure	00 T. T.	29Hz
Static Pressure	6.8	"H20
Nozzle Size	1592	inches
Stack Diameter	4.5	feet
Length	THE	feet
Nigth Nigth		feet
Port length:		inches

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Reading Interval	ps	-
Number of Ports	M	canada.
Number of Points/Port	孜	*Obligity

Probe Liner (Glass / Metal /Teflon / Other\_

Glass / Metal / Other\_ Nozzle

None /Metal /Teflon / Other\_ Union

Pitot Leak Checked? (Yes)

Notes:

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## Combustion Gas Concentration

1 ( ) ( )	%
Carbon Dioxide いつこうし	%

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot ≤ P4	Botton
Trendicator	cot 20090
Control Box	05 200 E
Incline Manometer	COE 2009,0
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	30830

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	Nozzle Measurements
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m	,2650
4	2685
Average:	12851

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202		Plant Location:	Courtice, Ontario	itario			Test Location:		APC Outlet No.	lo			
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Strimstray between 100 to 100	M26A	Dry Gas	Pitot		Stack	Probe	Oven	gnidml	Impinger Temp	Meter	Meter Temp	Meter	dund
Point	Clock	Meter	ΔР	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	nlet	Pressure	Vacuum
	Ĕ	m	"H20	Ę	<u>u</u>	<u>.</u>	Ļ	<u>11</u>	Ľ.	LL a	Lin.	₩ 0,4 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0	"Hg Gauge
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*	15	1	894	2	282	433	25%	9	517	73	%	7.7	5.5
jst	20	5	3	24:	2.88	252	248	54	218	73	%	77	5
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35	45	5073	165	14	222	256	57.7	2,0	H22	%	8	.6%	5,5
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Project No.: Operator :

Project No.:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 M26A
Test Date	November 9 2020
Test Location	APC Outlet No.
Operator Signature	

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Pitot Factor	<i>አ</i> ንአ"	
DGIMCF	7007	
Barometric Pressure	9.50	"Hg
Static Pressure	-8.93	"H20
Nozzle Size	, 265	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	T	inches

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Probe Liner Glass / Metal / Teflon / Other

Site Diagram

Glass / Metal / Other\_ Nozzle

None / Metal / Teflon / Other\_ Union

Š Pitot Leak Checked? Yes

Notes:

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MII Numbers

Measuring Device

Impinger Box No.:

Meter Box No.:

Probe No.: Page

Probe / Pitot Sp4

Control Box Trendicator

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Comb. Gas. Analyzer Incline Manometer

Micromanometer

Barometer

## Combustion Gas Concentration

	Oxygen	%
	Carbon Dioxide \\\	%
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Ipels	Nozzle Measurements
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Average:

Date: 100	0700		Covanta DYEC	ږ			lest No.:	7	MZOZIN			rage 4	7 5
.	overlater or	Plant Location:	Courtice, Ontario	itario			Test Location:	1	APC Outlet No.	0.			
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	M26A	Dry Gas	Pitot	The second secon	Stack	Probe	Oven	Imping	Impinger Temp	Meter Temp	Temp	Meter	bumb
Point	<u>Ş</u>	Meter	A A	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	net	Pressure	Vacuum
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	0	75.65	282	1,75	283	2.55	877		2	2	73	7	2.
K	S			4	288	292	25%	7.9	22.5	32	79	1/2	4.5
186	10	83.37	89 "	24.	288	2,53	25%	7	おる	12	ħ8	2,05	4.5
A	15	87.27	89.	25	182	257	256	0,5	977	7	%	50.2	ره ک
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79	25	5.5.3	89.	4	288	\$	757	250	226	7%	<del>)</del> %	2.05	4.5/
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22050 Project No.: Operator:

Project No.:

Probe No.: Page

Impinger Box No.: Meter Box No.:

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	/ M26A
Test Date	November 10 2020
Test Location	APC Outlet No
Onerator Signature	Ira

Pitot Factor	848	
DGMCF	7,00	
Barometric Pressure	F. S	₽H"
Static Pressure	るら	"H20
Nozzle Size	12651	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	<b>4-4</b>	inches

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Reading Interval	
Number of Ports	
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Probe Liner Glass / Metal /Teflon / Other\_

None /Metal / Teflon / Other\_ Glass / Metal / Other\_ Nozzle

Pitot Leak Checked? (Nes

Notes:

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	V. 94	9 I
e Gain		
Moisture Gain	CWTR	WCBDA

Combustion Gas Concentration	
Oxygen 7,OC	%
Carbon Dioxide (1, 0)	%
Carbon Monoxide	maa

Site Diagram

Probe / Pitot SPY   3 off off   Trendicator   CoE 20090   Control Box   CoE 20090   Incline Manometer   COE 20090   Comb.Gas.Analyzer   Micromanometer   Equ. Canade   Barometer   Equ. Canade   Calipers   R 03906	Measuring Device	MII Numbers
Bab COE COE COE ENU. B. O.		
COE COE COE ENV.	Probe / Pitot 写好	Ratall
COLE COLE Equ. R. O.	Trendicator	COE 20090
COLE ENU. R. O.	Control Box	COLE 20090
Elle. R. O.	Incline Manometer	COL 20090
12.4U. R. O.	Comb.Gas.Analyzer	
1540. R. O.	Micromanometer	
	Barometer	Tilli Carlado
	Calipers	5,05906

Name of the second seco	Nozzle Measurements	
-	3692	
~	,2635	
ന	12650	
ষ	2689	
Average:	12.2	

	1800	700	Covanta DYEC	E E			lest No.:	Moss	MZ6A			Page 2	of 2
. C.A.		Plant Location:	Courtice, Ontario	ntario	estimatus management de la companya	PROPOSITA DE PERSONANTE DE PROPOSITA DE LA CONTRACTOR DE	Test Location:	11:	APC Outlet No.	lo. 2			
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ensistemente superpresentation de la companya del companya de la companya de la companya del companya de la companya del la companya de la co	M26A	Dry Gas	Pitot		Stack	Probe	Oven	guidml	Impinger Temp	Meter	Meter Temp	Meter	Pump
Point	Clock	Meter	ΔР	Desired	Temp	Temp	Temp	Outlet	Inlet/7-rap	Outlet	net	Pressure	Vacuum
	2	<b>#</b>	"H <sub>2</sub> O	cfm	<b>!</b>	<u></u>	<u>u</u>	L.	L	ii.	ELL O	₹°2	"Hg Gauge
e	0		143	沫	7.69	253	9/12	49	2.7.7	2	53	0.0	10.2
Z	2	25.24	13	*	285	2.58	250	5	707	00	7	000	( ) ( )
100	10	14:25	12	7	£87	25A	250	)_5_(	208	69	75	_ ~}	4.57
4	15	82,09	<u>۾</u>	¢,	287	352	)57	2.4	212	5	12	, . ,	4.5
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8	25	             	999	3	+87	256	250	9	20	1 2	<b>⊘</b>	2.0	75,4
1	30	19H 78	99 "	YA,	982	952	230	9	202	7	158	7.0	4.5/
8	35		89	2,	187	256	27.5	09	2.16	77	98	12.05/	4.5%
8	40	20%,30	2	ر ر دي	<i>t87</i>	256	37,	S	472	73	£8	2:02	2
92,	45	45.908	07.0	24.	287	257	248	9.5	248	7.5	\% %	12.57	<b>L</b> ,
4	20	710,77	2	22	288	257	いた	S	213	ナ	28	2.15	-5
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Single Point

Project No.: Operator :

<u>+</u>	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 M26A
Test Date	November 10 2020
Test Location	APC Outlet No
Operator Signature	nre ////

	CO ( 10 7)	- CO-T-CO-T-CO-T-CO-T-CO-T-CO-T-CO-T-CO-
Pitot Factor	<u>X</u>	
DGMCF	1.004	
Barometric Pressure	まる	2 2 2 2 2 2
Static Pressure	49.6-	"H20
Nozzle Size	1590'	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	T	inches

 Reading Interval	) S
 Number of Ports	1
Number of Points/Port	17

Probe Liner (Glass / Metal /Teflon / Other\_

Glass / Metal / Other\_ Nozzle

None /Metal (Teflon / Other\_ Union

Pitot Leak Checked? Yes

Notes

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**MII** Numbers

**Measuring Device** 

Series

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Impinger Box No.:

Meter Box No.:

Probe No.: Page

Project No.:

cot 20010

80401

Probe / Pitot ≤₽4

> Incline Manometer Comb. Gas. Analyzer

Control Box Trendicator

Filter	mg
Probe	mg
Moisture Gain	
CWTR LTB . L	500
WCBDA	₽D

Combustion Gas Concentration	
Oxygen 8, 28	%
Carbon Dioxide //. \O	%
Carbon Monoxide	mdd

Cenada.

Env.

Barometer

Calipers

Micromanometer

803906

Site Diagram

Date: 505	0,0%			3								,	
The state of the s		Plant Location:	Courtice, Ontario	itario	anny function property and property and produced by the property of the proper		Test Location:		APC Outlet No.	0.			
	*		W.	THE RESIDENCE OF THE PROPERTY	*			*		*	*	*	*
	M26A	Dry Gas	Pitot		Stack	Probe	Oven	Imping	Impinger Temp	Meter Temp	Temp	Meter	bumb
Point	Clock	Meter	ΔР	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	niet	Pressure	Vacuum
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H	ហ	752,62	, 69	94.	987	2.59	253	52	227	43	<u>6</u> -	20,0	ずら
pp	10	376, 48	£.	¥,	787	7.88	152	0,5	17.7	73	<b>%</b> %	2.1	7
A	15	230,38	0£°	X.	787	72/2	252	25	277	オナ	(5	2.15	5
X	20	234, 32	\$9.	È.	987	2.5%	Z.	So	223	7.	-	7.7	5
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g	40	7. Z. Z.	89:	<b>L</b> ,	297	256	250	25	227	*	43	2.05	5
20	45	153.5%	7.	۲÷	787	2.56	250	2.3	22.	48	46	Zi [2]	<b>V</b>
Ħ	ß	さなった	<del>-</del>	7	882	25%	2.50	h.S	+77	X	वस	2.15	<b>V</b> 3
A. J. J. J.	S	26776	2	32	スタス	352	232	5.5	223	7.8	4,4	172	\
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Single Point

Project No.: Operator :

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 M26A
Test Date	November 10 2020
Test Location	APC Outlet No. 2-
Operator Signature	<b>6</b>

Commonwealth and a constitute of the state o	, ×48	
DGMCF	1.004	
Barometric Pressure	7.8	aH"
Static Pressure	ろびっ	"H2O
Nozzle Size	1592	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	TT	inches

Reading Interval	ph	15
Number of Ports	þ	
Number of Points/Port	77	

Number of Ports
*.

Probe Liner Glass / Metal /Teflon / Other\_

Glass / Metal / Other\_ Nozzle

None / Metal / Teflon / Other\_ Union

Pitot Leak Checked? Yes

Notes:

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Mil Numbers

**Measuring Device** 

Impinger Box No.:

Meter Box No.:

Probe No.: Page

Probe / Pitot 5/04

Control Box **Frendicator** 

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Project No.:

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Comb. Gas. Analyzer Incline Manometer

Micromanometer

Barometer

Calipers

WCBDA // S	50
Combustion Gas Concentration	
Oxygen 8 66	%
Carbon Dioxide (の, る)	%
Carbon Monoxide ( 8, 3	mdd

Nozzle Measurements			A minute and the contract and a cont	лодно-менамический применента применента применента применента применента применента применента применента при	
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Site Diagram

Date: A Price	30 3012		COVANTA UYEC	<u>ا</u>			Test No.:		M26A			Page 2	of 2
1	1		Courtice, Ontario	ntario			Test Location:		APC Outlet No	No. 2	- The second sec	-	
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	M26A	Dry Gas	Pitot		Stack	Probe	Oven	Imping	Impinger Temp	Meter	Meter Temp	Meter	Pump
Point	Clock	Meter	<u>0</u>	Desired	Temp	Temp	Temp	Outlet	Inlet/Trap	Outlet	ne e	Pressure	Vacuum
	ime i	<b>*</b>	"H <sub>2</sub> O	£		ir.	u.	u.	<u>LL</u>	<b></b>	Ľ.	O'H.	"Hg Gauge
Transcent volument of the second of the seco	0	66,05	7.	Ą.	286	2,57	2.53	94	2,(8	754	35	2,15	
H	S	70,37	9.	4	18子	22	255	3	2		54	5-5	4.5
jó	10	37	83.	7	787	257	52	\$	(6.3	7	3.E	2,05	ر ا ا
A	15	1.7. 2.2.	\% 9	4	287	256	25	50	シェ	48	<del>1</del> %	2,05	4.51
)8d	70	4 3 5 5	89,	4.	184	75%	2.5	5	215	76	84	7.05	7
9	25	25, 72	29.	2.	2.86	2.5%	25.2	K	25/	#	S	7	7.
X	30	84.57	89	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	285	2.76	757	ず	216	44	<u> </u>	3,60,6	75%
00	35	43,40	89.	A	2%2	25.2	22	20	ナス	4	<u>0</u>	2.05	)\ Z
8	40	4,35	<u>۾</u>	8.	285	2.5%	787	58	216	8±	7,5	12.1	5
40	<b>4</b>	101,30	೧೦ ೨ •	4	2.85	256	253	) 9	となっ	84	5	205	2
F	20	105,20	893	4	285	256	5.53	و	ナ17	<i>%</i> ±	2	2.05	<b>,</b> ∾
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Project No.: Operator :



### **APPENDIX 8**

VOST Field Data Sheets (6 pages)

### Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Volatile Organics Sampling Train Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
Ţ	1.020	37.45	61.20	23.75	29.50	1.20	26.8	23.81	0.0238
5	1.020	61.65	88.10	26.45	29.49	1.20	27.9	26.41	0.0264
C	1.020	88.25	114.20	25.95	29.50	1.20	29.3	25.80	0.0258
<b>7</b>	1.020	15.90	42.50	26.60	29.52	1.20	28.0	26.58	0.0266

\* Dry at 25°C and 1 atmosphere

### **Vost Data Sheet**

Plant: Covanta DYI	EC		
Plant Location: Courtice, O	4	Test Condition:	Control Box €2
Test location: APC Outlet I	vo\	DGMCF: 1.02	Operator: J G
Date: WOVEMBRA	11.2020	Barometric Pressure:	"Hg Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Decte	ctable Leak	Field Blank Pair ID: SA, SB

PBAR 39.5

Test 1 Start T	ime: OSH6	0819	Initial Leak Check	NDL @	22_ "Hg	Sample ID: 🛭 🖟	4,18
Test 1 End Tir	me:	2859	Final Leak Check	Nol @	Z_۱ "Hg	Lab ID: 노2중\	4397-5
Clock	Dry Gas		Tempo	eratures	- Contraction of the Contraction	Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
0	14837.76	140	139	16	22	1.7	1.0
5	7-84035	140	140	6	25	1:7	(0.
10	14843.98	141	140	10	25	1.2	(.0
15	7846 44	lu	140	6	25		lo .
20	T-850,46	141	14	lo	zg	(.72	1.0
25	7852.65	141	(38	<b>L</b>	28	,-2	(,6
30	7854185	141	ા હુક		29	1.2	(.0
35	7857.60	141	(2°s		29	17	3.0
40	7861.Zo	lui	(3%		29	1.7_	3,0

PERC SAMP

Test 2 Start Tir	me:	29 OH	Initial Leak Check	MDL @	71 "Hg	Sample ID:	24 2S
Test 2 End Tim	ie: C	? ? ~ ~	Final Leak Check	· · · · · · · · · · · · · · · · · · ·	"Hg	Lab ID: 425	4397.60
Clock	Dry Gas		Tempe	ratures	tyra. e. Nil	Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
	61.65	lu o	140	15	222	/、2	1-0
5	65,15	14	140	(5	27	7.7	20
10	68.50	140	161	(	28	1.2_	20
15	31.60	(40	lu)	(o	29	l. Z	2-0
20	741.25	(H	140		28	1,2_	7.0
25	78.5	i W	l La Caraciana	6	29	/. 2	20
30	80.10	141	146	10	28	/_ 2	2.0
35	88.4	141	140	12	2-8	4. 2	20
40	8 É. i	141	140	10	19	/.12	2.0

### **Vost Data Sheet**

Plant: Covanta DYEC				
Plant Location: Courtice, ON		Test Condition:		Control Box 1000 47
Test location: APC Outlet No	·	DGMCF: 1.020		Operator: 3 Con
Date: Nov 11, 2, 2		Barometric Pressure:	"Hg	Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectec	table Leak	Field Blank Pair II	<b>D:</b>

PEAR 29 5

Test 3 Start Time: 0948			Initial Leak Check (15 (@ 15 "Hg Sample ID: 3A				A 38
Test 3 End Tim	ie: 1028	3	Final Leak Check	A15: @	2∥ "Hg	Lab ID: (25)	
Clock	Dry Gas		Tempe	ratures		Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
0	86.25	(4)	140	(4	28	1.7	10
5	91.50	141	140	(5	28	1:2-1	1.0
10	44 80	i Gi	140	3	29	1. 2-	(.2
15	48,2	141	(41	10 m	29	1.2.	1.0
20	101.56	વિષ	A JYON	10 m	30	(-2	1-0
25	104 50	iul	THE THE		30	72	1.0
30	68,10	141	141	10	10	1.2	(,0
35	111.30	141	NA ALL		3,	15	100
40	114:20	141	(વા	16	30	1,2	1.0

PEAS 29.55

Test 4 Start T	Time: ( &	130	Initial Leak Check	KIDL @	2_( "Hg	Sample ID:	14,4B
Test 4 End Ti	me: / (	ليا	Final Leak Check	ND @	2 j "Hg	Lab ID: LZS	14377-6
Clock	Dry Gas		Tempe	eratures		Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
0	16.5	101	140	Maria 14 / 14 / 14 / 14 / 14 / 14 / 14 / 14	78	, 2,	20
5	19.3	lu (	140	3.4.	१८	1.2	2.0
10	23.j	L-U	140	10	<i>7</i> 0	1.2	2.0
15	26.6	l V	141	10	20	1.2	2.0
20	30.1	146	140		78		2.0
25	37.4	141	140	10	28	i. 2	2 0
30	JG G	1-1	4	6	28	1.2	2.0
35	<i>.2</i> 9_4	14/	4 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 /	lo	28	1.2	4.0
40	42.5	141	141	10	29		

### Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Volatile Organics Sampling Train Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1	1.010	54.35	75.40	21.05	29.50	1.09	22.7	21.18	0.0212
<b>2</b>	1.010	75.70	96.30	20.60	29.49	1.10	24.3	20.61	0.0206
***	1.010	99.50	120.50	21.00	29.50	1.10	25.1	20.96	0.0210
4	1.010	21.50	41.50	20.00	29.52	1.09	24.6	20.01	0.0200

\* Dry at 25°C and 1 atmosphere

### ORTECH Consulting Inc. Vost Data Sheet

Plant: Covanta DYE	C C	
Plant Location: Courtice, ON	Test Condition:	Control Box ID: Vost 5
Test location: APC Outlet N	lo DGMCF: /. 010	Operator: DUL
Date: November	11 2020 Barometric Pressure:	"Hg Project No: 22050
~ 0.5 LPM for 40 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 114, B

PBAR 29.50

Test 3 Start Ti	me: 95	50	Initial Leak Check	NPL @	/4 "Hg	Sample ID: 9	48
Test 3 End Tin	ne: /03	0	Final Leak Check	NDL@	/5 "Hg	Lab ID: 125/	1397-6
Clock	Dry Gas	ana Militara	Temper	atures		Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H <sub>2</sub> O	Vacuum "Hg
	99,50	133	1793	12	25		3
5	102.3	133	143	12	25		3
10	105.3	133	199	FU	25	7, (	<u> 3 </u>
15	107.9	133_	143	0	2626	Assert/Effense	<u> 5.5.</u>
20	11/0.3	132	143	Q	25	1 2 /	3.2
25	1113.01	133	143	<u> </u>	25	126	<u> </u>
30	liis.5	133	142	Section 1	25		<u> 5.5</u>
35	1117.9	123	142	5	25		3.5
40	1120.51	133	142	5	25	4.(	3-5

69 SP 253

Test 4 Start Ti	me: / <u>ረ</u>	736	Initial Leak Check	<i>NOL @</i>	/ 💪 "Hg	Sample ID: <u>と</u> Zst	<u> 514397-6</u>
Test 4 End Tin	ne: / / /	10	Final Leak Check	NOL @	/	Lab ID: 10#	<u> </u>
Clock	Dry Gas		Tempe	atures		Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
O	1715	133	1741-24	14	25		2
5	74.1	133	142	5	25	16	5
10	26.9	133	142	Ø	25		3
15	129.2	/ 33	142	5	75	200 100	-3
20	31.7	133	147	=	75		3
25	34.2	133	147	3	<b>ZU</b>	1.6	3,5
30	36,11	133	43	5	24	4.1	3.5
35	138.9	133	142	3	24	1. 1	85
40	41.5	132	146	5	24		5

### ORTECH Consulting Inc.

### **Vost Data Sheet**

Plant: Covanta DYEC		
Plant Location: Courtice, ON	Test Condition:	Control Box 18 VGTS
Test location: APC Outlet No. 2	_ DGMCF: 1.010	Operator:
Date: NOVEMBER 1	1 2020 Barometric Pressure:	"Hg Project No: 22050
	- No Dectectable Leak	Field Blank Pair ID: / A B

PBAR 29.50

Test 1 Start Ti	me: 82	Ú.	Initial Leak Check	NOL @		Sample ID:	7A,B
Test 1 End Tin	ne: 00	<b>2</b>	Final Leak Check	NDL @	14 "Hg	Lab ID: ムる	4397-6
Clock	Dry Gas		Temp	eratures		Meter	Pump
Time	Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Pressure "H₂O	Vacuum "Hg
0	9435	123	141	20	20	1.2	5
5	57.0	133	191	3	22	1.2	5
10	60.8	133	141	3	22	1.04.7	45
15	63.0	1:33	141	$\mathcal{U}$	-23	1.0	4.5
20	65.0	133	141	4	23	1.0	4.5
25	67.5	133	141	4	2-3	1.1	5
30	70.0	137_	141	4	23	1.1	
35	72.4	132	141	4	24	1. (	15
40	754	132	141	4	24	1.1	5

"Hg Sample ID: Initial Leak Check Test 2 Start Time: "Hg Lab ID: 125143726 Final Leak Check Test 2 End Time: Meter Pump Temperatures Clock Dry Gas Condensor Meter Avg Pressure Vacuum Stack Time Meter Probe °C "H<sub>2</sub>O "Hg °C °C °C 133 1. ( 0 5 2.1 24 10 15 20 25 133 30 35



### **APPENDIX 9**

Aldehydes Field Data Sheets (8 pages)

### Covanta - Durham York Energy Centre Boiler No. 1 BH Outlet Aldehydes Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H <sub>2</sub> O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm³)*
	1.020	44.30	87.20	42.90	29.52	1.20	28.5	42.79	0.0428
7	1.020	8.10	53.40	45.30	29.51	1.20	29.1	45.09	0.0451
<b>~</b>	1.020	34.50	72.60	38.10	29.51	1.20	29.2	37.91	0.0379

\* Dry at 25°C and 1 atmosphere.

### NCASI Method ISS/FP-A105.01 ORTECH Consulting Inc.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	
Test location:	APC Outlet No.
Date:	November 11, 625
Project No.:	22050 miles de la companya del companya de la companya del companya de la company

Measuring Device	MI Number
Control Module	1614 2 A1017
Barometer	Env Canada

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e E	Meter	Temp	Temp	Temp	Outlet	Temp	Pressure	Vacuum
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Start Time:						DGMCF:		0.26

Comments:

Initial Leak Check: Final Leak Check:

Finish Time:

: sample @ ~0.5 lpm for 60 minutes.

Average DGM Temp: Average DGM A H:

Lpm @ Lpm @

Sample Volume:

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	
Test location:	APC Outlet No.
Date:	Morenben 11, 2,2,
Project No.:	22050

uring Device	MINUMPER
trol Module	Krt2 Aio 17.
Barometer	Env Canada

Barometric Pressure: コ۹ S۱

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Time	Meter	Temp	Temp	Temp	Outlet	Temp	Pressure	Vacuum
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DGMCF: / Δ GZO
Sample Volume:
Average DGM Temp:
Average DGM Δ H:

: sample @ ~0.5 lpm for 60 minutes.

Comments:

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	
Test location:	APC Outlet No.
Date:	MAYAMGER II OSY
Project No.:	22050

Measuring Device	MI Number
Control Module	4101 7 2 x 50
Barometer	Env Canada

Barometric Pressure: スヘン

Clock	Dry Gas	Probe	Stack	Oven	Impinger	Meter	Meter	Pump
Time	Meter	emo	Temp	Temp	Outlet	Temp	Pressure	Vacuum
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itart Time:	inish Time:	nitial Leak Check	inal Leak Check:

Sample Volume: Average DGM Temp: Average DGM A H:

DGMCF:

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Comments:

: sample @ ~0.5 lpm for 60 minutes.

### Covanta - Durham York Energy Centre Boiler No. 2 BH Outlet Aldehydes Sample Volume Corrections

Test	DGMCF	Initial DGM	Final DGM	Actual Vol.	Barometric	Average DGM	Average DGM	Corrected	Corrected
<u>S</u>		Reading	Reading	Sampled	Pressure	Pressure	Temperature	Volume	Volume
		(1)	(1)	<u>(</u> )	(in Hg)	del H (in H <sub>2</sub> O)	(5,)	*(1)	(Rm³)*
	1.010	41.90	74.80	32.90	29.52	1.10	24.4	32.94	0.0329
2	1.010	75.20	105.85	30.65	29.51	1.10	25.1	30.61	0.0306
m	1.010	6.50	37.10	30.60	29.51	1.10	26.0	30.46	0.0305

\* Dry at 25°C and 1 atmosphere.

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	
Test location:	APC Outlet No. Z
Date:	November 11 2020
Project No.:	22050

suring Device	Number
ntrol Module	B1002 307
Barometer	Env Canada

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41.9   23   44   43   20   24   1.1   46.0   133   144   145   136   146	41.3 143 143 130 20 22 1.1  44.0 131 143 133 144 145 13 20 23 1.1  55.4 131 143 149 14 24 1.1  55.3 133 144 140 140 14 25 1.1  66.9 133 144 140 140 16 25 1.1  66.9 133 144 145 140 140 15 25 1.1  66.9 133 144 145 140 140 15 25 1.1  66.9 133 144 145 140 140 15 25 1.1  66.9 133 144 145 140 140 15 25 1.1  66.9 133 144 145 140 140 140 15 25 1.1  66.9 133 144 145 145 140 140 140 140 140 140 140 140 140 140							Average	I	to I
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46.7 132 143 143 143 149 149 149 149 149 149 149 149 149 149	46.7 134 143 139 19 24 52.4 131 143 140 17 24 55.3 131 143 140 17 24 55.3 144 140 17 24 65.3 133 144 140 17 25 65.3 133 144 140 17 25 65.3 133 144 140 16 25 74.8 134 144 140 16 25 74.8 134 144 140 16 25 11.0 144 140 16 25	Ŋ	のえた	W.	\ \ \ \		R	N		
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	124	k:	
J. 1116.	Finish Time:	Initial Leak Check	Final Leak Check

/O " Hg

Lpm @ Lpm @

DGMCF: Sample Volume: Average DGM Ter	ë		3
verage DGM A H		escured/file	**************
	SMCF: Imple Volume: /erage DGM Ter	DGMCF: Sample Volume: Average DGM Temp: Average DGM A H:	SMCF: 1,010 Imple Volume: 3,2,6 Ierage DGM Temp: 2,4, Ierage DGM A H: 1,

	sample @ ~0.5 lpm for 60 minutes.	
	sample	

Comments:

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F 1015 & .	
Plant Location:	Courtice, Ontario
Test No.:	
Test location:	APC Outlet No.
Date:	Klov 11/20
Project No.:	22050

Measuring Device	MINUMber
Control Module	COE 200(9
Barometer	Env Canada

Contract of the Contract of th	50 H
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	Barometric Pressure:

Clock	Dry Gas	Probe	Stack	Oven	Impinger	Meter	Meter	Pump
Time	Meter	Temp	Temp	Temp	Outlet	Temp	Pressure	Vacuum
	- CONTRACTOR			wichenster (chick		Average	A	ř
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Finish Time: 1550 Initial Leak Check: 2.01 Lpm @ 71 Final Leak Check: 2.0 Lpm @ 70	Start Time: $/2 \lesssim \mathcal{I}$
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" Hg " Hg

Sample Volume:		P	10	业	
Average DGM Temp:	remp:	1	M	b	
Average DGM A H:	ï		Stance Stance		

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Operator: ₹>> \

: sample @ ~0.5 lpm for 60 minutes.

Plant:	Covanta DYEC	
Plant Location:	Courtice, Ontario	
Test No.:		
Test location:	APC Outlet No. 2	
Date:	NUGABER 11, 2020	
Project No.:	22050	

Measuring Device	MI Number
Control Module	151000 300 J
Barometer	Env Canada

Barometric Pressure: ○<...S\ "Hg

Clock	Dry Gas	Probe	Stack	Oven	Impinger	Meter	Meter	dwnd
Ä	Meter	Temp	Temp	Temp	Outlet	Temp	Pressure	Vacuum
		•	•	•	***************************************	Average	H	Ē
		ပ္	သို	ွ	ů	ູ່ບ	"H20	Gauge
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40		13	12	<b>1</b>		82	Marcon Ma	
45	マルバル	K.	135	Ž		670	101	***************************************
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Start lime:				AMARANA AND AND AND AND AND AND AND AND AND		Cample Volume	702	distriction or the contract of

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INIGIA	ample Volume: Werage DGM Temp: Werage DGM Δ H:	30.6 26.9	
- Const	THE TAXABLE AND A PROPERTY OF THE PROPERTY OF		

: sample @ ~0.5 lpm for 60 minutes.

Comments:



### **APPENDIX 10**

ORTECH Sample Log/Chain of Custody Forms (9 pages)

### ORTECH Consulting Inc. - Sample Log Particulate and Metals Samples Covanta

Client: Covanta
Project Number: 22050
Received By: C Belore
How Received: Train Recovery

Job Assigned To: ALS

QUOTE/PO: 22050-J2729

ORTECH Sample I 20-22050-PM-	D Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
1	Nav 9, 20	#1 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
2	• )			Probe Rinse Nitric	0.1N Nitric	Metals
3				Filter	Particulate	Particulate & Metals
4				Impinger 1-5 Solution	Nitric/Peroxide	Metals
5				Impinger 6-7 Solution	Acid. KMnO4	Mercury
6				Impinger 6-7 Rinse	8N HCI	Mercury
7	NOV9,20	#1 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
8	, ,			Probe Rinse Nitric	0.1N Nitric	Metals
9				Filter	Particulate	Particulate & Metals
10				Impinger 1-5 Solution	Nitric/Peroxide	Metals
11			,	Impinger 6-7 Solution	Acid. KMnO4	Mercury
12				Impinger 6-7 Rinse	8N HCI	Mercury
13	NOV10,20	#1 APC Outlet	3	Probe Rinse Acetone	Acetone	Particulate & Metals
14	, , ===			Probe Rinse Nitric	0.1N Nitric	Metals
15				Filter	Particulate	Particulate & Metals
16				Impinger 1-5 Solution	Nitric/Peroxide	Metals
17				Impinger 6-7 Solution	Acid. KMnO4	Mercury
18				Impinger 6-7 Rinse	8N HCI	Mercury
19	NOV9, 20	Blank 1	Blank 1	Probe Rinse Acetone	Acetone	Particulate & Metals
20	/			Probe Rinse Nitric	0.1N Nitric	Metals
21				Filter	Particulate	Particulate & Metals
22				Impinger 1-5 Solution	Nitric/Peroxide	Metals
23				Impinger 6-7 Solution	Acid, KMnO4	Mercury
24				Impinger 6-7 Rinse	8N HCI	Mercury

Revered 12-NOU-20 830Am 6.4°C by Bren

### ORTECH Consulting Inc. - Sample Log Particulate and Metals Samples Covanta

Client: Covanta
Project Number: 22050
Received By: C Belore
How Received: Train Recovery

Job Assigned To: ALS

QUOTE/PO: 22050-J2729

ORTECH Sample II 20-22050-PM-	Sample Date	Location	Test No.	Sample Description	Sample Media	Sample Analysis
25	NOVIO, LO	#2 APC Outlet	1	Probe Rinse Acetone	Acetone	Particulate & Metals
26	, /			Probe Rinse Nitric	0.1N Nitric	Metals
27				Filter	Particulate	Particulate & Metals
28				Impinger 1-5 Solution	Nitric/Peroxide	Metals
29				Impinger 6-7 Solution	Acid. KMnO4	Mercury
30				Impinger 6-7 Rinse	8N HCI	Mercury
31	NOV10, 20	#2 APC Outlet	2	Probe Rinse Acetone	Acetone	Particulate & Metals
32	/	nz m c ounce	2	Probe Rinse Nitric	0.1N Nitric	Metals
33				Filter	Particulate	Particulate & Metals
34				Impinger 1-5 Solution	Nitric/Peroxide	Metals
35				Impinger 6-7 Solution	Acid. KMnO4	Mercury
36				Impinger 6-7 Rinse	8N HCl	Mercury
37	NOVIO, W	#2 ABC Outlot	3	Probe Rinse Acetone	Acetone	Particulate & Metals
38		#2 AFC Outlet	3	Probe Rinse Nitric	0.1N Nitric	Metals
39				Filter	Particulate	Particulate & Metals
40				Impinger 1-5 Solution	Nitric/Peroxide	Metals
41				Impinger 6-7 Solution	Acid. KMnO4	Mercury
42				Impinger 6-7 Rinse	8N HCl	Mercury
43	NOV107 20	> Blank 2	Blank 2	Probe Rinse Acetone	Acetone	Particulate & Metals
44	, - , - , - , - ,	> Didilk Z	DIGITIK Z	Probe Rinse Nitric	0.1N Nitric	Metals
45				Filter	Particulate	Particulate & Metals
<del>4</del> 6				Impinger 1-5 Solution	Nitric/Peroxide	Metals
47				Impinger 6-7 Solution	Acid. KMnO4	Mercury
48				Impinger 6-7 Rinse	8N HCl	Mercury
Relinquished By:	Chu	Roll	26		Date: Nov	12, 3080
Relinquished To:	Marine and Park	The second secon	The constitute of		Date:	

Recierd 12-NOV-20 830AM 6.490 by Bland Client: Covanta

Job/Report Number: 22050

Received By: C Belore

How Received: Train Recovery

Job Assigned To: ALS

Quote/PO: 22050-J2729

ORTECH Sample ID		Test		Sample	Sample	Sample
20-22050-M201A-	Date	No.	Location	Description	Media	Analysis
36	NOV9,20	3	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
37	, , , , , , , , , , , , , , , , , , , ,			PM 2.5 cyclone Rinse	Acetone	Particulate
38				PM 2.5 exit & connectors	Acetone	Particulate
39				Back up filter	Filter	Particulate
40				Impinger Soln & rinse	Water	Particulate
41				Secondary Filter	Filter	Particulate*
42				Impinger Rinse	Acetone & Hexane	Particulate
43	NO10,20	Blank	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
44	, , , , , , , , , , , , , , , , , , , ,			PM 2.5 cyclone Rinse	Acetone	Particulate
45				PM 2.5 exit & connectors	Acetone	Particulate
46				Back up filter	filter	Particulate
47				Impinger Soln & rinse	Water	Particulate
48				Secondary Filter	Filter	Particulate <sup>a</sup>
49				Impinger Rinse	Acetone & Hexane	Particulate
50	NOV 10, 20	Blank	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
51	, , , , ,			PM 2.5 cyclone Rinse	Acetone	Particulate
52				PM 2.5 exit & connectors	Acetone	Particulate
53				Back up filter	Filter	Particulate
54				Impinger Soln & rinse	Water	Particulate
55				Secondary Filter	Filter	Particulate <sup>a</sup>
56				Impinger Rinse	Acetone & Hexane	Particulate

Relinquished By:

Client: Covanta

Job/Report Number: 22050

Received By: C Belore

How Received: Train Recovery

Job Assigned To: ALS

Quote/ PO: 22050-J2729

ORTECH Sample ID		Test		Sample	Sample	Sample
20-22050-M201A-	Date	No.	Location	Description	Media	Analysis
1	10110 20	1	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
2	Na10,20			PM 2.5 cyclone Rinse	Acetone	Particulate
3				PM 2.5 exit & connectors	Acetone	Particulate
4				Back up filter	filter	Particulate
5				Impinger Soln & rinse	Water	Particulate
6				Secondary Filter	Filter	Particulate*
7				Impinger Rinse	Acetone & Hexane	Particulate
8	~ 1 8 ·	2	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
9	NOV10,20	6m	11 2 1 11 0 0 2 11 0 1	PM 2.5 cyclone Rinse	Acetone	Particulate
9 10	,			PM 2.5 exit & connectors	Acetone	Particulate
10 11				Back up filter	filter	Particulate
12				Impinger Soln & rinse	Water	Particulate
13				Secondary Filter	Filter	Particulate'
13 14				Impinger Rinse	Acetone & Hexane	Particulate
15	0/0/10 2	7 3	# 1 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
16	NOV10,20	, -		PM 2.5 cyclone Rinse	Acetone	Particulate
17				PM 2.5 exit & connectors	Acetone	Particulate
18				Back up filter	filter	Particulate
19				Impinger Soln & rinse	Water	Particulate
20				Secondary Filter	Filter	Particulate
21				Impinger Rinse	Acetone & Hexane	Particulate
22	101/ 2 4	1	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulate
23	NOV 9, 20	7		PM 2.5 cyclone Rinse	Acetone	Particulate
24				PM 2.5 exit & connectors	Acetone	Particulate
25				Back up filter	filter	Particulate
26				Impinger Soln & rinse	Water	Particulate
26 27				Secondary Filter	Filter	Particulate
28				Impinger Rinse	Acetone & Hexane	Particulat
29	N(0:9 -	2	# 2 APC Outlet	Nozzle & PM10 cyclone rinse	Acetone	Particulat
30	NOU9, 2	フ		PM 2.5 cyclone Rinse	Acetone	Particulat
31	,			PM 2.5 exit & connectors	Acetone	Particulat
32				Back up filter	Filter	Particulat
33		e.mo.e.moe.mounepare	et an antique antique de la company de la desta de la company de la company de la company de la company de la c	Impinger Soln & rinse	Water	Particulat
34				Secondary Filter	Filter	Particulate
35				Impinger Rinse	Acetone & Hexane	Particulat

Revend by Brut 12-NOV-20 830 AM 6.40C

### ORTECH Consulting Inc. - Sample Log Acid Gases Covanta

Client: Covanta Job/Report Number: 22050 Received By: C Belore How Received: Train Recovery

Job Assigned To: ALS Quote / PO #: 22050 - J2729

Final Sample Volume(ml) Analysis	HCI, HF & Ammonia	7 C HCI, nr & Allinoma F / (HCI, HF & Ammonia			HCl, HF & Ammonia	7 o HCI, HF & Ammonia	goo HCI, HF & Ammonia
Initial Volume(ml)	200	200	200		200	200	200
Media	0.1N H <sub>2</sub> SO <sub>4</sub> + DH <sub>2</sub> O	$0.1N H_2SO_4 + DH_2O_4 + DH_2O_5 +$	$0.1N H_2SO_4 + DH_2O$	$0.1N H_2 SO_4 + DH_2 O$	$0.1N H_2 SO_4 + DH_2 O$	$0.1N \text{ H}_2\text{SO}_4 + \text{DH}_2\text{O}$	$0.1N H_2 SO_4 + DH_2 O$
Sample Description	Impinger Soln & rinse	Impinger Soln & rinse	Impinger Soln & rinse	Impinger Soln & rinse	Impinger Soln & rinse	Impinger Soln & rinse	Impinger SoIn & rinse
Location	APC Outlet #1	APC Outlet #1	APC Outlet # 1	APC Outlet # 2	APC Outlet # 2	APC#1	APC#2
Sample Date	Navg, 20	<u>→</u>	07.01/0/1				
ORTECH Sample ID 20-22050-M26A-	1	2	w 4	. rv	9	Blank 1	Blank 2

Analyze for HCI, HF and Ammonia

Relinquished By:

Date: 10 10009

Relinquished To:

Revendby Brunt 12-1001-20 & 30AM 6,40C

### ORTECH Consulting Inc. - Sample Log Semi-Volatile Organics Samples Covanta

Client: Covanta Job/Report Number: 22050 Received By: C Belore How Received: Train Recovery

Job Assigned To: ALS

PO: 22050 - J2729

RTECH Sample ID 20-22050-SVOC-	Date	Sample		Sample	Sample
**************************************		Description	Location	Media	Analysis
4	11-Nov-20	Test 1	# 1 APC Outlet	Hexane/Acetone	svoc
h		Probe Rinse		1 4 4 1 1 1	
4		Test 1		Particulate	SVOC
		Filter			Autori
٥		Test 1		N.A.	SVOC
		XAD-II Trap			
P .		Test 1		Ethylene Glycol	svoc
		impinger Solution			
Þ		Test 1		Hexane/Acetone	svoc
	SELECTION OF THE THEORY OF THE THE THEORY OF THE THE THEORY OF THE THE THEORY OF THE THEORY OF THE THEORY OF THE T	Impinger Rinse			
6	11-Nov-20	Test 2	# 1 APC Outlet	Hexane/Acetone	SVOC
		Probe Rinse			
7		Test 2		Particulate	svoc
		Fifter			
\$		Test 2		N.A.	svoc
		XAD-II Trap			
9		Test 2		Ethylene Glycol	svoc
		: Impinger Solution			5,00
1b		Test 2		Hexane/Acetone	svoc
		Impinger Rinse		The state of the s	3000
1.).	12-Nov-20	Test 3	# 1 APC Outlet	Hexane/Acetone	SVOC
		Probe Rinse		77.00.00	3,00
1 2		Test 3		Particulate	svoc
		Filter			3,00
13		Test 3		N.A.	svoc
		XAD-II Trap		, , , , ,	3000
14		Test 3		Ethylene Glycol	svoc
		Impinger Solution		egrificing stycol	3000
1\$		Test 3		Hexane/Acetone	svoc
		impinger Rinse		Trekatie/Acetotie	3400
16	12-Nov-20	Blank 1	Blank	Hexane/Acetone	SVOC
		Probe Rinse	Own	richarie/ Mcccore	3000
17		Blank 1		Particulate	svoc
		Filter		raiticulate	SVOC
18		Biank 1		N.A.	svoc
		XAD-II Trap		14.14.	3400
19		Blank 1		Ethylene Glycol	SVOC
		Impinger Solution		railingue autroi	SVOC
20		Blank 1		110-000	51/55
4		Impinger Rinse		Hekane/Acetone	svoc

Relinquished To: ARROW Burton
Relinquished By: D. D. (1)

7:10

Date:

Date:

NW 13/20

### GRTECH Consulting Inc. - Sample Log Semi-Volatile Organics Samples Covanta

Client: Covanta Job/Report Number: 22050 Received By: C Belore How Received: Train Recovery

Job Assigned To: ALS

PO: 22050 - J2729

ORTECH Sample ID		Sample	à	Sample	Sample	
20-22050-SVOC-	Date	Description	Location	Media	Analysis	arymonomous
23	11-Nov-20	Test 1	# 2 APC Outlet	Herane/Acetone	svoc	
		Probe Rinse			21/02	
2‡		Test 1		Particulate	SVOC	
S. Control of the Con		Filter				
2\$		Test 1		N.A.	svoc	
		XAD-II Trap				
2¢		Test 1		Ethylene Glycol	SVOC	
1		Impinger Solution				
2\$		Test 1		Hexane/Acetone	SVOC	
	*** **********************************	Impinger Rinse		***************************************		
2\$	11-Nov-20	Test 2	# 2 APC Outlet	Hexane/Acetone	SVOC	
		Probe Rinse				
27		Test 2		Particulate	SVOC	
1		Filter				
28		Test 2		N.A.	SVOC	
		XAD-II Trap				
28		Test 2		Ethylene Glycol	svoc	
		Impinger Solution				
30		Test 2		Hexane/Acetone	svoc	
		Impinger Rinse				
31	12-Nov-20	Test 3	# 2 APC Outlet	Hexane/Acetone	SVOC	-
\$ 1		Probe Rinse				
32		Test 3		Particulate	SVOC	
		Filter				
33		Test 3		N.A.	svoc	
		XAD-II Trap				
34		Test 3		Ethylene Glycol	svoc	
Ţ		Impinger Solution		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
3\$		Test 3		Hexane/Acetone	svoc	
Ĭ		Impinger Rinse				
38	12-Nov-20	Blank 2	Blank	Hexane/Acetone	svoc	MAZONI
Ĭ	24 1401 40	Probe Rinse	SIG.III	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.00	
37		Blank 2		Particulate	svoc	
J		Filter		7 23 31 20 20 20	5700	
38		Blank 2		N.A.	svoc	
39		XAD-II Trap		14.74.	2400	
39		AAD-n Frap Blank 2		Ethylene Glycol	svoc	
39				curyiene diyodi	3400	
		Impinger Solution		11-1-1-10 and a	SVOC	
40		Blank 2		Hexane/Acetone	SVOC	
**************************************	**************************************	Impinger Rinse				<b>линич</b> т

Relinquished To:

AARON BURTON

Relinquished By:

Date:

3 NOV-2020

Date:

NW 13/20

### ORTECH Consulting Inc. - Sample Log VOCs

Client: Covanta Project Number: 22050 Received By: C Belore Job Assigned To: ALS

Quote / PO: 22050-J2729

Test Location	Test Number	ORTECH Sample ID 20-22050-VOST-	Sample Date	Sample Description	Sample Analysis
#1 APC Outlet	1 2 3 4 Field Blank Combined Condes	1A,B 2A,B 3A,B 4A,B 5A,B	NoV 11/20	Tenax and Tenax/Charcoal Archived @ ORTECH	VOCs VOCs VOCs VOCs
# 2 APC Outlet	1 2 3 4 Field Blank Trip Blank ombined Condes	7 A B 8 A B 9 A B 10 A B 11 A B 12 A B	Now 1/20	Tenax and Tenax/Charcoal - Archived @ ORTECH	VOCs VOCs VOCs VOCs VOCs

Custody Relinguished by:

Date: NUV 13/20

1' TO: AARA BUTTON

DATE: 13-NOV-202 9:10

1,50

75.

ORIECH Cousulting Inc. Recovery & Sample Log NCASI Method ISSIFF A 1115.111

Client: Covanate DYEC

Johnkeport Number: 22059

Received By: Chris Betore How Received: Train Recovery Job Assigned To: A1.S Quote / PO #: 22050 - 31729

Sand Substitute of Commission	PERCONALES TOR COMPANY OF THE PERCONAL PROPERTY OF THE PERCONAL PROPERT	A STATE OF THE PERSON NAMED OF THE PERSON NAME							
Fev.	100 S	ORTECH	S. S	First Seas.	Leigiy Weight	faitisi Weight	Final Weight	Weight of	Weight of
Namber	3.0cstion	Sample	Samiled	of Bila	MA Sample	Sample Bottle	55 BEE.	Sample Bottle	Sample Rottle
**************************************			ORAN HALLY	Sample Bottle	2336	+8334	Sample Battle	BHA & B20	BHA & HIO & Heasne
		20-22050-			(b)	16	9.0	(3)	(3)
	APC Outlet #1	ALD-1	Les II les	ALD-1	4 2	0.85	の対	160 0	18+S
12 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -	APC Outlet #1	ALD-2	المحادث	ALD-2	0.01	533.	1.99/	œ Ž	138
(NP)	APC Outlet #1	ALD-3	tan's town	ALD-3	i B. G	Š.	SE S	120.1	40
Blank i	APC Outlet #1	Blank I	orten stane	ALD-4	0.00	a. a.	で流	755	68.0 0.0
	APC Outlet #2	ALD-5	5	ALD-5	186	S.S.		23.5	0.58
7.	APC Outlet #2	ALD-6	*	ALD-6	110.2	8	10.70	0.22	\Q.\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
er orden mellet kennen ken	APC Outlet #2	ALD-7		ALD.7	1.60	N. V.	10,2	0.27	520
Blank 2	APC Outlet #2	Blank 2	))	4.6.8	b:60/	V. Co	N/N	176.1	1875
	The state of the s			www.	1000			-	
	Field BHA&Spike		E	กล	(7)	gu		na	£11
THE PROPERTY OF THE PROPERTY O	BHA Blank		na	118	133	Ra	25.2	200	11.2
	i and and	***************************************		*********	140.2		**************************************		
- C-	والإس والمستراج والمستروع والمراور والإراوا والمراوين والمستروع والمستروع والمستروع والمستروع	Age in the second secon	Service of the servic	E CONTRACTOR CONTRACTO	The state of the s	The same of the sa			THE RESEARCH CONTRACTOR OF THE PROPERTY OF THE

Analyze cach sample for Acetaldehyde, Formaliehyde, Acrolein.

Relinguished by:

000 13Nov-2020 Bate:

155

(10,0) 121

> MARa Burra Relinguished to:

Date:



### **APPENDIX 11**

Particulate and Metals Train Recovery Data Sheets (8 pages)

Client: Covanta DYEC

	Impinger 7		Impinger #7 Silica Ge Initial Wt: 903-7 Final Wt: 922-6 7 Gain: /8-9
	Impinger 5 & 6	CONTAINER TS5-A & TS5-B	CONTAINER TSS-A  Empty Wt:  With Imp. 5&6 Soln: 632-0  After 100g H,0 Rinse: 350-4  Total TSS-A:  MARK FLUID LEVEL  CONTAINER TSS-B  Empty Wt:  With 150 mL Di H <sub>2</sub> O: 430-0  After HCi Rinse: 452-3  After Dish  Total TSS-B  Empty Wt:  With 150 ml Di H <sub>2</sub> O: 430-0  After HCi Rinse: 452-3  After Dish  TSS-B O ml Glass Bottle TS3-Petri Dish TS4-L Amber Glass Bottle TS5-B - 500 ml Amber Glass Bottle
	Impinger 5 & 6		Empty Wt: 655.4 Initial Wt: 765.5 Gain: 2.9 Colour: Langle # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 654.2 Initial Wt: 756.8 Gain: 654.2 Colour: Langle # 6 Colour: 756.8
	Impingers 1, 2, 3, and 4	CONTAINER TS4	Impinger #1 Empty Empty Wt: 665.5 Golour: 240.7 Colour: 240.7 Colour: 240.7 Impinger #2 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Empty Wt: 672.7 Initial Wt: 787.4 Gain: 40.5 Colour: 40.5 Total TS4: 750.5 Total TS4: 750.5
	Filter	CONTAINER 153	Filter ID:
Project No.: 22050 Date: Morr Test No.: Morr Test Location: Morr	Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	CONTAINER TS1	Empty Wt:  After Act. Rinse:  Total TS1:  SEAL AND LABEL TS1  CONTAINER TS2  CONTAINER TS2  CONTAINER TS2  After 0.1N HNO <sub>3</sub> Rinse:  FINAL TS2:  SEAL AND LABEL TS2  After 0.1N HNO <sub>3</sub> Rinse:  SEAL AND LABEL TS2  Total TS2:  SEAL AND LABEL TS2  SEAL AND LABEL TS2  SEAL AND LABEL TS2  SEAL AND LABEL TS2  TS3 (Filter)  TS3 (Filter)  TS4 (Impinger 5,6 Sol'n-HNO <sub>3</sub> )  TS5-8 (Impinger 5,6 Sol'n-HNO <sub>3</sub> )  TS5-8 (Impinger 5,6 Sol'n-HNO <sub>3</sub> )  TS5-8 (Impinger 5,6 Rinse-HCl)  TTain Loaded By:  Train Loaded By:

	Impinger 7		Impinger #7 Silica Gel Initial Wt: タンゲ・ゲ Final Wt: タタム・ク 7 Gain: アススコ		Impinger Box ID:		
	Impinger 5 & 6	CONTAINER TSS-A & TSS-B	CONTAINER TSS-A  Empty W:: 706.5  With Imp. 5&6 Soln: 67.7 0  After KMnO, Rinse: 749.7  After 100g H <sub>2</sub> O Rinse: 8 49.0  Total TSS-A: 472.5	MARK FLUID LEVEL  SEAL & LABEL TSS-A  CONTAINER TSS-B Empty Wt:	With 150 mL DI H <sub>2</sub> O: ひろの S After HCI Rinse: ヤドゲイ After DI H <sub>2</sub> O Rinse: S 8 ト・S Total TSS-B: 3のイ・ス MARK FLUID LEVEL	TS1,TS2-500 ml Glass Bottle TS3-Petri Dish TS4-4 L Amber Glass Bottle TS5-A - 1000 ml Amber Glass Bottle	CWTR = 1 to 6: 473.1
	Impinger 5 & 6		Impinger #5 KMnO <sub>d</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 679. / Initial Wt: 798.4 Final Wt: 796.7 5 Gain: 2.9	Impinger # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 65/2 4 Initial Wt: 763 - 8 Final Wt: 767 - 2 6 Gain: \$ - 4	Colour: Ryfl &		
	Impingers 1, 2, 3, and 4	CONTAINER TS4	Impinger #1 Empty Empty Wt: 659.3 Final Wt: 723.0 1 Gain: 263.7 Colour:	Impinger #2 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Empty Wt: 6 H B Initial Wt: 750-1 Final Wt: 898-2 2 Gain: 748.1	Empty Wt: 64-8 Initial Wt: 767.8 Final Wt: 767.8 Gain: 8/7.6 Gaior: 44.8	Impinger #4 Empty Empty Wt: 626-7 Final Wt: 629-6 Gain: 7-2 Colour: Lear	Rinse: Rinse: RKK FLUI
	Filter	CONTAINER TS3	Filter ID: &Z 805 4 Colour: (メルイイを)			20-22050-PM	
Client: Covanta DYEC Project No.: 22050 Date: N. N. T.C. Test No.: A. Test Location: U.N.	Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	CONTAINER TS1	Container TS1 Weights Empty Wt: ハスピス After Act. Rinse: はいし、ハスピーン Total TS1: (ドト・リ	SEAL AND LABEL TS1  CONTAINER TS2  Container TS2 Weights Empty Wt:	After 0.1N HNO <sub>3</sub> Rinse: ゼケーレース Total TS2:	SAMPLE IDENTIFICATION TS1 (Probe Rinse-Acetone) TS2 (Probe Rinse-0.1N HNO <sub>3</sub> ) TS3 (Filter) TS4 (Impinger 1-4 Sol'n-HNO <sub>3</sub> )	TSS-B (Impinger 5,6 Rinse-HCl)  Train Loaded By:

Client: Covanta DYEC  Project No.: 22050  Date: VOV   0,1,0  Test No.: 3  Test Location: UNV   1					
Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3, and 4	Impinger 5 & 6	Impinger 5 & 6	Impinger 7
CONTAINER TS1	CONTAINER TS3	CONTAINER TS4		CONTAINER TSS-A & TSS-B	
Container TS1 Weights Empty Wt: After Act. Rinse: 787.0 After Act. Rinse: 787.0 After Act. Rinse: 787.0  MARK FLUID LEVEL  CONTAINER TS2  CONTAINER TS2  Total TS2: 747.8  Total TS2: 747.8  SEAL AND LABEL TS1  SEAL AND LABEL TS2  Total TS2: 747.8  TS2 (Probe Rinse-Acetone) TS2 (Probe Rinse-Acetone) TS3 (Filter) TS3 (Filter) TS3 (Filter)	Seal and label container TS3  Seal and label container TS3  3  20-22050-PM-	Impinger #1 Empty   Empty Wt: 6/4/4   Gain: 2.73. (Colour: 2.73.   Colour: 2.73.   Empty Wt: 5/4/3   Empty Wt: 5/4/3   Empty Wt: 5/4/3   Empty Wt: 5/6/3   Empty Wt: 6/6/3   Empty Wt: 6/6/3	Impinger #5 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 6773 Initial Wt: 7767 Gain: 2.7 Colour: P.7 Initial Wt: 662.7 Final Wt: 773.2 Final Wt: 773.2 Colour:	Empty Wt: 406.0 With Imp. 5&6 Soln: \$31.9 After KMnO, Rinse: 744.6 After LUDG H,O Rinse: 744.6 Total TS5-A: 4640.6  SEAL & LABEL TS5-A  CONTAINER TS5-B Empty Wt: 2 80.0 With 150 mL DI H,O: 432.0 After HG Rinse: 748.3 After DI H,O Rinse: 655.8  Total TS5-B: 406.0  SEAL & LABEL TS5-B  Total TS5-B: 732.0  SEAL & LABEL TS5-B  Total TS5-B: 732.0  Total TS5-B: 732.0  NARK FLUID LEVEL  SEAL & LABEL TS5-B  TS4-4 L Amber Glass Bottle TS3-Petri Dish TS4-4 L Amber Glass Bottle	Impinger #7 Silica Gel Initial Wt: 1020 ° 6 6 7 6 7 6 7 Gain: 2.4, 6 6 7 Gain: 2.4, 6 6 7 Gain: 7.4, 6 7 Gain:
TSS-B (impinger 5,6 Sol'n-KIVInO <sub>4</sub> ) TSS-B (impinger 5,6 Rinse-HCl) Train Loaded By:	7 /2	Empty Wt: $40\zeta_{10}$ W/Imp. 1.4 Soln: $40\zeta_{10}$ After HNO <sub>3</sub> Rinse: $12SS_{10}$ Total TS4: $883.7$ MARK FLUID LEVEL		TSS-B - 500 ml Amber Glass Bottle $SS_{C}$ / $SS_{C}$	

Nozzle, Probe Liner	Filter	Impingers 1, 2, 3, and 4	Impinger 5 & 6	Impinger 5 & 6	Impinger 7
Cyclone Bypass & P.H. Filter Housing					
CONTAINER TS1	CONTAINER TS3	CONTAINER TSA		CONTAINER TS5-A & TS5-B	
Container TS1 Weights	Filter ID: 82.9065	Impinger #1 Empty	Impinger #5 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub>	CONTAINER TS5-A	Impinger,#7 Silica Gel
	Colour: WHITE	Empty Wt:	Empty Wt:	3	Initial Wt:
Total TS1.		Final Wt:	Initial Wt:	45	Final Wt:
		Colour	Final WV.: 5 Gain:	After 100g H.O Rinse: 34/ 2	/ [gain:
MARK FLUID LEVEL	Seal and label container TS3		Colour:	142	
		Impinger #2 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub>		And the second s	
SEAL AND LABEL TS1		Empty Wt:		MARK FLUID LEVEL	
		Initial Wt:	Impinger # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub>		
CONTAINER TS2		Final Wt:	Empty Wt:	SEAL & LABEL TS5-A	
		2 Gain:	Initial Wt:		
ntainer TS2		Colour:	Final Wt:	CONTAINER TSS-B	
Empty Wt: 28/, 2			6 Gain:	Empty Wt: 28/30	
After 0.1N HNO <sub>3</sub> Rinse: 53 0.7		Impinger #3 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub>	Colour:	With 150 mL DI H <sub>2</sub> O: 4/3 /-0	
Total TS2: 249. の		Empty Wt:		20	
		Initial Wt:		After DI H <sub>2</sub> O Rinse: 570.5	Impinger Box ID:
MARK FLUID LEVEL				Total TS5-B: 299.5	
CEAL AND LABEL TC3		3 Gain:		- 10 % - 1	
SEAL AND LABEL 152		Colour:		MARK FLUID LEVEL	
		Impinget/#4 Empty		SEAL & LABEL TSS-B	
		Empty Wt:			
SAMPLE IDENTIFICATION	350-PM-				
TS1 (Probe Rinse-Acetone)		4 Gain:		TS1, TS2-500 ml Glass Bottle	
TS2 (Probe Rinse-0.1N HNO <sub>3</sub> )		Colour:		TS3- Petri Dish	
TS3 (Filter)	77			TS4- 4 L Amber Glass Bottle	
TS4 (Impinger 1-4 Sol'n-HNO <sub>3</sub> )	2 2	CONTAINER TS4 WEIGHTS		TS5-A - 1000 ml Amber Glass Bottle	
TS5-A (Impinger 5,6 Sol'n-KMnO <sub>4</sub> )		Empty Wt: ゲープ・ウ		TS5-B - 500 ml Amber Glass Bottle	
TS5-B (Impinger 5,6 Rinse-HCI)	>	w/ Imp. 1-4 Soin: 6/く.ペ			
		After HNO, Rinse: 7/9 · 9			
		Total TS4: 경기 3 - 위		CWTR = 1 to 6:	
Train Condition					
Train Recovered By:		SEAL AND LABEL TSA		WCBDA= /:	

	Impinger 7		Impinger #7 Silica Ge Initial Wt: 9/0.7 Final Wt: 935-/	Impinger Box ID:		
	Impinger 5 & 6	CONTAINER TS5-A & TS5-B	CONTAINER TSS-A Empty Wt: $\psi O_{\mathcal{E}}$ / With Imp. 5&6 Soln: $\delta \mathcal{Y}_{\mathcal{G}}$ / After KMnO <sub>4</sub> Rinse: $7536$ After100g H <sub>2</sub> O Rinse: $8556$ Total TSS-A: $4477$	SEAL & LABEL TSS-A  CONTAINER TSS-B  Empty Wt: 28/.7. With 150 mL Di H <sub>2</sub> O: 473/.7. After HCl Rinse: 459.3 After Di H <sub>2</sub> O Rinse: 677.4 Total TSS-B: 346.7.	TS1,TS2-500 ml Glass Bottle TS3- Petri Dish TS4-4 L Amber Glass Bottle TS5-A-1000 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle	
	Impinger 5 & 6		Impinger #5 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: £73./ Initial Wt: 782.7 Final Wt: 736.0 5 Galn: 7.7	Impinger # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 862-4 Initial Wt: 728-6 Final Wt: 78-6 Gain: L-6 Colour: Royall		
	Impingers 1, 2, 3, and 4	CONTAINER TS4	Impinger #1 Empty Empty Wt: 665-/ Final Wt: 7/6-3 Gain: 7-5/-1.1	Impinger #2 HNO3/H3O2   Empty Wt: 5 4 7 4	Impinger #4 Empty Empty Wt: \$95.5 Final Wt: \$05.0 Gain: \$19.5 Colour: \$10.0 CONTAINER TS4 WEIGHTS Empty Wt: \$10.0 After HNO <sub>3</sub> Rinse: \$12.65.8 Total TS4: \$10.0 MARK FLUID LEVEL	SEAL AND LABEL TS4
	Filter	CONTAINER TS3	Filter ID: 名乙 805) Colour: レイオ イイを Seal and label container TS3		20-22050-PM-	
Client: Covanta DYEC Project No.: 22050 Date: No.: 1 Test No.: 1 Test Location: UN T. Z	Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	CONTAINER TS1	Container TS1 Weights Empty Wt: ろってしか After Act. Rinse: ヤスらこの Total TS1: スカールの MARK FLUID LEVEL	SEAL AND LABEL TS1  CONTAINER TS2  Container TS2 Weights Empty Wt: フェル・アファ・ア After 0.1N HNO <sub>3</sub> Rinse: ゲゲディ Total TS2: ハレーシ MARK FLUID LEVEL  SEAL AND LABEL TS2	SAMPLE IDENTIFICATION TS1 (Probe Rinse-Acetone) TS2 (Probe Rinse-0.1N HNO <sub>3</sub> ) TS3 (Filter) TS4 (Impinger 1.4 Sol'n-HNO <sub>3</sub> ) TS5-A (Impinger 5,6 Sol'n-HNO <sub>4</sub> ) TS5-B (Impinger 5,6 Rinse-HCl)	Train Recovered By:

	Impinger 7		Impinger #7 Silica Ge Initial Wr: \$95.3 Final Wr: \$25.5	Impinger Box (D:	
	Impinger 5 & 6	CONTAINER TS5-A & TS5-B	CONTAINER TSS-A Empty Wt:  With Imp. 5&6 Soln: 63 0.7 After KMINO <sub>4</sub> Rinse: 73 9 0.7 After100g H <sub>2</sub> O Rinse: 8 9 0.0 Total TSS-A:	SEAL & LABEL TSS-A  CONTAINER TSS-B Empty Wt: スパパラ With 150 mL Dl H,O: 4 3 4・/ After HCl Rinse: イケリ・スロコ TSS-B: スパララ	TS1,TS2-500 ml Glass Bottle TS3- Petri Dish TS4-4 L Amber Glass Bottle TS5-A-1000 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle TS5-B-500 ml Amber Glass Bottle
	Impinger 5 & 6		Impinger #5 KWnO4/H <sub>2</sub> SO <sub>4</sub> Empty Wr: 679.7. Initial Wr: 789.8 Final Wr: 794.3 5 Gain: 6.5	Impinger # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: 656.4 Initial Wt: 763.4 Final Wt: 763.4 Colour: 2.3	
	Impingers 1, 2, 3, and 4	CONTAINER TS4	Impinger #1 Empty  Empty Wt: 65%-3 Final Wt: 974-4 Gain: 265.1 Colour: 0.20	Impinger #2 HNO <sub>3</sub> /H <sub>2</sub> O <sub>3</sub>   Empty Wt: 6 40.3   Initial Wt: 750.5   Initial Wt: 710.5   Colour: A.	Impinger #4 Empty Empty Wt: 626.7 Final Wt: 630.6 Gain: 4.4 Colour: 2007 A CONTAINER TS4 WEIGHTS Empty Wt: 406.8 W/ Imp. 1-4 Soln: 1079.7 Total TS4: 802.9 MARK FLUID LEVEL SEAL AND LABEL TS4
	Filter	CONTAINER TS3	Filter ID: Q.Z., 30,63 Colour: W.J. (176  Seal and label container TS3		20-22050-PM- 3 7 7 3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Client: Covanta DYEC Project No.: 22050 Date: Nのし つんし Test No.: イルロイン	Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	CONTAINER TS1	Container TS1 Weights Empty Wt: スタウン〇 After Act. Rinse: うらうし	SEAL AND LABEL TS1  CONTAINER TS2  Container TS2 Weights Empty Wt: After 0.1N HNO <sub>3</sub> Rinse: 3 4 4. 1  Total TS2: MARK FLUID LEVEL  SEAL AND LABEL TS2	SAMPLE IDENTIFICATION TS1 (Probe Rinse-Acetone) TS2 (Probe Rinse-0.1N HNO <sub>3</sub> ) TS3 (Filter) TS4 (Impinger 1.4 Sol'n-HNO <sub>3</sub> ) TS5-A (Impinger 5,6 Sol'n-KMnO <sub>4</sub> ) TS5-B (Impinger 5,6 Rinse-HCl) Train Loaded By: Train Recovered By:

4 Soin: / 7 / 2 / 2 3 Rinse: // 8 / 3
Total TS4: 78/4 60-7

	and impinger 7		Impinger #7 Silica Ge Initial Wt: 7 Gain:			Impinger Box ID:			
	Impinger 5 & 6	CONTAINER TSS-A & TSS-B	5-A 06.6 44-46 734.4	After 100g H <sub>2</sub> O Rinse: 寄りんらつ Total TSS-A: サーク。  MARK FLUID LEVEL	SEAL & LABEL TSS-A	CONTAINER TSS-B Empty Wt: $C \mathcal{E} / \mathcal{C} $ With 150 mL DI H <sub>2</sub> O: $4 \mathcal{I} / \mathcal{C} $ After HCI Rinse: $4 \mathcal{E} \mathcal{C} / \mathcal{C} $ After DI H <sub>2</sub> O Rinse: $5 \mathcal{I} / \mathcal{C} / \mathcal{C} $	Total TS5-B: 192,2 MARK FLUID LEVEL SEAL & LABEL TS5-B	TS1,TS2-500 ml Glass Bottle TS3- Petri Dish TS4-4 L Amber Glass Bottle TS5-A - 1000 ml Amber Glass Bottle TS5-B - 500 ml Amber Glass Bottle	CWTR = 1 to 6: WCBDA= 7:
	Impinger 5 & 6		Impinger #S, KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: Initial Wt:	5 Gain: Colour:	Impinger # 6 KMnO <sub>4</sub> /H <sub>2</sub> SO <sub>4</sub> Empty Wt: Initial Wt:	Final Wt: 6 Gain: Colour:			
	Impingers 1, 2, 3, and 4	CONTAINER TS4	Impinger #1 Empty Empty Wt: Final Wt:	Colour: Impinger #2 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Empty Wt:	Initial Wt: Final Wt:	Colour: Impinger #3 HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Empty Wt: Initial Wt:		Final W Gain: Colour Colour CC Empty W/Imp	Total TS4: 考/2、こ MARK FLUID LEVEL SEAL AND LABEL TS4
14 14 14	Filter	CONTAINER TS3	Filter ID: 87.9066 Colour: W出了で	Seal and label container TS3				20-22050-PM- 47 47 47 47 47 47 47 47 47 47	
Client: Covanta DYEC Project No.: 22050 Date: NON 100 100 Test No.:	Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	CONTAINER TS1	Container TS1 Weights Empty Wt: 2000 After Act. Rinse: 5000 Total TS1: 23000	MARK FLUID LEVEL SEAL AND LABEL TS1	CONTAINER TS2	Container TS2 Weights Empty Wt: プレックトゥル After 0.1N HNO <sub>3</sub> Rinse: ~ できる。サ	MARK FLUID LEVEL SEAL AND LABEL TS2	SAMPLE IDENTIFICATION TS1 (Probe Rinse-Acetone) TS2 (Probe Rinse-0.1N HNO <sub>3</sub> ) TS3 (Filter) TS4 (Impinger 1.4 Sol'n-HNO <sub>3</sub> ) TS5-8 (Impinger 5,6 Sol'n-KMnO <sub>4</sub> )	Train Loaded By: Train Recovered By:



### **APPENDIX 12**

Inorganics Analytical Reports (28 pages)



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

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TO SECONO	W-0	8 8	58 F	5 6	A10	-	200	<b>30</b>	- P	8	8	18 6	-	8	y	3	5	0,1

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#: L2528486 Date of Report 26-Nov-20

Date of Sample Receipt 12-Nov-20

Client Name: Client Address:

ORTECH Environmental 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore
Client Project ID: 22050 Covanta

### COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (TPH 26-NOV-2020)

### REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank

CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)

LOR = Limit of Reporting

Certified by:

L. Mora

Lynne Wrona Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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### **ALS Environmental**

Sample Analysis Summary Report

	NAME OF THE OWNER OF THE OWNER OF THE OWNER, WHEN THE OWNER, WHEN THE OWNER, WHEN THE OWNER, WHEN THE OWNER,			***************************************
<ol> <li>And the second control of the property of the second of the</li></ol>	아는 하다 이 영화 사람들은 전환 모든 나라게 사람들 사람들은 하다.		20-22050-PM-(19	20-22050-PM-(2
		THRU 18) TEST#3	THRU 24) BLANK	THRU 30) TEST#
APC OUTLET #1	APC OUTLET #1	APC OUTLET #1		APC OUTLET#
L2528486-1	L2528486-2	L2528486-3	1 2528486-4	L2528486-
Stack	Stack		나는 아이들은 얼마를 다양을 먹었습니?	Stac
Sample	Sample			Sampl
9-Nov-20	· 高· 克· · 克· · · · · · · · · · · · · · ·			10-Nov-2
12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-2
2				
	mg	mg	ma	mg
9	0.3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
그 사이가 있는 것이 되어 있는 그런데 되었습니다.				0.3
4 14.4	17.7	1.6	0.6	14.1
9 2 83.2	110	112	9 275	g 101
	THRU 6) TEST#1 APC OUTLET #1  L2528486-1 Stack Sample 9-Nov-20 12-Nov-20  R g mg 8 0.1 J 4 14.4 g g g	THRU 6) TEST#1 APC OUTLET #1  L2528486-1 Stack Sample 9-Nov-20 12-Nov-20 12-Nov-20 R g mg mg mg 8 0.1 J 0.3 J 4 14.4 17.7 g g g g g	THRU 6) TEST#1 APC OUTLET #1  L2528486-1 L2528486-2 L2528486-3 Stack Stack Sample 9-Nov-20 9-Nov-20 10-Nov-20 12-Nov-20 12-Nov-20  R g mg mg mg mg mg 8 0.1 J 0.3 J 0.2 J 14.4 14.4 17.7 1.6	THRU 6) TEST#1

### **ALS Environmental**

Sample Analysis Summary Report

	20-22050-PM-(31 THRU 36) TEST#2	20-22050-PM-(37 THRU 42) TEST#3	20-22050-PM-(43	
Sample Name	APC OUTLET #2		2	MB
ALS Sample ID	L2528486-6	L2528486-7	L2528486-8	L2528486-MB
Matrix	Stack	Stack	Stack	n/a
Analysis type	Sample	Sample	Sample	Sample
Sampling Date/Time	10-Nov-20	10-Nov-20	10-Nov-20	n/a
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	n/a
PM via Gravimetric Analysis L	OR			
Method 5	mg mg	mg	mg	mg
Filter Particulate Matter	0.8		::::::::::::::::::::::::::::::::::::::	
Acetone Particulate Matter	0.4 2.6	10.5	<0.1	<0.1
	g g	g	g	g
Acetone Mass 0	.02 118	110	227	30.2



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100 ALS WO#: L2528499

Date of Report 30-Nov-20 Date of Sample Receipt 12-Nov-20

Client Name: Client Address: Ortech Environmental 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

**Client Contact:** Chris Belore Client Project ID: 22050 Covanta

### COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (TPH 30-NOV-2020) Sample Particulate Analysis via Gravimetric USEPA Method 202 (TPH 30-NOV-2020)

### REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank

CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)

LOR = Limit of Reporting

Certified by:

L. Mrora

Lynne Wrona Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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### ALS Environmental

Sample Analysis Summary Report

ample Name		20-22050-M201A-1 TEST#1 APC OUTLET #1	20-22050-M201A-2 TEST#1 APC OUTLET #1	20-22050-M201A-3 TEST#1 APC OUTLET #1	20-22050-M201A-4 TEST#1 APC OUTLET #1	20-22050-M201A (5-7) TEST#1 APC OUTLET #1
LS Sample ID atrix nalysis type ampling Date/Time ate of Receipt		L2528499-1 Stack Sample 10-Nov-20	L2528499-2 Stack Sample 10-Nov-20	L2528499-3 Stack Sample 10-Nov-20	L2528499-4 Stack Sample 10-Nov-20	L2528499-5 Stack Sample 10-Nov-20
10 51 (CCG)		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PNI via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	sanarah kanganagin yan	Agranya gwalegia ye egal		<0.1	namakakan kan ini kahat
Acetone Particulate Matter	0.4	0.5	1.3	0.4		
	g	g	g	g	g	g
Acetone Mass	0.02	33.5	28.6	6.0		
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4		<u>.</u>			1.8
Non-Extractable Condensable Particulates	0.4		•			3.5
	g	g	g	g	g	g
Water Mass	0.02					273

### **ALS Environmental**

Sample Analysis Summary Report

Sample Name		20-22050-M201A-8 TEST#2 APC OUTLET #1	20-22050-M201A-9 TEST#2 APC OUTLET#1	20-22050-M201A- 10 TEST#2 APC OUTLET #1	20-22050-M201A- 11 TEST#2 APC OUTLET #1	20-22050-M201A (12-14) TEST#2 APC OUTLET #1	
ALS Sample ID		L2528499-6	L2528499-7	L2528499-8	L2528499-9	L2528499-10	
Matrix		Stack	Stack	Stack	Stack	Stac	
Analysis type		Sample	Sample	Sample	Sample	Sample	
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	
PM via Gravimetric Analysis	LOR						
Method 201A	mg	mg	mg	mg	mg	mg	
Filter Particulate Matter	0.8		Parajagigajana			ging a makansang na ja	
Acetone Particulate Matter	0.4	0.2 J	0.3 <b>J</b>	0.1 J			
	g	g	g	g	g	g	
Acetone Mass	0.02	33.5	22.5	14.8		policina programa. Na regional de la filosofia	
PM via Gravimetric Analysis	LOR						
Method 202	mg	mg	mg	mg	mg	mg	
Extractable Condensable Particulates	0.4					3.2	
Non-Extractable Condensable Particulates	0.4					4.0	
	g	g	g	g	g	g	
Water Mass	0.02					222	

	MINISTER PROPERTY.	The state of the s						
Sample Name		20-22050-M201A- 15 TEST#3 APC OUTLET #1	20-22050-M201A- 16 TEST#3 APC OUTLET #1	20-22050-M201A- 17 TEST#3 APC OUTLET #1	20-22050-M201A- 18 TEST#3 APC OUTLET #1	20-22050-M201A (19-21) TEST# APC OUTLET#		
ALS Sample ID		L2528499-11	L2528499-12	L2528499-13	L2528499-14	L2528499-1		
Matrix		Stack	Stack	Stack	Stack	Stac		
Analysis type		Sample	Sample	Sample	Sample	Sampl		
Sampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-2		
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20		
PM via Gravimetric Analysis	LOR							
Method 201A	mg	mg	mg	mg	mg	mg		
Filter Particulate Matter	0.8	and our morning shows.		ceany contemple to the	<0.1			
Acetone Particulate Matter	0.4	0.5	0.2 <b>J</b>	0.2 J				
	g	g	g	g	g	g		
Acetone Mass	0.02	34.5	27.1	11.9				
PM via Gravimetric Analysis	LOR							
Method 202	mg	mg	mg	mg	mg	mg		
Extractable Condensable Particulates	0.4					1.9		
Non-Extractable Condensable Particulates	0.4					3.6		
	g	g	g	g	g	g		
Water Mass	0.02					201		

ample Name		20-22050-M201A- 22 TEST#1 APC OUTLET #2	20-22050-M201A- 23 TEST#1 APC OUTLET #2	20-22050-M201A- 24 TEST#1 APC OUTLET #2	20-22050-M201A- 25 TEST#1 APC OUTLET #2	20-22050-M201A (26-28) TEST# APC OUTLET#2
LS Sample ID		L2528499-16	L2528499-17	L2528499-18	L2528499-19	L2528499-20
fatrix		Stack	Stack	Stack	Stack	Stack
nalysis type		Sample	Sample	Sample	Sample	Sample
ampling Date/Time		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
ate of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	papatan analysis <del>a</del> saatiya		NASTRUKTĀRĀSĀS KĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀSĀS		
Acetone Particulate Matter	0.4	<0.1	0.1 J	0.2 J		
	g	g	g	g	a	a
Acetone Mass	0.02	29.7	30.3	10.5		<b>g</b>
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4					2.5
Non-Extractable Condensable Particulates	0.4					4.5
	9	g	g	g	g	g
Water Mass	0.02					219

Sample Name		20-22050-M201A- 29 TEST#2 APC OUTLET #2	20-22050-M201A- 30 TEST#2 APC OUTLET #2	20-22050-M201A- 31 TEST#2 APC OUTLET #2	20-22050-M201A- 32 TEST#2 APC OUTLET #2	20-22050-M201A (33-35) TEST#2 APC OUTLET#2
ALS Sample ID Matrix Analysis type Sampling Date/Time		L2528499-21 Stack Sample 9-Nov-20	L2528499-22 Stack Sample 9-Nov-20	L2528499-23 Stack Sample 9-Nov-20	L2528499-24 Stack Sample 9-Nov-20	L2528499-25 Stack Sample 9-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8		enery singlejeje system		<0.1	। स्थानकार स्वत्वस्थान
Acetone Particulate Matter	0.4	0.8	0.2 J	0.4		
	g	g	g	g	g	g
Acetone Mass	0.02	47.5	21.3	11.1		
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	, mg	mg	mg	mg
Extractable Condensable Particulates	0.4	ing sa manggalang sa kalang sa Kalang sa kalang sa			<u></u>	3.2
Non-Extractable Condensable Particulates	0.4					4.3
	g	g	g	g	g	g
Water Mass	0.02					249

ple Name	20-22050-M201A- 36 TEST#3 APC OUTLET #2	20-22050-M201A- 37 TEST#3 APC OUTLET #2	20-22050-M201A- 38 TEST#3 APC OUTLET #2	20-22050-M201A- 39 TEST#3 APC OUTLET #2	20-22050-M201A (40-42) TEST#3 APC OUTLET #2
Sample ID	L2528499-26	L2528499-27	L2528499-28	L2528499-29	L2528499-30
× : : : : : : : : : : : : : : : : : : :	Sta <b>c</b> k	Stack	Stack	Stack	Stack
⁄sis.type	Sample	Sample	Sample	Sample	Sample
oling Date/Time	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis LC	OR .				
Method 201A r	ng mg	mg	mg	mg	mg
Filter Particulate Matter	1- je prazpjeko je je nastivi <b>8.0</b>	and a farmana spiritera c	ara serrabbingspool	0.4 (A)	orthophysical and the control of the
Acetone Particulate Matter (	0.4 0.5	0.2 <b>J</b>	0.9		
	g g	g	g	g	
Acetone Mass 0.	02 41.3	39.8	17.6		
PM via Gravimetric Analysis LC	OR STATE OF THE ST				
Method 202	ng mg	mg	mg	mg	mg
Extractable Condensable Particulates (	).4				2.1
on-Extractable Condensable Particulates (	).4				3.7
	g g	ani di Maria di Mari Maria di Maria di Ma	g	g	g
그 그는 아마 프로틴 사람들 그만 나는 아이들은 사람들을 모르는 모르는 것	).4 .g			<b>9</b>	g

ample Name		20-22050-M201A- 43 BLANK APC OUTLET #1	20-22050-M201A- 44 BLANK APC OUTLET #1	20-22050-M201A- 45 BLANK APC OUTLET #1	20-22050-M201A- 46 BLANK APC OUTLET #1	20-22050-M201A (47-49) BLANI APC OUTLET#
LS Sample ID		L2528499-31	L2528499-32	L2528499-33	L2528499-34	L2528499-3
atrix		Stack	Stack	Stack	Stack	Stack
nalysis type		Sample	Sample	Sample	Sample	Sample
ampling Date/Time		10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20	10-Nov-20
ate of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20
PM via Gravimetric Analysis	LOR					
Method 201A	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	8.0	and proposition of		andronjujujujuju	<0.1	anjangan hijinji <b>k</b> anisi
Acetone Particulate Matter	0.4	0.2 J	0.1 J	<0.1		
	g	g	g e	g	a a	g
Acetone Mass	0.02	20.7	22.6	21.9		
PM via Gravimetric Analysis	LOR					
Method 202	mg	mg	mg	mg	mg	mg
Extractable Condensable Particulates	0.4					0.5
Non-Extractable Condensable Particulates	0.4					1.4
	9	g	g	g	g	g
Water Mass	0.02	-				173

OUTLET #2 OUTLE	APC 52 BLANK APC T #2 OUTLET #2	53 BLANK APC OUTLET #2	20-22050-M201A (54-56) BLANK APC OUTLET #2
L2528499-36 L252849	보석하는 내가 나라 하루를 중한 2명하다라고,	L2528499-39	L2528499-40
그는 그는 사람들이 가장 살아 있는 것이 하면 하는 것은 사람들이 되는 것이 되는 것이 되는 것이 되었다면 하는 것이 되었다.	Stack Stack	Stack	Stack
	mple Sample	Sample	Sample
10-Nov-20 10-No 12-Nov-20 12-No		10-Nov-20 12-Nov-20	10-Nov-20 12-Nov-20
ia Gravimetric Analysis LOR		SELECTION CONTROL CONT	
Method 201A mg mg mg	mg	mg	mg
Filter Particulate Matter 0.8		0.2 J	
cetone Particulate Matter 0.4 0.5 0.6	0.1 J		
and the state of t	g	g	g
Acetone Mass 0.02 56.4 48.1	52.2		가 있다고 11 전투 함인 1 :
ia Gravimetric Analysis LOR			
Method 202 mg mg mg	mg	mg	mg
Condensable Particulates 0.4			0.6
Condensable Particulates 0.4			1.9
	g	g	g
Condensable Particulates 0.4 -	g	g g	9

ample Name		MB	MB	
LS Sample ID		L2528499-MB	L2528499-MB2	
latrix		n/a	n/a	
nalysis type		Sample	Sample	
ampling Date/Time		n/a	n/a	
Pate of Receipt		n/a	n/a	
PM via Gravimetric Analysis	LOR			
Method 201A	mg	mg	mg	
Filter Particulate Matter	0.8	0,4 J		
Acetone Particulate Matter	0.4	0.2 <b>J</b>	<0.1	
	g	g	g	
Acetone Mass	0.02	34.0	30.2	
PM via Gravimetric Analysis	LOR			
Method 202	mg	mg	mg	
Extractable Condensable Particulates	0.4	0.1 <b>J</b>		
Non-Extractable Condensable Particulates	0.4	1.7		
	g	g	g	
Water Mass	0.02	199		



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#: L2528478

Date of Report 23-Nov-20

Date of Sample Receipt 12-Nov-20

Client Name:

Ortech Environmental

Client Address:

804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore

Client Project ID: 22050 Covanta

### COMMENTS:

F as HF Anion Analyzed via Ion Chromatography USEPA Method 26A (GN 19-Nov-20) Cl as HCl Anion Analyzed via Ion Chromatography USEPA Method 26A (GN 19-Nov-20) Ammonia, Total (as NH<sub>3</sub>) via Ion Chromatography USEPA Method CTM-027 (GN 16-Nov-20)

### **ANALYST COMMENTS:**

Low levels of chloride and fluoride observed in the method blank (MB) slightly above their LORs. Sample data is well beyond this potential background. No impact to data quality is suspected. PE 20-Nov-2020

LOR = Limit of Reporting

MB = Laboratory Control Blank (limits: <LOR)

LCS = Laboratory Control Sample (limits: 90-110%)

MS = Matrix Spike Sample (limits: 90-110%, NH<sub>3</sub>: 85-115%)

RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)

Certified by: L. Mrosso Lynne Wrona

Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Name	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-2 APC OUTLET #1	20-22050-M26A-3 APC OUTLET#1	20-22050-M26A-4 APC OUTLET #2	20-22050-M26A-5 APC OUTLET #2
ALS Sample ID Matrix Analysis type Sampling Date/Time Date of Receipt	L2528478-1 Stack Sample 9-Nov-20 12-Nov-20	L2528478-2 Stack Sample 9-Nov-20 12-Nov-20	L2528478-3 Stack Sample 9-Nov-20 12-Nov-20	L2528478-4 Stack Sample 10-Nov-20 12-Nov-20	L2528478-5 Stack Sample 10-Nov-20 12-Nov-20
Ion Chromatography Analysis					
USEPA Method 26A	mg	mg	mg	mg	mg
Total F as HF (ave)	<0.160	<0.161	<0.176	<0.168	<0.174
Analysis 1	<0.160	<0.161	<0.176	<0.168	<0.174
Analysis 2	<0.160	<0.161	<0.176	<0.168	<0.174
Total Cl' as HCl (ave)	6.56 AND A	6.76	6,11	5.37	5.11
Analysis 1	6.68	6.73	6.16	5.26	5.16
Analysis 2	6.45	6.78	6.06	5.47	5.06
USEPA Method CTM-027 Ammonia	mg	mg	mg	mg	mg
Total Ammonia as NH <sub>3</sub>	0.911	1.06	0.986	1.22	1.09

		20-22050-M26A-	20-22050-M26A-	
Sample Name	20-22050-M26A-6 APC OUTLET #2	BLANK 1 APC OUTLET #1	BLANK 2 APC OUTLET #2	
ALS Sample ID	L2528478-6	L2528478-7	L2528478-8	
Matrix Analysis type Sampling Date/Time Date of Receipt	Stack Sample 10-Nov-20	Stack Sample 10-Nov-20	Stack Sample 10-Nov-20	
	12-Nov-20	12-Nov-20	12-Nov-20	
Ion Chromatography Analysis USEPA Method 26A	mg	mg	mg	
Total F´as HF (ave)	<0.173	<0.107	<0.109	
Analysis 1	<0.173	<0.107	<0.109	
Analysis 2	<0.173	<0.107	<0.109	
Total Cl as HCl (ave)	4.98	<0.157	0.312	
Analysis 1	4,98	<0.157	0.307	
Analysis 2	4.98	<0.157	0.316	
USEPA Method CTM-027 Ammonia	mg	mg	mg	
Total Ammonia as NH₃	1.01	<0.288	<0.293	

Sample QC Summary Report

Sample Name	MB	LCS	LCS	
LS Sample ID	MB	LCS	LCS	
<b>Natrix</b>	Stack	Stack	Stack	
nalysis type	Method Blank	Blank Spike	Blank Spike	
Sampling Date/Time Date of Receipt	n/a n/a	n/a n/a	n/a n/a	
Ion Chromatography Analysis				
USEPA Method 26A	mg	mg	% Rec	
Total F as HF (ave)	0.00512	0.0585	101%	
Analysis 1	0.00510	0.0587		
Analysis 2	0.00514	0.0583		
Total Cl as HCl (ave)	0.00299	0.0778	97%	
Analysis 1	0.00298	0.0781		
Analysis 2	0.00300	0.0775		
USEPA Method CTM-027 Ammonia	mg	mg	% Rec	
Ammonia, Total (as NH <sub>3</sub> )	<0.00472	0.0486	103%	

Sample QC Summary Report

Sample Name	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1	20-22050-M26A-1 APC OUTLET #1	
ALS Sample ID Matrix Analysis type Sampling Date/Time Date of Receipt	L2528478-1 Stack Sample 9-Nov-20 12-Nov-20	L2528478-1DUP Stack Duplicate 9-Nov-20 12-Nov-20	L2528478-1MS Stack Matrix Spike 9-Nov-20 12-Nov-20	L2528478-1MS Stack Matrix Spike 9-Nov-20 12-Nov-20	
Ion Chromatography Analysis					
USEPA Method 26A	mg	mg	mg	% Rec	
Total F as HF (ave)	<0.160	<0.160	5.00	95%	
Analysis 1	<0.160	<0.160	5.01		
Analysis 2	<0.160	<0.160	5,00		
Total Cl as HCl (ave)	6.56	6.57	14.4	105%	
Analysis 1	6.68	6.60	14.4		
Analysis 2	6.45	6.54	14.4		
USEPA Method CTM-027 Ammonia	mg	mg	mg	% Rec	
Ammonia, Total (as NH <sub>3</sub> )	0.911	0.887	5.32	101%	



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### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

> ALS Project ID: **ORT100**

> > L2528486 ALS WO#:

Date of Report 3-Dec-20

Date of Sample Receipt 12-Nov-20

Client Name:

**ORTECH Environmental** 

Client Address: 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore Client Project ID:

22050 Covanta

### COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 26-Nov-20 and 30-Nov-20) Sample Preparation via USEPA Method 29 (26-Nov-20)

### **ANALYST COMMENTS:**

Cu, Mo, Ni observed in the 1A method blank (MB) at levels significantly above their LORs. Data for these analytes may be biased high as a result of these background contributions.

Ag recovery in the FH LCSD is outside ALS DQOs (found: 59%, limits: 85-115%). LCS, MS, and MSD recoveries are all within ranges. This is likely due to silver binding other elements in solution. The presence of the filter matrix has been observed to effectively counteract this process. Impact to data quality is expected to be negligible. PE 2-Dec-2020

LCB = Laboratory Control Blank LCS = Laboratory Control Sample LCSD = Laboratory Control Sample Duplicate LOR = Limit of Reporting

Certified by:

L. Mrora

Lynne Wrona Account Manager

		ALO El Sample Anal	NVİ <mark>ronm</mark> ( Vsis Summaı				
Sample Name		20-22050- PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050- PM-(7 THRU 12) TEST#2 APC OUTLET #1	20-22050- PM-(13 THRU 18) TEST#3 APC OUTLET #1	20-22050- PM-(19 THRU 24) BLANK 1	20-22050- PM-(25 THRU 30) TEST#1 APC OUTLET #2	20-22050 PM-(3: THRU 36 TEST#2 APO OUTLET #2
ALS Sample ID Matrix Analysis Type Sampling Date Date of Receipt		L2528486-1 Stack Sample 9-Nov-20 12-Nov-20	L2528486-2 Stack Sample 9-Nov-20 12-Nov-20	L2528486-3 Stack Sample 10-Nov-20 12-Nov-20	L2528486-4 Stack Sample 9-Nov-20	L2528486-5 Stack Sample 10-Nov-20	L2528486-6 Stacl Sample 10-Nov-20
Multi-Metals via ICP-MS	LOR	12-NUV-20	12-1100-20	12-1104-20	12-Nov-20	12-Nov-20	12-Nov-20
muit-licrais ara 1CL-M2	ug						
	uy	ug	ug	ug	ug	ug	ប្រ
Front Half HF Fraction 1A							
Antimony Arsenic	0.2 1	0.397 <	0.205				0.22
Barium	5	5.48	5.07	8.07	7.18	<	7.5
Beryllium	0.2	<	<	<	<	<	
Cadmium	0.1	0.253	0.174	0.232	<	0.143	0.15
Chromium	1.1	5.34	3.85	2.76	2.44	3.06	3.1
Cobalt	0.2	<	<	0.345	<	<	
Copper	1	6.98	6.68	6.16	6.07	6.27	6.4
Lead	0.5	1.23	0.958	1.01	<	1.02	1.0
Molybdenum	0.2	24.2	23.6	24.0	23.3	24,0	23.
Nickel	0.2	4.83	3.40	3.84	2.30	2.80	3.0
Selenium	2	<	<	<	<	<	
Silver	0.2	<	<	<	<	<	
Thallium	0.2	0.971	0.404	<	<	<	0.26
Vanadium	1	<	<	<	<	<	
Zinc	6	25.2	16.8	17.0	<	13.6	17.
Back Half (HNO3 / H2O2) Fraction 2	A						
Antimony	0.1	No.	<	<	×	<	
Arsenic	0.2	Ž.	~	<u> </u>	Į.	<u> </u>	
Barium	0.5	1.22	1.01	1.00	0.776	1.15	1.1
Beryllium	0.1					<	
Cadmium	0.05	0.150	0.157	0.0603	<	0.144	
Chromium	0.15	0.735	0.581	0.493	0.355	0.892	0.67
Cobalt	0.1	<	, , , , , , , , , , , , , , , , , , ,	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	~ ~	<	ÿ.ÿ/,
Copper	0.3	15.7	16.4	19.7	9.78	20.1	16.
Lead	0.05	0.844	0.550	0.460	0.421	0.779	0.41
Molybdenum	0.1	<	<	<	<	<	
Nickel	0.1	0.849	0.695	1.01	0.280	0.660	0.66
Selenium	1	5.75	8.13		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	× ×	3.0
Silver	0.1	<	<	<	<	<	
Thallium	0.05	<	<	<	<	<	
Vanadium	0.1	<	<	<	<	<	
Zinc	3	10.4	6.05	5.66	<	6.16	6.4

		ALS Er	nvironm	ental	
		Sample Anal			
Sample Name		20-22050- PM-(37 THRU 42) TEST#3 APC OUTLET #2	20-22050- PM-(43 THRU 48) BLANK 2	MB	
ALS Sample ID		L2528486-7	L2528486-8	L2528486-MB	
Matrix		Stack	Stack	n/a	
Analysis Type		Sample	Sample	Sample	
Sampling Date		10-Nov-20	10-Nov-20	n/a	
Date of Receipt		12-Nov-20	12-Nov-20	n/a	
Multi-Metals via ICP-MS	LOR				MINISTER STREET, STREE
	ug	ug	ug	ug	
Front Half HF Fraction 1A					
Antimony	0.2	<			
entras is reconstantes in a reconstantial particular Arsenic :	0.2 	er val y vlade alejalese v	> . ≥entenganina	× dedokanimeka	
Barium	5	8.27	5.19	· · · · · · · · · · · · · · · · · · ·	
Beryllium	0.2	5.27 <	5.15	<	
Cadmium	0.1	0.266	~	~	
Chromium	1	2.71	2.41	2.04	
Cobalt	0.2	2,71	2.41	2.04	
Copper	1	7.12	9.00	5.79	
Lead	0.5	1.01	0.503	5.79	
Molybdenum	0.2	23.2	22.3	23.2	
Nickel	0.2	4.34	2.09	2.23	
Selenium	-2	T.J.	2.03	2.23	
Silver	0.2	<	<	<	
Thallium	0.2	0.697	<u> </u>	<	
Vanadium	1				
Zinc	6	4 15.7	<b>&lt;</b>	< <	
물론 스타르트 그림 그를 즐겁다	Ĭ				
Back Half (HNO3 / H2O2) Fraction 2	Α				
Antimony	0.1	<	<u> </u>		
Arsenic	0.2		<		
Barium	0.5	1.47	0.834		
Beryllium	0.1	0.0006	<		
Cadmium	0.05	0.0836	<		
Cobalt	0.15	0.600	0.341		
Cobalt	0.1	0.295	< 0.22		
Copper	0.3	15.8 0.613	8.33		
Molyhdonym	0.05		0.523		
Molybdenum Niekol	0.1	0.500	<		
Nickel Coloniae	0.1	0.588	0.279		
Selenium	1	<	<b>×</b>		
Silver	0.1		<		
Thallium	0.05	<	<		
Vanadium	0.1	0.273	<		
Zinc	3	9.56	<	a ta da sa sa 😁	

		ALS En	vironme	ental			
			Summary R				
Sample Name		RB	LCS	LCS	LCSD	LCSD	
ALS Sample ID		RB	LCS	LCS			
Matrix		Stack	Stack	Stack	LCSD	LCSD	
Analysis Type		Blank	LCS	LCS	Stack LCS	Stack	
Sampling Date						LCS	
Date of Receipt		n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a	
		ny a	iva.	II/ d	ΙVα	n/a	*************
Multi-Metals via ICP-MS	LOR						
	ug	ug	ug	% Rec	ug	% Rec	
Front Half HF Fraction 1A							
Antimony	0.2		11.9	99	11.5	96	
Arsenic	1	<	59.8	100	58.3	97	
Barium	5	<	58.3	97	57.7	96	
Beryllium:	0.2	stania ant Sudan	· -		58.4	97	
Cadmium	0.1	<	29.9	100	28.8	96	
Chromium	1	<	58.8	98	57.8	96	
Cobalt	0.2	<	59.1	99	57.8	96	
Copper	1	<	60.2	100	59.0	98	
Lead	0.5	<	61.1	102	59.2	99	
Molybdenum	0.2	<	29.2	97	27.8	93	
Nickel	0.2	<	59.4	99	58.1	97	
Selenium	2	<	60.1	100	58.9	98	
Silver	0.2	<	30.1	100	17.6	59	
Thallium	0.2	<	61.2	102	59.3	99	
Vanadium	1	<	58.6	98	57.9	96	
Zinc	6	<	119	99	115	95	
Back Half (HNO3 / H2O2) Fraction 2	2 <b>A</b>						
Antimony	0.1	<	5.92	99	5.83	97	
Arsenic	0.2		29.6	99	30.0	100	
Barium	0.5		30.3	101	30.0 29.2	97	
Beryllium	0.1		29.1	97	29.2 29.4	97 98	
Cadmium	0.05		15.5	104	29.4 15.7	105	
Chromium	0.15	<	29.7	99	30.2	101	
Cobalt	0.1	<	29.9	100	30.3	101	
Copper	0.3	<	30.1	100	30.4	101	
Lead	0.05	<	30.1	100	30.5	101	
Molybdenum	0.1	<	14.6	97	14.6	97	
Nickel	0.1	<	29.9	99	30.4	101	
Selenium	1	<	28.7	96	29.5	98	
Silver	0.1	<	14.4	96	14.4	96	
Thallium	0.05	<	29.7	99	30.3	101	
Vanadium	0.1	<	29.9	100	29.9	100	
Zinc	3	<	59.1	98	59.4	98	

		ALS E	Environn	nental			
			QC Summary				
Sample Name		20-22050-	20-22050-	20-22050- PM-(1 THRU 6) TEST#1 APC OUTLET #1	20-22050- PM-(1 THRU 6) TEST#1 APC OUTLET #1	6) TEST#1	20-22 PM-(1 6) TE APC OL
ALS Sample ID		L2528486-1	L2528486-1	MS	MS	MSD	
Matrix		Stack	Stack	Stack	Stack	Stack	
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Sp
Sampling Date		9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-1
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-N
Multi-Metals via ICP-MS	LOR			1011110 50113-111110 (101111-111-111-111-111-11-11-11-11-11-11			
	ug	ug	ug	ដូច	% Rec	ug	Q
Front Half HF Fraction 1A							og komi <sup>r</sup>
Antimony	0.2	0.397	0.368	23.7	97	24.2	
	1	na romanikaris€.		112	93.	24.2 114. juni ja 14.	
Barium	5	5.48	5.42	116	92	121	
Beryllium	0.2	<		116	97	119	
Cadmium	0.1	0.253	0.249	59.1	98	58.5	
Chromium	1	5.34	5.27	115	91	116	
Cobalt	0.2		<	111	93	112	
Copper	1	6.98	6.93	120	94	120	
Lead	0.5	1.23	1.27	118	97	120	
Molybdenum	0.2	24.2	24.3	81.1	95	82.4	
Nickel	0.2	4.83	4.99	116	92	117	
Selenium	2	<	<	115	96	116	
Silver	0.2	<	<	57.1	95	58.2	
Thallium	0.2	0.971	0.996	121	100	121	
Vanadium	1	i i i i i i i i i i i i i i i i i i i	i i i i i i i i i i i i i i i i i i i	110	92	111	
Zinc	6	25.2	25.3	254	95	254	
Back Half (HNO3 / H2O2) Fraction :	2A						
	0.1						
Antimony	0.1			11.6	96	11.5	
Arsenic	0.2	, , , , , , , , , , , , , , , , , , ,	,	56.9	95	57.2	
Barium	0.5 0.1	1,22	1.23	51.2	83	51.5	
Beryllium		0.150	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	57.2	95	57.4	
Cadmium	0.05	0.150	0.141	30.5	101	31.4	
Chromium	0.15	0.735	0.752	59.0	97	58.8	
Cobalt	0.1	15.7	<u> </u>	58.5	97	59.4	
Copper	0.3	15.7	15.4	74.1	97	74.9	
Lead Molybdenum		0.844	0.838	57.5	94	57.8	
	0.1	0.840	<	28.6	95	28.6	
Nickel Salanium	0.1	0.849	0.830	59,5	98	60.1	
Selenium	0.1	5.75	5,51	60.3	91	62.4	
Silver	0.1	<u> </u>	<	27.9	93	28.0	
Thallium	0.05	<u> </u>	<u> </u>	58.3	97	58.2	
Vanadium	0.1		<b>.</b>	58.4	97	58.3	
Zinc	3	10,4	10.1	126	96	127	



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#:

L2528486

Date of Sample Receipt 12-Nov-20

Date of Report 30-Nov-20

Client Name:

**ORTECH Environmental** 

Client Address:

804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Client Project ID:

Chris Belore 22050 Covanta

### COMMENTS:

Sample Preparation via USEPA Method 29 (AB 23,24,27-NOV-2020) Mercury Analysis via CVAA using Method USEPA 7470A (AB 24,27-NOV-2020)

LOR = Limit of Reporting

LCB = Laboratory Control Blank (limits: <LOR)

LCS = Laboratory Control Sample (limits: hivol, solids: 85-115%, stack: 90-110%)

MS = Matrix Spike Sample (limits: 75-125%)

RPD = Relative Percent Difference (limits: <20%)

CCV/CVS = Calibration Verification Standard (limits: 85-115%)

Certified by:

L. Strona

Lynne Wrona Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

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			-22050-PM-(7 THRU	20-22050-PM-(13		20-22050-PM-(2
	(8	TEST#1 APC	12) TEST#2 APC	THRU 18) TEST#3	20-22050-PM-(19	THRU 30) TEST#
Sample Name		OUTLET#1	OUTLET#1	APC OUTLET #1	THRU 24) BLANK 1	APC OUTLET#
ALS Sample ID		L2528486-1	L2528486-2	L2528486-3	L2528486-4	L2528486-
Matrix		Stack	Stack	Stack	Stack	Stac
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		9-Nov-20	9-Nov-20	10-Nov-20	9-Nov-20	10-Nov-20
Date of Receipt		12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-2
Mercury via CVAA	LOR				CONTROL OF STANCE AND AND AND AND AND AND AND AND AND AND	
Method 29						
meuloa 25	ug	ug	ug	ug	ug	ug
Analytical Fraction 1B	0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Analytical Fraction 2B	0.050	1.91	1,15	0.644	<0.148	< 0.425
Analytical Fraction 3B	0.025	<0.0225	<0.0225	< 0.0225	<0.0225	<0.0225
Analytical Fraction 3C	0.25	0.468	0.399	<0.225	<0.15	0.304

Sample Name	20-22050-PM-(31 THRU 36) TEST#2 APC OUTLET #2	THRU 42) TEST#3	20-22050-PM-(43 THRU 48) BLANK 2	
ALS Sample ID	L2528486-6	L2528486-7	L2528486-8	
Matrix	Stack	Stack	Stack	
Analysis type	Sample	Sample	Sample	
Sampling Date/Time	10-Nov-20	10-Nov-20	10-Nov-20	
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	
Mercury via CVAA	LOR			
Method 29	ug	ug	ug	
Analytical Fraction 1B	0.015 <0.015	<0.015	<0.015	
Analytical Fraction 2B	0.050 <0.395	<0.385	< 0.15	
Analytical Fraction 3B	0.025 < 0.0225	<0.0225	<0.0225	
Analytical Fraction 3C	0.25 <0.15	<0.2	<0.15	

Sample QC Summary Report

Sample Name		LCB	LCS	LCS	LCSD	LCSI
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSE
Analysis type		Method Blank	Blank Spike	Blank Spike	Blank Spike Dup	Blank Spike Du
Sampling Date/Time		N/A	N/A	N/A	N/A	N//
Date of Receipt		N/A	N/A	N/A	N/A	N//
Mercury via CVAA	LOR		THE STATE OF THE S	NOT THE DOCUMENT OF THE PARTY O	Tarania (Mariana i Santa Mariana i Mariana i Mariana i Mariana i Mariana i Mariana i Mariana i Mariana i Maria	
Method 29	na	ug	ug	% Rec	ug	% Rec
Analytical Fraction 1B	0.015	<0.015	0.282	94%	0.280	94%
Analytical Fraction 2B	0.050	<0.05	0.933	93%	0.954	95%
Analytical Fraction 3B	0.025	<0.025	0.474	95%	0,481	96%
Analytical Fraction 3C	0.25	<0.25	4.65	93%	4.57	91%

Sample QC Summary Report

			yp.o			
	20-22050-PM-(1 THRU 6) TEST#1	20-22050-PM-(1 THRU 6) TEST#1	20-22050-PM-(1 THRU 6) TEST#1	20-22050-PM-(1 THRU 6) TEST#1	20-22050-PM-(1 THRU 6) TEST#1	20-22050-PM-(* THRU 6) TEST#
Sample Name	APC OUTLET #1	APC OUTLET #1	APC OUTLET #1	APC OUTLET #1	APC OUTLET #1	APC OUTLET#
ALS Sample ID	L2528486-1	L2528486-1DUP	L2528486-1MS	L2528486-1MS	L2528486-1MSD	L2528486-1MSE
Matrix	Stack	Stack	Stack	Stack	Stack	Stac
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Du
Sampling Date/Time	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20	9-Nov-20
Date of Receipt	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-20	12-Nov-2
Mercury via CVAA LO	DR .			felficiple solve of the later character and a second and a second and a second and a second and a second and a		
Method 29	ıg ug	ug	ug	% Rec	ug	% Rec
- Analytical Fraction 1B 0.01	5 <0.015	<0.015	0.300	99%	0.288	95%
Analytical Fraction 2B 0.05	0 1.91	1.89	8.71	95%	8.64	94%
Analytical Fraction 3B 0.02	5 <0.0225	<0.0225	0.398	88%	0.401	89%
Analytical Fraction 3C 0.25	0.468	0.489	3.21	91%	3.33	95%



### **APPENDIX 13**

Particle Size Distribution Train Recovery Data Sheets (8 pages)

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**ORTECH Consulting Inc.** 

PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

Client: Covanta DYEC

Project No.: 22050

100 C

Date:

filter to front half 2nd filter with CWTR=1+2+3: WCBDA=4: stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of Seal and Label Container CONTAINER TS5 & TS6 Mark Fluid Level and glassware from filter Purge On: 10-10 to 2nd u-tube with Secondary Filter CONTAINER TSS CONTAINER TS6 di H2O into TS3 12/2 purge is not required. Rinse all \* if there is no gain Purge Off: Impinger #1 Knock Out V Impinger #4 Silica Gel a ale Impinger #2 Empty Impingers 1, 2, 3, 4 Ken 3.768 Secondary Filter Impinger #3 H<sub>2</sub>O 1.000 658 9800 Empty Wt: Empty Wt: Empty Wt: Initial Wt: nitial Wt: Final Wt: Final Wt: Final Wt: Final Wt: % Spent: Colour: Colour: Colour: Gain: Gain: 4 Gain: 3 Gain: Seal and label container TS4 CONTAINER TS4 Back-Up Filter Filter ID: 62.90 / Colour: 121H Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, CONTAINER TS3 and Filter Top Seal and label container TS2 cup, and outside of exit stem to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, exit stem, connecting Mark Fluid Level and 20-22050-M201A-CONTAINER TS2 Ž Seal and label container TS1 Nozzle, PM 10 Cyclone walls, SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TSS (Imp 2 H<sub>2</sub>0 and rinse) TS4 (Back Up Filter, <2.5) CONTAINER TS1 collection cup, TS6 (Secondary Filter) Train Recovered By: Train Loaded By: TS3 (Part. < 2.5) TS2 (Part. > 2.5) TS1 (Part. > 10)

Acetone & Hexane into TS7

Acetone/Hexane Rinse

Rinse all glassware from

CONTAINER TS7

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Test Location:

Test No.:

Seal and Label Container

Mark Fluid Level and

# PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

50071011

Date:

Client: Covanta DYEC

Project No.: 22050

Test Location:

Test No.:

filter to front half 2nd filter with Acetone & Hexane into TS7 Rinse all glassware from Seal and Label Container Acetone/Hexane Rinse 0 Mark Fluid Level and CONTAINER TS7 CWTR=1+2+3: WCBDA=4: stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of Seal and Label Container CONTAINER TS5 & TS6 0 Mark Fluid Level and glassware from filter to 2nd u-tube with CONTAINER TSS CONTAINER TS6 Secondary Filter di H2O into TS3 3 purge is not required. Rinse all \* if there is no gain Purge On: Purge Off: Impinger #1 Knock Out 00%.0 1000 Impinger #4 Silica Gel 378 Impinger #2 Empty 12/21 Impingers 1, 2, 3, 4 (X) 100 Secondary Filter Impinger #3 H<sub>2</sub>O Empty Wt: Empty Wt: Empty Wt: Initial Wt: Initial Wt: % Spent: Final Wt: Final Wt: Final Wt: Final Wt: Colour: Colour: Colour: 4 Gain: Gain: 1 Gain: 3 Gain: Seal and label container TS4 **CONTAINER TS4** Back-Up Filter Filter ID:  $\mathbb{QER}$ Colour: CAL Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, **CONTAINER TS3** and Filter Top Seal and label container TS2 cup, and outside of exit stem to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, exit stem, connecting Mark Fluid Level and 20-22050-M201A-CONTAINER TS2 0 N Nozzle, PM 10 Cyclone walls, Seal and label container TS1 SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TS5 (Imp 2 H<sub>2</sub>0 and rinse) TS4 (Back Up Filter, <2.5) CONTAINER TS1 collection cup, TS6 (Secondary Filter) Train Recovered By: Train Loaded By: TS2 (Part. > 2.5) TS3 (Part. < 2.5) TS1 (Part. > 10)

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PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

Client: Covanta DYEC

Project No.: 22050

Date:

Test Location:

Test No.:

filter to front half 2nd filter with Acetone & Hexane Into TS7 Rinse all glassware from 0 Seal and Label Container Acetone/Hexane Rinse Mark Fluid Level and CONTAINER TS7 CWTR=1+2+3: WCBDA=4: stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of Seal and Label Container CONTAINER TS5 & TS6 のくい Mark Fluid Level and 5.00 glassware from filter to 2nd u-tube with CONTAINER TS5 Secondary Filter CONTAINER TS6 di H2O into TS3 purge is not required. Rinse all \* if there is no gain Purge On: Purge Off: Impinger #1 Knock Out Impinger #4 Silica Gel Impinger #2 Empty S Impingers 1, 2, 3, 4 N A Secondary Filter Impinger #3 H<sub>2</sub>O 288. 880 Empty Wt: 675. Initial Wt: Empty Wt: Empty Wt: Initial Wt: Final Wt: Final Wt: Final Wt: Final Wt: % Spent: Colour: Colour: Colour: 4 Gain: Gain: Gain: 3 Gain: Seal and label container TS4 CONTAINER TS4 Back-Up Filter Filter ID: (8,7, 50 Colour: 1/2 🏹 Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, CONTAINER TS3 and Filter Top cup, and outside of exit stem Seal and label container TS2 to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, exit stem, connecting Mark Fluid Level and 20-22050-M201A-CONTAINER TS2 0 2 13 N Seal and label container TS1 Nozzle, PM 10 Cyclone walls, SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TS4 (Back Up Filter, <2.5) collection cup, TS5 (Imp 2 H<sub>2</sub>0 and rinse) CONTAINER TS1 TS6 (Secondary Filter) Train Recovered By: Train Loaded By: TS2 (Part. > 2.5) TS3 (Part. < 2.5) TS1 (Part. > 10)

-

CWTR=1+2+3:

WCBDA=4:

## ORTECH Consulting Inc.

# PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

Test location:	CONTAINER TS5 & TS6	Perform nitrogen purge of	imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)	* if there is no gain	purge is not required.	Ourman One	Purge Off:		Rinse all	glassware from filter	to 2nd u-tube with	di H2O into TS3		CONTAINER TS5	Mark Fluid Level and	Seal and Label Container			CONTAINER TS6	Secondary Filter		Seal and label container TS6			
	Impingers 1, 2, 3, 4	Impinger #1 Knock Out	Empty Wt:	1 Gain:	Colour:	Liveril Classification	Empty Wt:	Final Wt:	2 Gain:	Colour:		Secondary Filter		Impinger #3 H <sub>2</sub> O	Empty Wt:	Initial Wt:	Final Wt:	3 Gain:	Colour:	Executive control cont	Impinger #4 Silica Gel	Initial Wt:	Final Wt:	4 Gain:	% Spent:
	Back-Up Filter			CONTAINER TS4		Filter ID: Q. C. O. O. C.	Colour: 0/1/2	Seal and label container TS4																	
	Exit Stem, and Connecting	and Filter Top		CONTAINER TS3			Mark Fluid Level and	Seal and label container TS3																	
PM 10 Turnaround cup, exit stem, connecting	tubing from, PM 10 head	Cyclone walls, collection	cup, and outside of exit stem	CONTAINER TS2			Mark Fluid Level and	Seal and label container TS2					20-22050-M201A-		40	シナ	95		200	62					
Client: Covanta DYEC  Project No.: 22050  Date: (M) (0, )	Nozzle, PM 10 Cyclone walls,	conection cup, outside of exit stem		CONTAINER TS1			Mark Fluid Level and	Seal and label container TS1				10	SAMPLE IDENTIFICATION	TS1 (Part. > 10)	TS2 (Part. > 2.5)	TS3 (Part. < 2.5)	TS4 (Back Up Filter, <2.5)	TS5 (Imp 2 H <sub>2</sub> 0 and rinse)	TS6 (Secondary Filter)	TS7 (Acetone / Hexane rinse)			Train Loaded By:	Train Recovered By:	Стирования по при при при при при при при при при при

Seal and Label Container

Mark Fluid Level and

Acetone/Hexane Rinse

filter to front half 2nd filter with Acetone & Hexane into TS7

Rinse all glassware from

CONTAINER TS7

# PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

	CONTAINER TS7		Rinse all glassware from	filter to front half 2nd filter with	Acetone & Hexane Into 157			Acetone/Hexane Rinse			Mark Fluid Level and	Seal and Label Container													) 9 <del>T</del>	CWTR=1+2+3: (+77)	MICEDIA-4.	
Test No.: Test Location: (4.12.)	CONTAINER TS5 & TS6		Perform nitrogen purge of	imp 1 transfered to Impaction	stem impinger (14 ipm for 1 nr)	* if there is no gain	purge is not required.			SERPHURE Off: 1700		Rinse all	glassware from filter	to 2nd u-tube with	di H2O into T53		CONTAINER TSS	Mark Fluid Level and	Seal and Label Container			CONTAINER TS6	Secondary Filter		Seal and label container TS6			
	Impingers 1, 2, 3, 4		Impinger #1 Knock Out	S.	VE: Ø ∖		Colour:		Empt	Empty Wt: 517-565	6,0	2 Gain: 1 🕒 🔑	Colour:		Secondary Filter		Impinger#3 H <sub>2</sub> O	Empty Wt: (575.3	Initial Wt: 1775.0	Wt:	3 Gain: — 0.5	Colour:		Impinger#4 Silica Gel	Initial Wt: 852.4	Final Wt: 863-1	4 Gain: 10.7	% Spent:
	Back-Up Filter				F Copie Co. La per la Copie Co. La per la Copie	CONTAINER 134	5,0	Filter ID: Q Z 20/0	Colour: WM/TTE		Seal and label container TS4																	
	Exit Stem, and Connecting	Tubing to Filter,	and Filter Top			CONTAINER TS3				Mark Fluid Level and	Seal and label container TS3																	
PM 10 Turnaround cup, exit stem, connecting	tubing from, PM 10 head	to PM 2.5 cyclone. PM 2.5	Cyclone walls, collection	cup, and outside of exit stem		CONTAINER TS2				Mark Fluid Level and	Seal and label container TS2					20-22050-M201A-	70	22	47	25	9 N	77	9%	adductive and an accompany of the offer figible conserve of specimens, specimens, specimens and		~	1/20	٠
Client: Covanta DVEC Project No.: 22050 Date: 1000	Nozzle, PM 10 Cyclone walls,	collection cup,	outside of exit stem	раном надам (как ) селото на пред пред пред пред пред пред пред пред		CONTAINER TS1				Mark Fluid Level and	Seal and label container TS1					SAMPLEIDENTIFICATION	TS1 (Part. > 10)	TS2 (Part. > 2.5)	TS3 (Part. < 2.5)	TS4 (Back Up Filter, <2.5)	TS5 (Imp 2 H <sub>2</sub> 0 and rinse)	TS6 (Secondary Filter)	TS7 (Acetone / Hexane rinse)		•	Train Loaded By:	Train Recovered By:	

# PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

Client: Covanta DYEC

Test No.:

filter to front half 2nd filter with Acetone & Hexane into TS7 Rinse all glassware from Acetone/Hexane Rinse Seal and Label Container Mark Fluid Level and 00° CONTAINER TS7 CWTR=1+2+3: WCBDA=4: stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of Seal and Label Container CONTAINER TS5 & TS6 Mark Fluid Level and glassware from filter to 2nd u-tube with 00.1 Secondary Filter CONTAINER TS5 CR:91 CONTAINER TS6 di H2O into TS3 purge is not required. Rinse all \* if there is no gain Test Location: Purge Off: Purge On: Impinger #1 Knock Out 1887 10 Impinger #4 Silica Gel Impinger #2 Empty 5129 する 2002 LRan Impingers 1, 2, 3, 4 0:31 Cear 1585 Secondary Filter Impinger #3 H<sub>2</sub>O たるか Sea A Empty Wt: CAL. Empty Wt: Empty Wt: Initial Wt: Final Wt: Initial Wt: Final Wt: Final Wt: Final Wt: % Spent: Colour: Colour: 1 Gain: Colour: 4 Gain: Gain: Gain: Seal and label container TS4 Filter 10: 02 12 80 / S CONTAINER TS4 Back-Up Filter Colour: LINGIT Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, **CONTAINER TS3** and Filter Top Seal and label container TS2 cup, and outside of exit stem to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, exit stem, connecting Mark Fluid Level and 20-22050-M201A-CONTAINER TS2 6 62 9 Nozzle, PM 10 Cyclone walls, Seal and label container TS1 SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TS5 (Imp 2 H<sub>2</sub>0 and rinse) TS4 (Back Up Filter, <2.5) collection cup, CONTAINER TS1 TS6 (Secondary Filter) 300 Project No.: 22050 Train Recovered By: Train Loaded By: TS3 (Part. < 2.5) TS2 (Part. > 2.5) TS1 (Part. > 10) Date:



# PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

Client: Covanta DYEC

Test No.:

filter to front half 2nd filter with Acetone & Hexane into TS7 Rinse all glassware from Acetone/Hexane Rinse Seal and Label Container Mark Fluid Level and CONTAINER TS7 CWTR=1+2+3: WCBDA=4: stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of Seal and Label Container CONTAINER TSS & TS6 Mark Fluid Level and glassware from filter to 2nd u-tube with CONTAINER TS6 Secondary Filter CONTAINER TS5 di H2O into TS3 purge is not required. Rinse all \* if there is no gain Test Location: Purge Off: Purge On: Impinger #1 Knock Out Impinger #4 Silica Gel Impinger #2 Empty (200) Impingers 1, 2, 3, 4 00 LRAN Secondary Filter Impinger #3 H<sub>2</sub>O 00° -00 Empty Wt: Empty Wt: Initial Wt: Initial Wt: Empty Wt: Final Wt: Final Wt: % Spent: Final Wt: Final Wt: Colour: Colour: Colour: 4 Gain: 2 Gain: 3 Gain: 1 Gain: Seal and label container TS4 CONTAINER TS4 Filter ID: 12.2.80( Back-Up Filter Colour: [시년 Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, CONTAINER TS3 and Filter Top Seal and label container TS2 cup, and outside of exit stem to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, Mark Fluid Level and exit stem, connecting 20-22050-M201A-CONTAINER TS2 00 m Seal and label container TS1 Nozzle, PM 10 Cyclone walls, SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TS4 (Back Up Filter, <2.5) TS5 (Imp 2 H<sub>2</sub>0 and rinse) collection cup, CONTAINER TS1 TS6 (Secondary Filter) Project No.: 22050 Date: NNS Train Recovered By: Train Loaded By: TS2 (Part. > 2.5) TS3 (Part. < 2.5) TS1 (Part. > 10)

\_\_\_\_

filter to front half 2nd filter with Acetone & Hexane into TS7

Rinse all glassware from

CONTAINER TS7

PM<sub>10</sub>, PM<sub>2.5</sub> & Condensate Recovery Data Sheet

ORTECH Consulting Inc.

stem impinger (14 lpm for 1 hr) imp 1 transfered to Impaction Seal and label container TS6 Perform nitrogen purge of CONTAINER TS5 & TS6 Seal and Label Container glassware from filter Mark Fluid Level and to 2nd u-tube with CONTAINER TS5 CONTAINER TS6 Secondary Filter di H2O into TS3 purge is not required. \* if there is no gain Test Location: Purge On: Purge Off: Test No.: Impinger #1 Knock Out Impingen#4 Silica Gel Impinger #2 Empty Impingers 1, 2, 3, 4 Impinger #3 H<sub>2</sub>O Secondary Filter Empty Wt: Empty Wt: Empty Wt: Initial Wt: Initial Wt: Final Wt: Final Wt: Final Wt: Final Wt: % Spent: Colour: Colour: Gain: Colour: 3 Gain: Gain: Gain: Seal and label container TS4 CONTAINER TS4 Back-Up Filter Filter ID: 02.72.80 Colour: Seal and label container TS3 Exit Stem, and Connecting Mark Fluid Level and Tubing to Filter, CONTAINER TS3 and Filter Top Seal and label container TS2 cup, and outside of exit stem to PM 2.5 cyclone. PM 2.5 tubing from, PM 10 head Cyclone walls, collection PM 10 Turnaround cup, exit stem, connecting Mark Fluid Level and 20-22050-M201A-CONTAINER TS2 ト Nozzle, PM 10 Cyclone walls, Seal and label container TS1 SAMPLE IDENTIFICATION TS7 (Acetone / Hexane rinse) Mark Fluid Level and outside of exit stem TS4 (Back Up Filter, <2.5) TS5 (Imp 2 H<sub>2</sub>0 and rinse) collection cup, CONTAINER TS1 Client: Covanta DYEC TS6 (Secondary Filter) Project No.: 22050 Train Recovered By: Train Loaded By: TS3 (Part. < 2.5) TS2 (Part. > 2.5) TS1 (Part. > 10) Date:

Seal and Label Container

Rinse all

Mark Fluid Level and

Acetone/Hexane Rinse

CWTR=1+2+3:

WCBDA=4:



### **APPENDIX 14**

SVOC Train Recovery Data Sheets (8 pages)

	Impinger 4 Silica Gel	CONTAINER TSG (Impinger)	Initial Wt: 906./ Final Wt: 729./ Gain: 23.00 % Spent:			
Test No.: / Test Date: // NOV // 20	Sample ID S Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes	and impingers  CONTAINER  TS5	Empty Wt: 404.5 After Acetone/ F77.6 5 Total TS5: 173.1		Impinger Box ID:	TS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID 4	CONTAINER TS4	Imply Wt: 665-7 Final Wt: 7070-3 Galin: 7845-7 Colour: clean	Empty Wt: 5 4 8. 0	Impinger #3 Empty Empty Wt: 672-6 Final Wt: 8/3-4 6 Gain: 205.8 Colour: 200	Container TS4 Weights Empty Wt:
	Sample ID )	CONTAINER TS3	Initial Wt: 359-0 Final Wt: 366-3 Gain: 7-5 Colour: WHITE	WRAP IN FOIL LABEL AS CONTAINER TS3		
	Sample ID 2	CONTAINER TS2	Colour: W. H. J. J. E. FOLD IN FOIL SEAL AND LABEL CONTAINER 152		rtification ALS	1986/7 105537 105537
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-	Sample ID  Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting	Container  CONTAINER  TS1	Empty Wt: 405, © After Acetone/ Hexane Rinse: 702. 3  Total TS1: 297.3	MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1	Train & Proofing Identification Glassware Train Proofing Provided By: Glassware Train ID: Tran ID:	HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.: Arctone Batch No.: Train Loaded By:

Client: Covanta DYEC Project No.: 22050				Test No.: 2	
Sample Batch No.: 20-22050-SVOC-				Test Location: いんパー	
Sample ID	Sample ID	Sample ID 7	Sample ID	Sample ID 1,0	
		1			Внештинованно от применения в применения в применения в применения в применения в применения в применения в при
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter	Hiter State of the Control of the Co	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube,	Impinger 4 Silica Gel
Housing, Frit & Connecting Glassware to Top of Condenser				Imp. Inlet Stem, U-Tubes and Impingers	
CONTAINER	CONTAINER	CONTAINER	CONTAINER	CONTAINER	CONTAINER
TS1	TS2	ESL ST	154	125	TS6 (Impinger)
	The state of the s	f	1.00		20 65 mm
Empty Wt:	Colour: VY / C	Final Wr: 597.7	Impinger#1 Empty Empty Wt: /C 0. C	Empty wt: 703, 5,	Final Wr: 8880
nse: 756	FOLD IN FOIL		Final Wt: 968	2-019	5 Gain: 20.7
Total TS1:		Colour: WM TC		Total TSS: 266	% Spent:
	SEAL AND LABEL CONTAINER TS2	SEALTRAP	Colour:		
В патемате и положения выполнения и положения выполнения по пред пред десемента выполнения по под под под под			Impinger #2 Ethylene Glycol		
MARK FLUID LEVEL		WRAP IN FOIL	Empty Wt: 552 - 8		
SEAL AND LABEL		IABELAS	20		
CONTAINER TS1		CONTAINER TS3	3 Gain: 2863		
			Colour: Chose		
			Impinger #3 Empty Empty Wit: くっつ は	Impinger Box ID:	
Train & Proofing Identification	ntification		Final Wt:	0.12	
Glassware Train Proofing Provided By:	ALS		4 Gain: 101.0		
Glassware Train ID:			Colour:		
Trap ID:	- Charles				
HPLC Batch No.:	ALS		Container TS4 Weights		
Ethylene Gylcol Batch No.:			Empty Wt:		
Hexane Batch No.:			With imp Soin:		
			Total TS4: 7/4. 2		
	/-			Tet Tet TS = 11 Ambor Glace Bottle	
Train Loaded By:			CWTR=1+2+3+4: 699 9	TS2 - Glass Petri Dish	
Train Recovered By:	2 E			TS3 - Glass Trap	
			WCBDA=5:		

Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-				Test No.: 3 Test Date: Mall A © Test Location: UN 17	
Sample ID ( 1	Sample ID	Sample ID 7	Sample ID	Sample ID ( 5)	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 403.0 After Acetone/ 707.9 Hexane Rinse: 304.9	Colour: Wyytes FOLD IN FOIL SEAL AND LABEL CONTAINER 152	Initial Wt: 472.9 Final Wt: 420.9 Gain: 770 Colour: WH 776	Empty Wt: 585.7. Final Wt: 760.4 Colour: 275.7. Colour: 275.7.	Empty Wt: \$706.5 After Acetone/ 579.1 Hexane Rinse: 579.1 Total TSS: [92.6	Initial Wt: 937. O Final Wt: 957. © Gain: 2.0. O % Spent:
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1		WRAP IN FOIL LABEL AS CONTAINER TS3	Empty Wt: 649.2 Initial Wt: 760.4 Final Wt: 760.4 Colour: 200.6		
Train & Proofing Identification Glassware Train Proofing Provided By: Glassware Train ID: Tran ID:	rtification ALS		Impinger #3 Empty Empty Wt: 596.9 Final Wt: 706.7 Gain: 109.8	Impinger Box ID:	
HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.:	ÁIS		Container TS4 Weights Empty Wt: 406.0 With Imp Soln: (184.0 After ~100g H <sub>2</sub> O Rinse: 1372.5		
Train Loaded By: Train Recovered By:			CWTR = 1+2+3+4:	TS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap	

8		Impinger 4 Silica Gel	CONTAINER TS6 (Impinger)	Initial Wt: 9/4-/ Final Wt: 9/8-/ Gain:				
Test No.: BLANK 1 Test Date: NOUNT	Sample ID 2.0	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	CONTAINER TS5	Empty Wt: '+O'4', O' After Acetone/ Hexane Rinse: 6/6.5 Total TSS: 2(2.5		Impinger Box ID:		TS1, TS4, TS5 - 11 Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID	Impingers 1, 2 & 3	CONTAINER TS4	Impinger #1 Empty Empty Wt: \$55.3 Final Wt: \$55.3 Colour:	Empty Wt: 564.5 Initial Wt: 667.9 Final Wt: 667.4 Gain:	Impinger #3 Empty Empty Wt: 470.3 Final Wt: 477.3 6 Gain:	Container TS4 Weights  Empty Wt: 433.5  With Imp Soln: 500.0  After 100g H <sub>2</sub> O Rinse: 650.5  Total TS4: 247.0	CWTR = 1 + 2 + 3 + 4:
	Sample ID	XAD-II Trap	CONTAINER TS3	Initial Wt: 777 & Final Wt: 378-7  I Gain: ANG Colour: WN (TC)	WRAP IN FOIL LABEL AS CONTAINER TS3			
	Sample ID 1	Filter	CONTAINER TS2	Colour: WWWTTC FOLD IN FOIL SEAL AND LABEL CONTAINER 152		antification ALS	ALS	4
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-	Sample ID ' 6	Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	CONTAINER TS1	Empty Wt: 403.0  After Acetone/ Hexane Rinse: 572.5  Total TS1: 169.5	MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS.1	Train & Proofing Identification Glassware Train Proofing Provided By: Glassware Train ID:	Trap ID: HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.:	Train Loaded By: Train Recovered By:

20	Impinger 4 Silica Gel	CONTAINER TS6 (Impinger)	Initial Wt: 856.6 Final Wt: 870.0 Gain: 73.4 % Spent:				Bottle
Test No.: 1 Test Date: NOU!! 7 Test Location: UN!	Sample ID 2 5  Back-Half Rinses  Trap Bottom U-Tube,	Imp. Inlet Stem, U-Tubes and Impingers CONTAINER 155	Empty Wt: 404.5 After Acetone/647.8 Hexane Rinse: 647.8 Total TSS: 243.3		Impinger Box ID:		TS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID 2.4 Impingers 1, 2 & 3	CONTAINER TS4	Impinger #1 Empty Empty Wt: 529. 8 Final Wt: 578. 0 2 Gain: 348.2 Colour: 68.2	Impinger #2 Ethylene Glycol Empty Wt: \$53.7 Initial Wt: \$55.5 Final Wt: \$77.5 3 Gain: 2.24.0 Colour: Clean	Impinger #3 Empty   Empty   Empty Wt: 608.0     Empty Wt: 842.8     Email Wt: 842.8     Empty   Empty     Empty   Empty       Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty     Empty   Empty     Empty     Empty   Empty     Empty   Empty     Empty   Empty     Empty   Empty     Empty   Em	Container TS4 Weights Empty Wt: 405-0 With Imp Soln: 405-0 After 100g H <sub>2</sub> O Rinse: 12 45-7 Total TS4: 8 40-7	CWTR = 1 + 2 + 3 + 4: 6/7.7  [WCBDAsS: 72.
	Sample ID (2) XAD-II Trap	CONTAINER TS3	Initial Wt: 389.8 Final Wt: 400.5 Gain: 10.7 Colour: WH 17.6	WRAP IN FOIL LABEL AS CONTAINER TS3			
	Sample ID 7.2. Filter	CONTAINER TS2	Colour: WHTE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2		tification ALS	ÁIS	
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-	Sample ID 7. \ Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter	Housing, Frit & Connecting Glassware to Top of Condenser CONTAINER TS1	Empty Wt: 403.0 After Acetone/ Hexane Rinse: 686.7 Total TS1: 283.7	MARK FLUID LEVEL SEAL AND LABEL CONTAINER 75.1	Train & Proofing Identification Glassware Train Proofing Provided By:	Irap ID: HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.:	Train Loaded By:

	Impinger 4 Silica Gel	CONTAINER TS6 (Impinger)	Final Wt: 97 & Spent: % Spent:		
Test No.: 2 Test Date: Nov 11,520 Test Location: WATZ	Sample ID 3 co Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	CONTAINER TS5	Empty Wt: 493.5 After Acetone/ 57/-8 Hexane Rinse: 57/-8 Total TSS: 248.3	Impinger Box ID:	7 TS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID Ref	CONTAINER TS4	Impinger #1 Empty Empty Wt: 6 C 4 ~ . Final Wt: 9 4 9 . 5 Gain: 295.5 Colour: 295.5 Impinger #2 Ethylene Glycol Empty Wt: 556.6 Initial Wt: 570.0 Final Wt: 40.7 Gain: 25.07	Imply Wt: 605.7 Final Wt: 727.0 Gain: 127.3 Colour: 127.3	Empty Wt: 404 C
	Sample ID 2.8	CONTAINER TS3	Initial Wt: 758.7 Final Wt: 756.0 Gain: 566.0 Colour: W H T E SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3		
	Sample ID %	CONTAINER 152	Colour: WHITE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	entification ALS	198612
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-5VOC-	Sample ID  Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	CONTAINER TS1	Empty Wt: 40500 After Acetone/ Hexane Rinse: 7.7.5 Total TS1: 3/8.5  MARK FLUID LEVEL  SEAL AND LABEL  CONTAINER TS1	Train & Proofing Identification Glassware Train ID: Trap ID:	HPLL Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.: Train Loaded By:

		Impinger 4 Silica Gel CONTAINER TS6 (Impinger)	Final Wr. 952.8 Final Wr. 966.9 Gain: 66.9 % Spent:	
Test No.: 3 Test Date: Na.172, 28 Test Location: UNIT 2. A	Sample ID 3 5	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers CONTAINER TSS	Empty Wt: 406.0  After Acetone/ Hexane Rinse: 586.1  Total TSS: 690.1	/FS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID ***	Impingers 1, 2 & 3  CONTAINER 154	Impinger #1 Empty Empty Wt: 676-5 Final Wt: 977-6 Colour: 022-1 Empty Wt: 650-5 Initial Wt: 72-1 Final Wt: 72-1 Final Wt: 72-1 Final Wt: 72-1 Final Wt: 72-1 Golour: 25-2	Container Wt:  10 Soln: 100g H2O R 54: 11+2+3+
	Sample ID 7/7	CONTAINER TS3	Initial Wt: 345-4 Final Wt: 351-2 Gain: 5-8 Colour: 1-1 SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	
	Sample ID 7, 2	Filter CONTAINER TS2	Colour: W. H. TTE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2 ALS ALS	AIS
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-	Sample ID $^{2}$ (	Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser CONTAINER TS1	After Acetone/ After Acetone/ Hexane Rinse: 6/2.5 Total TS1: 407.5  SEAL AND LABEL CONTAINER TS1  CONTAINER TS1  Glassware Train & Proofing Identification Glassware Train ID:	Trap ID: HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.: Train Loaded By:

700		Impinger 4 Silica Gel	CONTAINER TS6 (Impinger)	Initial Wt. 940.0 Final Wt. 940-0 Gain: % Spent:				
Test No.: HAR Z.) Test Date: NGC Z.) Test Location:	Sample ID	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	CONTAINER TS5	Empty Wt: 406.0 After Acetone/Hexane Rinse: 622.0 Total TSS: 2/6.0		Impinger Box ID:		TS1, TS4, TS5 - 1L Amber Glass Bottle TS2 - Glass Petri Dish TS3 - Glass Trap
	Sample ID 79	Impingers 1, 2 & 3	CONTAINER TS4	Impinger #1 Empty Empty Wt: 654-3 Final Wt: 654-3 Colour:	Empty Wt: 5 C C Initial Wt: 6 B S Final Wt: 7 C B S S Gain: Colour: Colour: Colour: Colour: Colour: Colour: Colour: Colour: C B S S S S S S S S S S S S S S S S S S	Empty Wt: 65.5 Final Wt: 65.5 Final Wt: 65.5 Gain: 600ur:	Container TS4 Weights Empty Wt: +04-0 With Imp Soln: 5/5.3 After ~100g H <sub>2</sub> O Rinse: 682.5 Total TS4: 2 7 8 5	CWTR = 1 + 2 + 3 + 4: WCBDA=5:
	Sample ID 7.8	XAD-II Trap	CONTAINER TS3	Initial Wt: 792.7 Final Wt: 392.7 Gain: Colour: CAM (T.E.	WRAP IN FOIL LABEL AS CONTAINER TS3			
	Sample ID	Filter	CONTAINER TS2	Colour: LWHITE FOLD IN FOIL SEAL AND LABEL CONTAINER 152		ntification ALS	AIS	
Client: Covanta DYEC Project No.: 22050 Sample Batch No.: 20-22050-SVOC-	Sample ID 3 (5	Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	CONTAINER TS1	Empty Wt: 407.0 After Acetone/ 625.7 Total TS1: 2.18.7	MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1	Train & Proofing Identification Glassware Train Proofing Provided By: Glassware Train ID: Trap ID:	HPLC Batch No.: Ethylene Gylcol Batch No.: Hexane Batch No.: Acetone Batch No.:	Train Loaded By: Train Recovered By:



# **APPENDIX 15**

SVOC Analytical Report (70 pages)



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: **ORT100** 

ALS WO#: L2529311

Date of Report 15-Dec-20

Date of Sample Receipt 13-Nov-20 Client Name:

**ORTECH Environmental** 

Client Address: 804 Southdown Road Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore

Client Project ID: 22050 Covanta

COMMENTS:

PCDD/F by EPA M23

123678-HxCDF showed the presence of a peak in the corresponding diphenylether channel on the field samples. Historical evidence has shown that this diphenylether is a false positive and the HxCDF value is considered real and unbiased.

Mass resolution deteriorated during the 12 hour run sequence with the resolution being slightly below 10,000 for selected functions at the end of the run sequence. There is no evidence for enhanced interferences or noise to negatively impact data quality has been observed.

Certified by:

Ron McLeod, PhD.

Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences Sample Analysis summary Report								
ALS Sample ID	L2529311-1	L2529311-2	L2529311-3	L2529311-4	L2529311-5	L2529311-6		
Sample Size		1	1	1.1	1.			
Sample size units	sample	sample	sample	sample	sample	sample		
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a		
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack		
Sampling Date	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	11-Nov-20	11-Nov-20		
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20		
Farget Analytes	pg	pg	pg	pg	pg	pg		
2,3,7,8-TCDD	<4.2	<2 <i>.</i> 5	<4.2	<4.3	<b>≼4.1</b>	<5.9		
1,2,3,7,8-PeCDD	<34	33.8	32.1	<4.4	<6.7	<5.9 <7.0		
1,2,3,4,7,8-HxCDD	117	107	81.9	<4.0	18.2	<7.0 <23		
1,2,3,6,7,8-HxCDD	331	321	252	<3.5	46.5	<51		
1,2,3,7,8,9-HxCDD	146	152	106	<3.8	19.3	<21		
1,2,3,4,6,7,8-HpCDD	2100	1840	1590	47.9	284	333		
OCDD	1370	1260	1040	177	311	712		
2,3,7,8-TCDF 1,2,3,7,8-PeCDF	7.87 22.8	18.7	<5.6	<3.3	< 5.8	<13		
1,2,3,7,8-PECDF 2,3,4,7,8-PECDF	78.6	31.2	22.6	<2.6	6.69	<8.6		
1,2,3,4,7,8-HxCDF	102	79.6	54.9	<2.4	<17	24.8		
1,2,3,6,7,8-HxCDF	102	105 119	74.0 91.3	<2.2	< 20	25.2		
2,3,4,6,7,8-HxCDF	230	202	165	<2.1	26.6	<20		
1,2,3,7,8,9-HxCDF	<61	63.1	47.6	<2.3 <2.7	44.6	44.6		
1,2,3,4,6,7,8-HpCDF	682	633	47.6 513	<2.7 <9.8	11.2 116	<12 155		
1,2,3,4,7,8,9-HpCDF	117	<99	313 <77	<7.4	<18	155 <17		
OCDF	363	330	313	<19	<43	<17 <88		
ield Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec		
37Cl4-2,3,7,8-TCDD	89	85	92	92	90	81		
13C12-1,2,3,4,7,8-HxCDD	105	102	107	105	104	96		
13C12-2,3,4,7,8-PeCDF	123	109	115	114	114	95		
13C12-1,2,3,4,7,8-HxCDF	104	103	105	106	104	95		
13C12-1,2,3,4,7,8,9-HpCDF	95	90	93	90	94	75		
xtraction Standards								
13C12-2,3,7,8-TCDD	34	45	35	20				
13C12-1,2,3,7,8-PeCDD	39	45 46	35 35	29 27	32 32	28		
13C12-1,2,3,6,7,8-HxCDD	44	46 56	35 40	27 32	32 39	29		
13C12-1,2,3,4,6,7,8-HpCDD	41	42	40 34	32 25	39	34		
13C12-0CDD	34	33	34 29	25 19	34 29	26 18		
13C12-2,3,7,8-TCDF	36	45	34	27	32	18 27		
13C12-1,2,3,7,8-PeCDF	32	40	30	23		27 24		
13C12-1,2,3,6,7,8-HxCDF	39	48	36	29 29	33	32		
13C12-1,2,3,4,6,7,8-HpCDF	37	41	33	24	32	27		
omologue Group Totals	pg	pg	pg	pg	pg	pg		
Total-TCDD	436	324						
Total-PeCDD	1700	324 1700	158	<4.3	113	128		
Total-HxCDD	4780	1700 4400	1340 3500	<4.4 ~1.0	311	418		
Total-HpCDD	4350	4050	3590 3310	<4.0 47.9	779 626	1030		
Total-TCDF	299	289	132	47.9 <3.3	626 24.8	820		
Total-PeCDF	810	797	132 578	<3.3 <2.6	24.8 202	62.5		
Total-HxCDF	1220	1200	928	~2.6 3.54	202	85.9 232		
Total-HpCDF	981	973	926 794	3.54 <7.4	236 154	232 230		
Toxic Equivalency - (WHO 2005)								
ower Bound PCDD/F TEQ (WHO 2005)	159	193	152	0.532	20.9	19.5		
4id Point PCDD/F TEQ (WHO 2005)	201	195	156	6.62	37.3	41.5		
Upper Bound PCDD/F TEQ (WHO 2005)	203	196	158	12.6	39.6	46.9		

		ALS Life So	iences	
	TO THE RESIDENCE OF THE PROPERTY OF THE PROPER	mple Analysis sur		WOODS AND THE PROPERTY OF THE
Sample Name	20-22050-SVOC- (31 THRU 35) TEST#3 APC	20-22050-SVOC- (36 THRU 40) BLANK#2		
ALS Sample ID	OUTLET #2 L2529311-7	L2529311-8		
Sample Size	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Management of the second of th
Sample size units	sample	sample		
Percent Moisture	n/a	n/a		
Sample Matrix	Stack	Stack		
Sampling Date	12-Nov-20	12-Nov-20		
xtraction Date	25-Nov-20	25-Nov-20		
arget Analytes	CONTRACTOR OF THE PROPERTY OF		WARRANT CONTROL OF THE CONTROL OF TH	***************************************
생활하면 하시면 시시 등 생각하다 하시 때문이	pg	pg		
2,3,7,8-TCDD	<4.3	<3.0		
1,2,3,7,8-PeCDD	6.19	<2.3		
1,2,3,4,7,8-HxCDD	<17	<3.2		
1,2,3,6,7,8-HxCDD	42. <u>2</u>	<2.8		
1,2,3,7,8,9-HxCDD	<20			
1,2,3,4,6,7,8-HpCDD	263	<16		
OCDD	326	<82		
2,3,7,8-TCDF	<4.0	<1.8		
1,2,3,7,8-PeCDF	9.13	<1.7		
2,3,4,7,8-PeCDF	<14	<1.6		
1,2,3,4,7,8-HxCDF	<19	<1.8		
1,2,3,6,7,8-HxCDF	<18	<1.8		
2,3,4,6,7,8-HxCDF	37.0	<1.9		
1,2,3,7,8,9-HxCDF	<23	<2.2		
1,2,3,4,6,7,8-HpCDF	104	<3.1		
1,2,3,4,7,8,9-HpCDF	15.0	<2.5		
Property of the control of the contr	<49	17.9		
ield Spike Standards	% Rec	% Rec		
37Cl4-2,3,7,8-TCDD	86	90		
13C12-1,2,3,4,7,8-HxCDD	100	102		
13C12-2,3,4,7,8-PeCDF	105	108		
13C12-1,2,3,4,7,8-HxCDF	98	101		
13C12-1,2,3,4,7,8,9-HpCDF	85	91		
ctraction Standards				
13C12-2,3,7,8-TCDD	34	35		
13C12-1,2,3,7,8-PeCDD	32	32		
13C12-1,2,3,6,7,8-HxCDD	39	38		
13C12-1,2,3,4,6,7,8-HpCDD	31	34		
13C12-OCDD	24	28	jagat gajtaj listigaj kataj ja kata arciali.	
13C12-2,3,7,8-TCDF	33	34		
13C12-1,2,3,7,8-PeCDF	28	29		
13C12-1,2,3,6,7,8-HxCDF	37	35		
13C12-1,2,3,4,6,7,8-HpCDF	32	33		
iomologue Group Totals	pg	pg		
Total-TCDD	75.8	<3.0		
Total-PeCDD	267	2.89		
Total-HxCDD	655	<3.2	,"我们就是一个人,我们还有什么,我们就是一个人,""这个人,""我们就是一个人。""我们就是一个人。""我们就是一个人,我们就是一个人,我们就是一个人,我们就	
Total-HpCDD	576	<5.1		
Total-TCDF	36.9	<1.8		
Total-PeCDF	128	<1.7		
Total-HxCDF	172	<2.2		
Total-HpCDF	180	<2.5		
oxic Equivalency - (WHO 2005)				
ower Bound PCDD/F TEQ (WHO 2005)	18.3	0.00537		
id Point PCDD/F TEQ (WHO 2005)	31.6	4.08		
pper Bound PCDD/F TEQ (WHO 2005)	36.9	7.94		

ALS Life Sciences								
		ontrol Summary Report						
Sample Name	Method Media	Laboratory Control						
	Blank	Sample						
ALS Sample ID	WG3444637-1	WG3444637-2						
Sample Size								
Sample size units Percent Moisture	sample	n/a						
Sample Matrix	<b>n/a</b> ,	n/a						
	QC	, 18 : 18 : 18 : 18 : 18 <b>: 2C</b> : 18 : 18 : 18 : 18 : 18 : 18 : 18 : 1						
Sampling Date Extraction Date	п/а 25-Nov-20	n/a 25-Nov-20						
		2.3-NOV-20	**************************************					
Target Analytes	pg	% Rec						
2,3,7,8-TCDD	<3.1	82						
1,2,3,7,8-PeCDD	<3.1	98	하는 아무슨 아들이 가지 않는 것도 하고 하는 것이다.					
1,2,3,4,7,8-HxCDD	<3.4	93						
1,2,3,6,7,8-HxCDD	<3.3	91						
1,2,3,7,8,9-HxCDD	karak ana karaksasa sa karapatan							
1,2,3,4,6,7,8-HpCDD	<15	92						
OCDD	133	92						
2,3,7,8-TCDF	<1.9							
1,2,3,7,8-PeCDF	<2.0	보다는 물 기를 들는 시간을 받는 것을 받는 것이 되었다. 기가를 보고 있는 것이 되었다. 그 사람들은 10명을 보는 것이 되었다.						
2,3,4,7,8-PeCDF	<1.9	88						
1,2,3,4,7,8-HxCDF	<2.7	84						
1,2,3,6,7,8-HxCDF	<2.6	89						
2,3,4,6,7,8-HxCDF	<2.9	91						
1,2,3,7,8,9-HxCDF	<3.3							
1,2,3,4,6,7,8-HpCDF	<7.4	87						
1,2,3,4,7,8,9-HpCDF	<9.5	85	网络大大大大大大大大大大大大大大大大					
OCDF	31.5	79						
Field Spike Standards	% Rec	% Rec						
37Cl4-2,3,7,8-TCDD	NS	N <b>S</b>						
13C12-1,2,3,4,7,8-HxCDD	NS	NS NS						
13C12-2,3,4,7,8-PeCDF	NS	NS NS						
13C12-1,2,3,4,7,8-HxCDF	NS	NS NS						
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS NS						
Extraction Standards								
		기름으로 오늘 보고 하고 됐다. 하고 하다						
13C12-2,3,7,8-TCDD	36	39						
13C12-1,2,3,7,8-PeCDD	36							
13C12-1,2,3,6,7,8-HxCDD	기가 가는 말로 <b>39</b> 교사는 결과							
13C12-1,2,3,4,6,7,8-HpCDD		37						
13C12-OCDD	22							
13C12-2,3,7,8-TCDF	35	37						
13C12-1,2,3,7,8-PeCDF	31							
13C12-1,2,3,6,7,8-HxCDF 13C12-1,2,3,4,6,7,8-HpCDF	35 32	36						
Homologue Group Totals	pg							
Total-TCDD Total-PeCDD	<3.1 × 2.1 ×							
Total-HxCDD	<3.1 <3.4							
Total-HpCDD	<3.4 <3.2							
Total-TCDF	<1.9							
Total-PeCDF	<2.0							
Total-HxCDF	<3.3							
Total-HpCDF	<9.5							
Toxic Equivalency - (WHO 2005)								
Lower Bound PCDD/F TEQ (WHO 2005)	0.0494							
Mid Point PCDD/F TEQ (WHO 2005)								
MIG POINT PLUD/F (EG/WHG) 2005)	5.03							

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Sample Analysis Report           Sample Name         20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1         Sampling Date         11-Nov-20           ALS Sample ID         L2529311-1         Extraction Date         25-Nov-20         Approved:								Approved ·		
Analysis Method Analysis Type Sample Matrix	EPA M23 Sample Stack						Sample Size Percent Moisture Split Ratio	1 n/a 6	sample	N Ashtarie-signature 15-Dec-2020
Run Information		Run 1								33.566.2020
Filename		7-201214	A06							
Run Date		14-Dec-20	17:07							
Final Volume			uL							흥미하는 하는 사람들 보다는 하나 하는
Dilution Factor		1								
Analysis Units Instrument - Column		pg HDMS-7	DBEMSUS	0287846H						
	23434343434			020704011						
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc.	EDL Store	EMPC					
			pg	pg Flags	pg	LQL				
2,3,7,8-TCDD 1,2,3,7,8-PeCDD		NotFnd 31.78	<4.2	4.2 U		30				
1,2,3,4,7,8-HxCDD	0.1	33.94	<34 117	2.9 M,J,R 7.2 J		150 150				
1,2,3,6,7,8-HxCDD	0.1	34.00	331	6.4		150				
1,2,3,7,8,9-HxCDD	0.1	34.12	146	7.0		150				
1,2,3,4,6,7,8-HpCDD	0.01	35.59	2100	8.4		150				
OCDD	0.0003	37.05	1370	9.6		300				
2,3,7,8-TCDF	0.1	26.16	7.87	3.5		30				
1,2,3,7,8-PeCDF	0.03	30.75	22.8	6.9 J		150				
2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF	0.3 0.1	31.55 33.43	78.6	6.4 J		150				
1,2,3,6,7,8-HxCDF	0.1	33.50	102 116	7.1 J		150 150				
2,3,4,6,7,8-HxCDF	0.1	33.84	230	7.4		150				
1,2,3,7,8,9-HxCDF	0.1	34.28	<61	8.5 J,R	61	150				
1,2,3,4,6,7,8-HpCDF	0.01	35.04	682	5.3		150				
1,2,3,4,7,8,9-HpCDF OCDF	0.01 0.0003	35.83 37.13	117 363	6.8 J		150				
	0.0003	37.13	363	6.0		300				
Field Spike Standards	pg		% Rec							
37Cl4-2,3,7,8-TCDD 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PeCDF 13C12-1,2,3,4,7,8-HxCDF 13C12-1,2,3,4,7,8,9-HpCDF Extraction Standards	0 0 0 0 0									
										보고 말을 다 보고 있다면 그리네요
13C12-2,3,7,8-TCDD 13C12-1,2,3,7,8-PeCDD	19920 19920	27.05 31.77		40-130 40-130						
13C12-1,2,3,6,7,8-HxCDD	19920	33.99		40-130						
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.59		25-130						
13C12-OCDD 13C12-2,3,7,8-TCDF	39840 19920	37.04		25-130 40-130						
13C12-1,2,3,7,8-PeCDF	19920	26.14 30.74		40-130 40-130						
13C12-1,2,3,6,7,8-HxCDF	19920	33.49		40-130						
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	37	25-130						
			Conc.	EDL						
Homologue Group Totals		# peaks	Pg	Pg						
Total-TCDD		7	436	4.2		30				
Total-PeCDD		7	1700	2.9		150				
Total-HxCDD		8	4780	7.2		150				명한 화물시설 경험 등을 수를 모기되었다.
Total-HpCDO Total-TCDF		2 13	4350	8.4		150				
Total-PeCDF		13 11	299 810	3.5 6.9		30 150				
Total-HxCDF		10	1220	8.5		150				
Total-HpCDF		3	981	6.8		150				
Toxic Equivalency - (WHO			Pg							
Lower Bound PCDD/F TEQ ( Mid Point PCDD/F TEQ (WH Upper Bound PCDD/F TEQ (	O 2005)		159 201 203							
EDL TEF M U		Indicates t Indicates t	he Toxic E hat a peal	ted Detection Lim quivalency Factor chas been manua ompound was not	illy integ	ated.		this target in this e Toxic Equivalend		
J R				et analyte was de n abundance ratio			ibrated range. did not meet the acceptance	criterion.		
LQL										
EMPC		Estimated	Maximum	Possible Concent	ration – i	elevated de	n level corrected for sample s tection limit due to interferen	nze, spiits and dili nce or positive id (	utions. criterion failure	

### **ALS Life Sciences** Sample Analysis Report 20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1 Sampling Date 11-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-2 Approved: N Ashtari -e-signature-Extraction Date 25-Nov-20 EPA M23 Sample Sample Size Percent Moisture sample n/a Sample Matrix Stack Split Ratio 6 15-Dec-2020 Run Information 7-201214A08 Run Date 14-Dec-20 18:31 Final Volume 10 uL Dilution Factor 1 Analysis Units pq Instrument - Column HRMS-7 DB5MSUS0287846H TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags pg LQL pg 2,3,7,8-TCDD 1 NotFnd 2.5 < 2.5 ·U 30 1,2,3,7,8-PeCDD 31.79 2.5 33.8 150 1,2,3,4,7,8-HxCDD 0.1 33,95 107 150 1,2,3,6,7,8-HxCDD 0.1 34.00 321 5.6 150 1.2.3.7.8.9-HxCDD 0.1 34.13 152 6.2 150 1,2,3,4,6,7,8-HpCDD 0.01 35.60 1840 12 150 OCDD 0.0003 37.05 1260 14 В 300 2,3,7,8-TCDF 0.1 26.16 18.7 6.6 30 1,2,3,7,8-PeCDF 0.03 30.76 31.2 11 150 2,3,4,7,8-PeCDF 0.3 31.55 79.6 9.8 150 1,2,3,4,7,8-HxCDF 0.1 33.43 105 5.2 150 1,2,3,6,7,8-HxCDF 33.50 119 5.0 150 2,3,4,6,7,8-HxCDF 0.1 33.84 202 150 1,2,3,7,8,9-HxCDF 0.1 34,29 63.1 6,3 150 1.2.3.4.6.7.8-HpCDF 0.01 35.04 633 4.2 150 1,2,3,4,7,8,9-HpCDF 35.83 0.01 <99 5.3 M,J,R . 99 150 0.0003 37.14 330 8.6 300 Field Spike Standards pg % Rec 37CH-2,3,7,8-TCDD 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PeCDF 13C12-1,2,3,4,7,8-HxCDF 13C12-1,2,3,4,7,8,9-HpCDF Extraction Standards 13C12-2,3,7,8-TCDD 19920 27.05 45 40-130 13C12-1,2,3,7,8-PeCDD 19920 31.77 46 40-130 13C12-1,2,3,6,7,8-HxCDD 19920 33.99 56 40-130 13C12-1,2,3,4,6,7,8-HpCDD 42 25-130 19920 35.59 13C12-OCDD 39840 37.04 33 25-130 13C12-2,3,7,8-TCDF 19920 26.14 45 40-130 13C12-1,2,3,7,8-PeCDF 19920 30.74 40 40-130 13C12-1,2,3,6,7,8-HxCDF 19920 33.50 48 40-130 13C12-1,2,3,4,6,7,8-HoCDF 19920 35.04 41 25-130 Conc. FDI Homologue Group Totals # peaks pg pg Total-TCDD 5 324 2.5 Total-PeCDD 10 1700 2.5 150 Total-HxCDD 8 4400 6.4 150 Total-HpCDD - 2 4050 12 150 Total-TCDF 12 289 6.6 30 Total-PeCDF 15 797 11 150 Total-HxCDF 10 1200 150 Total-HnCDF 3 973 5.3 150 Toxic Equivalency - (WHO 2005) pg Lower Bound PCDD/F TEQ (WHO 2005) 193 Mid Point PCDD/F TEQ (WHO 2005) Upper Bound PCDD/F TEQ (WHO 2005) 195 196 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. Indicates the Toxic Equivalency Factor TEE М Indicates that a peak has been manually integrated. Ú Indicates that this compound was not detected above the EDL Indicates that a target analyte was detected below the calibrated range. R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. LOL **EMPC** Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences											
Sample Analysis Report Sample Name 20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1 Sampling Date 12-Nov-20											
ALS Sample ID Analysis Method Analysis Type	20-22050-590 L2529311-3 EPA M23 Sample Stack	C-(11 /H	KO 15) I	ES1#3 A	PC OUT	EF#1		Sampling Date Extraction Date Sample Size Percent Moisture Split Ratio	12-Nov-20 25-Nov-20 1 sample n/a 6	Approved: N Ashtari e-signature- 15-Dec-2020	
Run Information		Run 1					- 43/3/3				
Filename		7-201214	A09								
Run Date		14-Dec-20									
Final Volume Dilution Factor			uL								
Analysis Units		1									
Instrument - Column		pg HRMS-7	DB5MSUS	0287846	н						
			i de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	Tagala a		12000					EAN ASSE
Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg (	Flags	EMPC Pg	LQL				
2,3,7,8-TCDD	1	NotFnd	<4.2	4.2	บ		30				
1,2,3,7,8-PeCDD	1	31.78	32.1	2.8	J		150				
1,2,3,4,7,8-HxCDD	0.1	33.93	81.9	7.0	J		150				
1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	0.1	33.99 34.12	252 106	6.2 6.7	J		150				
1,2,3,4,6,7,8-HpCDD	0.01	35.59	1590	11			150 150				
OCDD	0.0003	37.04	1040	17	В		300				
2,3,7,8-TCDF	0.1	NotFnd	<5.6	5.6			30				
1,2,3,7,8-PeCDF	0.03	30.74	22.6	6.2	, J		30 150				
2,3,4,7,8-PeCDF	0.3	31.54	54.9	5.8			150				
1,2,3,4,7,8-HxCDF	0.1	33.42	74.0	13	J		150				
1,2,3,6,7,8-HxCDF	0.1	33.49	91.3	13	3		150				
2,3,4,6,7,8-HxCDF	0.1	33.83	165	14			150				
1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF	0.1 0.01	34.28 35.03	47.6 513	16 6.1	M,J		150 150				
1,2,3,4,7,8,9-HpCDF	0.01	35.82	<77	7.9	M,J,R	77	150				
OCDF	0.0003	37.13	313	7.8	В		300				
Field Spike Standards	pg		% Rec								
37Cl4-2,3,7,8-TCDD 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PcDF 13C12-1,2,3,4,7,8-HxCDF 13C12-1,2,3,4,7,8,9-HpCDF Extraction Standards	0 0 0 0 0										
13C12-2,3,7,8-TCDD	19920	27.04	75	40.120							
13C12-1,2,3,7,8-PeCDD	19920	31.76		40-130							
13C12-1,2,3,6,7,8-HxCDD	19920	33.98		40-130							
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.58		25-130							
13C12-OCDD 13C12-2,3,7,8-TCDF	39840 19920	37.04 26.13		25-130 40-130							
13C12-1,2,3,7,8-PeCDF	19920	30.73		40-130							
13C12-1,2,3,6,7,8-HxCDF	19920	33.48	36	40-130							
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.03	33	25-130							
Homologue Group Totals		# nooks	Conc.	EDL							
		* peaks	Pg	pg							
Total-TCDD		6	158	4.2			30				
Total-PeCDD Total-HxCDD		8 7	1340 3590	2.8 7.0			150 150				
Total-HpCDD		2	3310	11			150				
Total-TCDF		10	132	5.6			30				
Total-PeCDF		11	578	6.2			150				
Total-HxCDF Total-HpCDF		11 3	928 794	16 7.9			150 150				
Toxic Equivalency - (WHO	2005)		pg								
Lower Bound PCDD/F TEQ ( Mid Point PCDD/F TEQ (WH Upper Bound PCDD/F TEQ (	WHO 2005) O 2005)		152 156 158								
EDL TEF M		Indicates t Indicates t	he Toxic ! hat a pea	Equivalen k has bee	ry Factor n manua	r iliy integ	rated.		this target in this sample. e Toxic Equivalency		
		Indicates t	nat this c	ompound	was not	detected	above the	EDL.			
		Indicates t	hat a targ	jet analyti	e was de	tected b	elow the cal	brated range.			
in a company of the c											
igi a taga a kabana a kabana kaba								ild not meet the acceptance			
B LQL		Indicates t	hat this t	arget was	detected	in the l	lank at gre	nd not meet the acceptance ater than 10% of the sample level corrected for sample s	concentration.		

### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(16 THRU 20) BLANK#1 Sampling Date 12-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-4 EPA M23 Sample Extraction Date 25-Nov-20 Approved: Sample Size Percent Moisture sample N Ashtari n/a signature Sample Matrix Stack Split Ratio 6 15-Dec-2020 Run Information Filename 7-201214A10 Run Date 14-Dec-20 19:54 Final Volume 10 uL Dilution Factor 1 pg Instrument - Column HRMS-7 DB5MSUS0287846H TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg pg Flags pg LQL 2,3,7,8-TCDD NotFnd <4.3 4.3 30 1,2,3,7,8-PeCDD NotFnd <4.4 4.4 υ 150 1,2,3,4,7,8-HxCDD 0.1 NotFnd <4.0 4.0 150 1.2.3.6.7.8-HxCDD 0.1 NotEnd <3.5 3.5 υ 150 1,2,3,7,8,9-HxCDD 0.1 NotFnd < 3.8 3.8 υ 150 1,2,3,4,6,7,8-HpCDD 0.01 35.61 47.9 5.3 17 150 OCDD 0.0003 37.06 177 17 J.B 300 2.3.7.8-TCDF 0.1 NotFnd < 3.3 3,3 -U 30 1,2,3,7,8-PeCDF 0.03 NotFnd < 2.6 2.6 υ 150 2,3,4,7,8-PeCDF 0.3 NotFnd <2.4 2.4 U 150 1,2,3,4,7,8-HxCDF 0.1 NotFnd <2.2 2.2 U 150 1,2,3,6,7,8-HxCDF 0.1 NotFnd <2.1 2.1 150 2,3,4,6,7,8-HxCDF 0.1 NotFnd < 2.3 2,3 150 1,2,3,7,8,9-HxCDF 0.1 NotFnd < 2.7 2.7 ш 150 1,2,3,4,6,7,8-HpCDF 0.01 35.04 < 9.8 5.8 1.R 9.8 150 1,2,3,4,7,8,9-HpCDF 0.01 NotEnd <7.4 7.4 U 150 OCDF 0.0003 37.14 <19 19 J,R 300 Field Spike Standards Pg % Rec 37CI4-2,3,7,8-TCDD 0 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PeCDF ົດ 13C12-1,2,3,4,7,8-HxCDF 0 13C12-1,2,3,4,7,8,9-HpCDF **Extraction Standards** 13C12-2,3,7,8-TCDD 27.05 29 40-130 13C12-1.2.3.7.8-PeCDD 19920 31.78 27 40-130 13C12-1,2,3,6,7,8-HxCDD 19920 34.00 32 40-130 13C12-1,2,3,4,6,7,8-HpCDD 19920 35.60 25 25-130 13C12-OCDD 39840 37.05 19 25-130 13C12-2,3,7,8-TCDF 19920 26.14 27 40-130 13C12-1,2,3,7,8-PeCDF 19920 30.75 23 40-130 13C12-1.2.3.6.7.8-HxCDF 19920 33.50 29 40-130 13C12-1,2,3,4,6,7,8-HpCDF 19920 35.04 24 25-130 Conc. EDL Homologue Group Totals # peaks Pg pg Total-TCDD 0 <4.3 4.3 30 Total-PeCDD .0 <4.4 4.4 U 150 Total-HxCDD 0 <4.0 4.0 u 150 Total-HpCDD 47.9 5.3 150 Total-TCDF 0 <3.3 3.3 30 Total-PeCDF 0 <2.6 2.6 150 Total-HxCDF 3.54 2.7 Total-HpCDF 0 <7.4 7.4 u 150 Toxic Equivalency - (WHO 2005) P9 Lower Bound PCDD/F TEQ (WHO 2005) 0.532 Mid Point PCDD/F TEQ (WHO 2005) Upper Bound PCDD/F TEQ (WHO 2005) 6.62 12.6 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor U Indicates that this compound was not detected above the EDL. J Indicates that a target analyte was detected below the calibrated range. R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. LOL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2 Sampling Date 11-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-5 Extraction Date 25-Nov-20 Approved: EPA M23 Sample Sample Size Percent Moisture sample N Ashtari n/a e-signature Sample Matrix Stack Split Ratio 6 15-Dec-2020 Run Information Filename 7-201214A11 Run Date 14-Dec-20 20:35 Final Volume 10 uL Dilution Factor 1 pg Instrument - Column HRMS-7 D85MSUS0287846H TEF Ret. Conc EDL EMPC Target Analytes (WHO 2005) Time pg pg Flags LQL рg 2,3,7,8-TCDD 1 NotFnd <4.1 4.1 30 1,2,3,7,8-PeCDD 31.77 < 6.7 3.7 6.7 150 J,R 1,2,3,4,7,8-HxCDD 0.1 33.94 18.2 4.1 м,з 150 1,2,3,6,7,8-HxCDD 0.1 33.99 46.5 3.6 M,J 150 1,2,3,7,8,9-HxCDD 0.1 34.12 19.3 3.9 150 1,2,3,4,6,7,8-HpCDD 0.01 35.59 284 3.7 150 OCDD 0.0003 37.04 311 6.9 В 300 2,3,7,8-TCDF 0.1 26.13 < 5.8 5.8 M,U 30 1,2,3,7,8-PeCDF 0.03 30.75 6.69 6.5 150 2,3,4,7,8-PeCDF 0.3 31.54 <17 17 150 6.1 M,J,R 1,2,3,4,7,8-HxCDF 33.42 <20 7.0 M,3,R 20 150 1,2,3,6,7,8-HxCDF 0.1 33.50 6.7 M,3 150 2,3,4,6,7,8-HxCDF 0.1 33.84 44.6 7.4 150 1,2,3,7,8,9-HxCDF 0.1 34.29 11.2 8.4 М,3 150 1,2,3,4,6,7,8-HpCDF 0.01 35.04 116 3.9 150 1,2,3,4,7,8,9-HpCDF 0.01 35.82 <18 5.0 J.R .18 150 OCDF 0.0003 37.13 7.8 M,J,R 43 Field Spike Standards pg % Rec 37CI4-2,3,7,8-TCDD 0 13C12-1,2,3,4,7,8-HxCDD 0 13C12-2,3,4,7,8-PeCDF Ö 13C12-1,2,3,4,7,8-HxCDF 0 13C12-1,2,3,4,7,8,9-HpCDF Extraction Standards 32 40-130 13C12-2,3,7,8-TCDD 19920 27.04 13C12-1,2,3,7,8-PeCDD 19920 31.77 32 40-130 13C12-1,2,3,6,7,8-HxCDD 19920 33.99 39 40-130 13C12-1,2,3,4,6,7,8-HpCDD 19920 35.58 34 25-130 13C12-OCDD 39840 37.04 29 25-130 13C12-2,3,7,8-TCDF 19920 32 40-130 26.13 13C12-1,2,3,7,8-PeCDF 19920 30.74 27 40-130 13C12-1.2.3.6.7.8-HxCDF 19920 33.49 33 40-130 13C12-1,2,3,4,6,7,8-HpCDF 19920 35.03 32 25-130 Conc. EDL Homologue Group Totals # peaks pg рg Total-TCDD 113 4.1 30 Total-PeCDD 5 311 3.7 150 Total-HxCDD 779 4.1 150 Total-HpCDD 626 3.7 150 Total-TCDF 24.8 5.8 30 Total-PeCDF 202 6.5 150 Total-HxCDF 8 236 150 Total-HpCDF 2 154 5.0 150 Toxic Equivalency - (WHO 2005) pg Lower Bound PCDD/F TEQ (WHO 2005) 20.9 Mid Point PCDD/F TEQ (WHO 2005) 37.3 Upper Bound PCDD/F TEQ (WHO 2005) 39.6 Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample, Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency TEF М Indicates that a peak has been manually integrated. U Indicates that this compound was not detected above the EDL. 'n Indicates that a target analyte was detected below the calibrated range. R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. LOL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2 Sampling Date 11-Nov-20 ALS Sample ID Analysis Method Extraction Date Approved: N Ashtari 25-Nov-20 Sample Size Percent Moisture EPA M23 Sample 1 n/a Analysis Type -e-signature Sample Matrix Stack Split Ratio Ġ 15-Dec-2020 Run Information Run 1 Filename 7-201214A12 Run Date 14-Dec-20 21:17 Final Volume 10 uL Dilution Factor 1 Analysis Units DO Instrument - Column HRMS-7 DB5MSUS0287846H TEF Ret. EDL Conc. Target Analytes (WHO 2005) Time LQL pg pg Flags pq 2,3,7,8-TCDD NotFnd < 5.9 5.9 ωŪ 30 1,2,3,7,8-PeCDD 31.78 <7.0 5.3 M,J,R 7.0 150 1,2,3,4,7,8-HxCDD 0.1 33.94 <23 22 23 150 J,R 1,2,3,6,7,8-HxCDD 0.1 33.99 <51 19 51 150 J,R 1,2,3,7,8,9-HxCDD 0.1 NotFnd <21 21 150 1,2,3,4,6,7,8-HpCDD 0.01 35 59 333 21 150 OCDD 0.0003 37.04 712 20 M,B 300 2,3,7,8-TCDF 0.1 26.16 <13 13 30 1,2,3,7,8-PeCDF 0.03 30.74 <8.6 8.6 Ü 6.4 150 2,3,4,7,8-PeCDF 0.3 31.54 24.8 8.0 1 150 1,2,3,4,7,8-HxCDF 33.42 0.1 25.2 10 M.3 150 1,2,3,6,7,8-HxCDF 0.1 33.49 <20 20 9.6 M,J,R 150 2,3,4,6,7,8-HxCDF 0.1 33.84 44.6 11 M,J 150 1,2,3,7,8,9-HxCDF 0.1 34.29 <12 12 U 150 1,2,3,4,6,7,8-HpCDF 0.01 35.03 155 5.8 150 1,2,3,4,7,8,9-HpCDF 0.01 35.83 <17 7.4 J.R 17 150 OCDF 0.0003 37.14 <88 21 M,3,R 88 300 Field Spike Standards pg % Rec 37CI4-2.3.7.8-TCDD 0 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PeCDF 13C12-1,2,3,4,7,8-HxCDF 13C12-1,2,3,4,7,8,9-HpCDF Extraction Standards 13C12-2,3,7,8-TCDD 19920 27.04 28 40-130 13C12-1,2,3,7,8-PeCDD 19920 31.77 29 40-130 13C12-1.2.3.6.7.8-HxCDD 19920 33.98 34 40-130 13C12-1,2,3,4,6,7,8-HpCDD 19920 35.58 26 25-130 13C12-OCDD 39840 37.04 13C12-2.3.7.8-TCDF 19920 26.13 27 40-130 13C12-1,2,3,7,8-PeCDF 19920 30.73 24 40-130 13C12-1,2,3,6,7,8-HxCDF 19920 33.48 32 40-130 13C12-1,2,3,4,6,7,8-HpCDF 19920 35.03 27 25-130 **Homologue Group Totals** # peaks pg Pg Total-TCDD 128 5.9 30 Total-PeCDD 418 Total-HxCDD 5 1030 22 150 Total-HpCDD 2 820 21 150 Total-TCDF 62.5 13 30 Total-PeCDF 85.9 150 8.6 Total-HxCDF 232 12 150 Total-HpCDF 3 230 7.4 150 Toxic Equivalency - (WHO 2005) P9 Lower Bound PCDD/F TEQ (WHO 2005) 19.5 Mid Point PCDD/F TEQ (WHO 2005) Upper Bound PCDD/F TEQ (WHO 2005) 46.9 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency М Indicates that a peak has been manually integrated. U Indicates that this compound was not detected above the EDL 3 Indicates that a target analyte was detected below the calibrated range R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. 101 Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure EMPC

### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2 Sampling Date 12-Nov-20 ALS Sample ID L2529311-7 Extraction Date 25-Nov-20 Approved: Analysis Method Analysis Type EPA M23 Sample Sample Size Percent Moisture sample N Ashtari n/a Sample Matrix Stack Split Ratio 6 15-Dec-2020 Run Information Run 1 Filename 7-201214A13 Run Date 14-Dec-20 21:59 Final Volume 10 uL Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-7 DB5MSUS0287846H TEF EDL Ret. Conc. EMPC **Target Analytes** (WHO 2005) Time LQL 2,3,7,8-TCDD 1.1 1,2,3,7,8-PeCDD 31.78 6.19 3.8 150 Μ,3 1,2,3,4,7,8-HxCDD 0.1 33.95 <17 5.1 J,R 17 150 1,2,3,6,7,8-HxCDD 0.1 34.00 42.2 4.5 150 1,2,3,7,8,9-HxCDD 0.1 34.14 < 20 4.9 M,J,R 20 150 1,2,3,4,6,7,8-HpCDD 35.60 263 9.4 150 OCDD 0.0003 37.06 326 11 м,в 300 2,3,7,8-TCDF 0.1 26.14 <4.0 4.0 U.M 2.8 30 1,2,3,7,8-PeCDF 0.03 30.75 9.13 5.3 :M,3 150 2,3,4,7,8-PeCDF 0.3 31.55 <14 4.9 M,J,R 14 150 1,2,3,4,7,8-HxCDF 0.1 33.43 150 1.2.3.6.7.8-HxCDF 0.1 33.50 <18 18 M,U 17 150 2,3,4,6,7,8-HxCDF 0.1 33.84 37.0 20 150 1,2,3,7,8,9-HxCDF 0.1 34.29 <23 -23 M.U 6.0 150 1,2,3,4,6,7,8-HpCDF 0.01 35.04 104 1.9 150 1,2,3,4,7,8,9-HpCDF 0.01 15.0 150 OCDF 0.0003 37.15 <49 7.4 M,J,R 49 Field Spike Standards pg 37CI4-2,3,7,8-TCDD 13C12-1,2,3,4,7,8-HxCDD 13C12-2,3,4,7,8-PeCDF 'n 0 13C12-1,2,3,4,7,8-HxCDF 13C12-1,2,3,4,7,8,9-HpCDF 0 **Extraction Standards** 13C12-2,3,7,8-TCDD 19920 27.05 34 40-130 13C12-1,2,3,7,8-PeCDD 19920 31.78 32 40-130 13C12-1,2,3,6,7,8-HxCDD 39 40-130 33.99 13C12-1,2,3,4,6,7,8-HpCDD 13C12-OCDD 19920 35.59 31 25-130 39840 37.05 24 25-130 13C12-2,3,7,8-TCDF 19920 33 40-130 13C12-1,2,3,7,8-PeCDF 13C12-1,2,3,6,7,8-HxCDF 19920 30.74 28 40-130 19920 33.50 37 40-130 13C12-1,2,3,4,6,7,8-HpCDF 35.04 32 25-130 Conc. EDL **Homologue Group Totals** # peaks PS pg Total-TCDD 75.8 4.3 Total-PeCDD 267 3.8 150 Total-HxCDD 655 5.1 150 Total-HpCDD 576 9.4 150 Total-TCDF 36,9 30 4.0 Total-PeCDE 128 5.3 150 Total-HxCDF 172 23 150 Total-HpCDF 180 2.5 150 Toxic Equivalency - (WHO 2005) pg Lower Bound PCDD/F TEQ (WHO 2005) 18.3 Mid Point PCDD/F TEQ (WHO 2005) 31.6 Upper Bound PCDD/F TEQ (WHO 2005) Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TER Indicates the Toxic Equivalency Factor М Indicates that a peak has been manually integrated. Ü Indicates that this compound was not detected above the EDL. Indicates that a target analyte was detected below the calibrated range. R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. 8 Indicates that this target was detected in the blank at greater than 10% of the sample concentration. LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(36 THRU 40) BLANK#2 Sampling Date 12-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-8 Extraction Date 25-Nov-20 Approved: EPA M23 Sample Sample Size Percent Moisture sample N Ashtari n/a Sample Matrix Split Ratio 6 15-Dec-2020 Run Information Filename 7-201214A14 Run Date 14-Dec-20 22:40 Final Volume 10 uL. Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-7 D85MSUS0287846H TEF Ret. Conc. EDL EMPC Target Analytes (WHO 200S) Time pg Flags pg LQL 2,3,7,8-TCDD NotFnd <3.0 3.0 30 1,2,3,7,8-PeCDD NotFnd <2.3 2.3 U 150 1,2,3,4,7,8-HxCDD 0.1 NotFnd <3.2 3.2 1,2,3,6,7,8-HxCDD 0.1 NotEnd <2.8 2.8 U 150 1,2,3,7,8,9-HxCDD 0.1 NotFnd <3.1 3.1 u 150 1,2,3,4,6,7,8-HpCDD 35.59 0.01 <16 5.1 J.R 16 150 OCDD 0.0003 37.05 <82 7.6 M,J,R 82 300 2,3,7,8-TCDF 0.1 NotFnd <1.8 1.8 IJ 30 1,2,3,7,8-PeCDF 0.03 NotFnd <1.7 1.7 U 150 2,3,4,7,8-PeCDF 0.3 NotFnd <1.6 1.6 150 Ù 1,2,3,4,7,8-HxCDF 0.1 NotFnd <1.8 1.8 U 150 1,2,3,6,7,8-HxCDF 0.1 NotFnd <1.8 1.8 2,3,4,6,7,8-HxCDF 0.1 NotEnd <1.9 1.9 Ù 150 1,2,3,7,8,9-HxCDF 0.1 NotFnd <2.2 2.2 'n 150 1,2,3,4,6,7,8-HpCDF 0.01 35.03 <3.1 2.0 M,J,R 3.1 150 1,2,3,4,7,8,9-HpCDF 0.01 NotFnd <2.5 2.5 :0 150 OCDF 0.0003 37.14 17.9 M,J,B Field Spike Standards % Rec pg 37CI4-2,3,7,8-TCDD 0 13C12-1,2,3,4,7,8-HxCDD 0 13C12-2,3,4,7,8-PeCDF 'n 13C12-1,2,3,4,7,8-HxCDF 0 13C12-1,2,3,4,7,8,9-HpCDF **Extraction Standards** 13C12-2,3,7,8-TCDD 19920 35 40-130 13C12-1,2,3,7,8-PeCDD 19920 31.76 32 40-130 13C12-1,2,3,6,7,8-HxCDD 19920 38 40-130 33.99 13C12-1,2,3,4,6,7,8-HpCDD 19920 35.58 34 25-130 13C12-OCDD 39840 37.04 28 25-130 13C12-2,3,7,8-TCDF 19920 26.13 34 40-130 13C12-1,2,3,7,8-PeCDF 19920 30.73 29 40-130 13C12-1,2,3,6,7,8-HxCDF 19920 33.48 35 40-130 13C12-1,2,3,4,6,7,8-HpCDF 35.03 33 25-130 Conc. EDL Homologue Group Totals # peaks рg pg Total-TCDD ō <3.0 3.0 30 Total-PeCDD 2.89 2.3 150 Total-HxCDD 0 <3.2 3.2 Ù 150 Total-HpCDD < 5.1 5.1 U 150 Total-TCDF <1.8 1.8 30 Total-PeCDF 0 <1.7 1.7 150 Total-HxCDF Ð <2.2 2.2 150 Total-HpCDF 0 <2.5 2.5 ·u 150 Toxic Equivalency - (WHO 2005) рg Lower Bound PCDD/F TEQ (WHO 2005) 0.00537 Mid Point PCDD/F TEQ (WHO 2005) 4.08 Upper Bound PCDD/F TEQ (WHO 2005) 7.94 Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor M Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the EDL. 1 Indicates that a target analyte was detected below the calibrated range. R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. LOL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

### **ALS Life Sciences** Laboratory Method Blank Analysis Report Sample Name Method Blank Sampling Date n/a ALS Sample ID WG3444637-1 Extraction Date 25-Nov-20 Approved: Analysis Method Analysis Type Sample Size Percent Moisture sample N Ashtari n/a Sample Matrix Split Ratio 6 15-Dec-2020 Run Information Filename 7-201214A05 Run Date 14-Dec-20 16:26 Final Volume 10 ul. Dilution Factor 1 pg Instrument - Column HRMS-7 DB5MSUS0287846H TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg pg Flags pg LQL 2,3,7,8-TCDD 1 NotFnd <3.1 3.1 30 ·U 1,2,3,7,8-PeCDD <3.1 3.1 U 150 1,2,3,4,7,8-HxCDD 0.1 NotFnd <3.4 1,2,3,6,7,8-HxCDD 0.1 33 99 <3.3 3.0 J,R 3,3 150 1,2,3,7,8,9-HxCDD 0.1 34.13 < 3.3 3.3 M,U 1.1 150 1,2,3,4,6,7,8-HpCDD 0.01 35.60 <15 3.2 J,R 15 150 OCDD 0.0003 37.05 133 8.9 3 300 2,3,7,8-TCDF 0.1 NotFnd <1.9 1.9 ·u 30 1,2,3,7,8-PeCDF 0.03 30.75 <2.0 2.0 U 1.6 150 2,3,4,7,8-PeCDF NotFnd <1.9 1.9 U 150 1,2,3,4,7,8-HxCDF 0.1 33.42 <2.7 2.7 M,U . 1.1 150 1,2,3,6,7,8-HxCDF 0.1 33.48 <2.6 M,U 1.3 150 2,3,4,6,7,8-HxCDF 0.1 33,85 <2.9 2.9 U 1.7 150 1,2,3,7,8,9-HxCDF 0.1 34.27 <3.3 3,3 · U 1.4 150 1,2,3,4,6,7,8-HpCDF 0.01 35.04 <7.4 7.4 M.U. 150 1,2,3,4,7,8,9-HpCDF 0.01 35.84 <9.5 9.5 3.5 U 150 OCDF 0.0003 37.14 31,5 M,J Field Spike Standards Pg % Rec 37CH-2,3,7,8-TCDD 13C12-1,2,3,4,7,8-HxCDD 0 13C12-2,3,4,7,8-PeCDF -0 13C12-1,2,3,4,7,8-HxCDF 0 13C12-1,2,3,4,7,8,9-HpCDF **Extraction Standards** 13C12-2,3,7,8-TCDD 19920 27.04 36 40-130 13C12-1,2,3,7,8-PeCDD 19920 31.77 36 40-130 13C12-1,2,3,6,7,8-HxCDD 19920 39 40-130 33.99 13C12-1,2,3,4,6,7,8-HpCDD 19920 35.59 33 25-130 13C12-OCDD 39840 37.05 22 25-130 13C12-2,3,7,8-TCDF 19920 35 40-130 26.14 13C12-1,2,3,7,8-PeCDF 19920 30.74 31 40-130 13C12-1,2,3,6,7,8-HxCDF 19920 33.49 35 40-130 13C12-1,2,3,4,6,7,8-HpCDF 35.04 32 25-130 Conc. EDL **Homologue Group Totals** # peaks pg pg Total-TCDD 0 <3.1 3.1 Total-PeCDD 0 <3.1 3.1 U 150 Total-HxCDD 0 <3.4 3.4 ù 150 Total-HpCDD <3.2 3.2 u 150 Total-TCDF <1.9 1.9 30 Total-PeCDF 0 <2.0 2.0 150 Total-HxCDF 0 <3.3 3.3 150 Total-HpCDF 0 <9.5 9.5 ·u 150 Toxic Equivalency - (WHO 2005) pg Lower Bound PCDD/F TEQ (WHO 2005) 0.0494 Mid Point PCDD/F TEQ (WHO 2005) 5.03 Upper Bound PCDD/F TEQ (WHO 2005) 9.54 Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor M Indicates that a peak has been manually integrated. Ü Indicates that this compound was not detected above the EDL. 1 Indicates that a target analyte was detected below the calibrated range B Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. LOL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# ALS Life Sciences

# Laboratory Control Sample Analysis Report

Split Ratio

Sample Name

Sample Matrix

Filename

Run Date Final Volume

Dilution Factor

Laboratory Control Sample

ALS Sample ID Analysis Method Analysis Type WG3444637-2 EPA M23 LCS

QC

Sampling Date Extraction Date Sample Size Percent Moisture

25-Nov-20 1 n/a 6

sample

Approved: N Ashtari --e-signature--15-Dec-2020

Run Information

Run 1 7-201214A02 14-Dec-20 14:22 10 uL

1

% Rec

Analysis Units

%

Instrument - Column HRMS-7 DB5MSUS0287846H

	pg	Ret.		Limits		
Target Analytes		Time	% Rec		Flags	
2,3,7,8-TCDD	1200	27.10	82	70-130		
1,2,3,7,8-PeCDD	6000	31.80	98	70-130		
1,2,3,4,7,8-HxCDD	6000	33.95	93	70-130		
1,2,3,6,7,8-HxCDD	6000	34.01	91	70-130		
1,2,3,7,8,9-HxCDD	6000	34.14	95	70~130		
1,2,3,4,6,7,8-HpCDD	6000	35.61	92	70-130		
OCDD	12000	37.06	92	70-130		
2,3,7,8-TCDF	1200	26.19	88	70-130		
1,2,3,7,8-PeCDF	6000	30.77	88	70-130		
2,3,4,7,8-PeCDF	6000	31.57	88	70-130		
1,2,3,4,7,8-HxCDF	6000	33.44	. 84	70-130		
1,2,3,6,7,8-HxCDF	6000	33.51	89	70-130		
2,3,4,6,7,8-HxCDF	6000	33.86	91	70-130		
1,2,3,7,8,9-HxCDF	6000	34.28	89	70-130		
1,2,3,4,6,7,8-HpCDF	6000	35.06	87	70-130		
1,2,3,4,7,8,9~HpCDF	6000	35.84	85	70-130		
OCDF	12000	37.15	79	70-130		

ield	Spike	Standa	rds	P9

37Cl4-2,3,7,8-TCDD 0 13C12-1,2,3,4,7,8-HxCDD 0 13C12-2,3,4,7,8-PeCDF 0 13C12-1,2,3,4,7,8-HxCDF 0 0

13C12-1,2,3,4,7,8,9-HpCDF

Extraction Standards				
13C12-2,3,7,8-TCDD	19920	27.08	39	40-130
13C12-1,2,3,7,8-PeCDD	19920	31.79	42	40-130
13C12-1,2,3,6,7,8-HxCDD	19920	34.00	43	40-130
13C12-1,2,3,4,6,7,8-HpCDD	19920	35.60	37	25-130
13C12-OCDD	39840	37.05	29	25-130
13C12-2,3,7,8-TCDF	19920	26.17	37	40-130
13C12-1,2,3,7,8-PeCDF	19920	30.76	34	40-130
13C12-1,2,3,6,7,8-HxCDF	19920	33.50	36	40-130
13C12-1,2,3,4,6,7,8-HpCDF	19920	35.04	32	25-130



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: **ORT100** 

L2529311 ALS WO#: Date of Report 11-Dec-20

Date of Sample Receipt 13-Nov-20

Client Name:

**ORTECH Environmental** 804 Southdown Road Client Address:

Mississauga

ON L5J 2Y4 Chris Belore

**Client Contact:** Client Project ID: 22050 Covanta

COMMENTS:

PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values,

consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD

Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences							
	Sa	mple Analysis Su					
Sample Name		20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1	20-22050-SVOC- (11 THRU 15) TEST#3 APC OUTLET #1	20-22050-SVOC- (16 THRU 20) BLANK#1	20-22050-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2	20-22050-SVO (26 THRU 30 TEST#2 AP OUTLET #	
ALS Sample ID	L2529311-1	L2529311-2	L2529311-3	L2529311-4	L2529311-5	L2529311	
Sample Size	1	1	1		1.		
Sample size units	sample	sample	sample	sample	sample	samp	
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n	
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Sta	
Sampling Date	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	11-Nov-20	11-Nov-2	
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-2	
Target Analytes	pg	pg	pg	pg	pg	p	
PCB-081	<27	<26	<27	<22	<27	<	
PCB-077	66.9	213	<63	<23	70.8	22	
PCB-123	<27	135	<27	<27	25.7	84	
PCB-118	859	6370	1010	61.5	1780	47	
78.73   19.13   19.13   19.14   PCB-114	30.6	181	<22	<21	40.9	which is a contracting $(1)$	
PCB-105	251	2070	331	<21	456	13	
PCB-126	<25	<35	<27	<24	<15	<.	
PCB-167	27.2	85.8	<17	<13	27.6	</td	
PCB-156/157	79.8	330	55.0	<19	79.5	14	
PCB-169	31.4	32.5	<23	<15	<8.3	<1	
PCB-189	37.4	42.6	24.3	<11	18.9	15	
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Re	
13C12-PCB-081	74	93	54	68	79		
13C12-PCB-077	75	96	55	71	82		
13C12-PCB-123	73	92	55	69	82		
13C12-PCB-118	72	93	52	67	79		
13C12-PCB-114	85	108	62	81	97	1	
13C12-PCB-105	87	107	61	82	96		
13C12-PCB-126	93	113	67	92	99		
13C12-PCB-167	77	95	56	68	87		
13C12-PCB-156/157	75	98	55	68	87		
13C12-PCB-169	88	112	64	75	100		
13C12-PCB-189	88	114	62	79	99		
Field Spike Standards							
13C12-PCB-031	89	94	92	119	93		
13C12-PCB-095	95	84	94	87	89		
13C12-PCB-153	85	89	88	92	91		
Cleanup Standards							
13C12-PCB-028	50	56	41	64	46		
13C12-PCB-111	64	73	53	77	73		
13C12-PCB-178	66	88	54	67	85	6	
Toxic Equivalency - (WHO 2005)	pg	pg	pg	pg	pg	Ţ.	
Lower Bound PCB TEQ	0.987	1.27	0.0426	0.00185	0.0799	0.2	
Mid Point PCB TEQ	2.24	3.03	2.09	1.43	0.958	1	
Upper Bound PCB TEQ	3.50	4.78	3.45	2.86	1.84	3.3	

	· · · · · · · · · · · · · · · · · · ·	LS Life Sci	ences
	Sam	iple Analysis Sumn	nary Report
Sample Name	20-22050-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2	20-22050-SVOC- (36 THRU 40) BLANK#2	
ALS Sample ID	L2529311-7	L2529311-8	
Sample Size	1	1	
Sample size units	sample	sample	
Percent Moisture	n/a	n/a	
Sample Matrix	Stack	Stack	
Sampling Date	12-Nov-20	12-Nov-20	
Extraction Date	25-Nov-20	25-Nov-20	
Target Analytes	pg	pg	
PCB-081	<25	<22	
PCB-077	194	33.2	
PCB-123	76.9	<29	
PCB-118	5080	680	
PCB-114	144	<23	
PCB-105 PCB-126	2240 <39	304 <26	
PCB-126 PCB-167	<39 177	<26 51.4	
PCB-156/157	617	144	
PCB-169	<18	<22	
PCB-189	40.9	20.2	
Extraction Standards			
Extraction Standards	% Rec	% Rec	
13C12-PCB-081	64	70	
13C12-PCB-077	65	69	
13C12-PCB-123	64	70	
13C12-PCB-118	64	68	
13C12-PCB-114	73	83	
13C12-PCB-105 13C12-PCB-126	72 81	83 90	
13C12-PCB-126	67	90 69	
13C12-PCB-156/157	66	69	
13C12-PCB-169	73	79	
13C12-PCB-189	77	81	
Field Spike Standards			
13C12-PCB-031	88	95	
13C12-PCB-095	88	85	
13C12-PCB-153	82	92	
Cleanup Standards			
13C12-PCB-028	44	49	
13C12-PCB-111	59	64	
13C12-PCB-178	64	59	
Toxic Equivalency - (WHO 2005)	pg	pg	
Lower Bound PCB TEQ	0.271	0.0393	
Mid Point PCB TEQ	2.49	1.67	
Upper Bound PCB TEQ	4.72	3.31	

	ALS Life S	Sciences
TO THE PROPERTY OF THE PROPERT	Quality Control Si	
Sample Name	Method Media Blank	
	riethou rietha Biank	
ALS Sample ID	WG3444637-1	
Sample Size Sample size units	1 sample	
Percent Moisture	n/a	
Sample Matrix	oc	
Sampling Date	n/a	
Extraction Date	25-Nov-20	
	A FIGURE AND A FIG	
Target Analytes	<b>pg</b>	
PCB-081		
PCB-077	<12	
PCB-123		
PC8-118	18.3	
PCB-114 PCB-105	<14 <14	
PCB-105	<14 <17	
PCB-167		
PCB-156/157	<16	
PCB-169	<13 < 13 < 13 < 13 < 13 < 13 < 13 < 13	
PCB-189		
Extraction Standards	% Rec	
13C12-PCB-081	89	여름 이번 발표 보고 있다는 그는 이다. 그들은 한 경기를 받는다.
13C12-PCB-077	92	
13C12-PCB-123	87	
13C12-PCB-118 13C12-PCB-114	83. 13. 1	
13C12-PCB-105	90 94	
13C12-PCB-126	94	보인으로 통일로 보다 어른 말을 먹다 하는 그 때로 등했
13C12-PCB-167	79	
13C12-PCB-156/157	<b></b>	
13C12-PCB-169 13C12-PCB-189	[12] 14 - 14 - 14 - 14 - 14 - 14 - 14 - 14	
13C12-7CB-107	75	
Field Spike Standards		
13C12-PCB-031		F. B. B. B. 다른 다른 다른 다른 다른 경우를 받는 것 같다.
13C12-PCB-095	NS	
13C12-PCB-153	NS .	
Cleanup Standards		
13C12-PCB-028		
13C12-PCB-111	. 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 1948 - 194	
13C12-PCB-178	<b>72</b>	
Toxic Equivalency - (WHO 2005)	pg	
Lower Bound PCB TEQ Mid Point PCB TEQ	0.000549	
Upper Bound PCB TEQ	1.05 2.10	
4 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :	보고 보고 있는 경우를 가고 있다. 함께 가고 있다.	

ALS Life Sciences						
\$\$7.3 (\$6000) \$6500 (\$1870 \$1000) \$6500 (\$1870	Samı	ole Analysis Summary Report				
Sample Name	Laboratory Control Sample					
	Sample					
ALS Sample ID	WG3444637-2					
Sample Size	1					
Sample size units	n/a					
Percent Moisture	n/a	그는 이름을 모르는 가루를 보고 말했다는 그 그를 된다고 있는데 그리다고 말했다.				
Sample Matrix	QC					
Sampling Date	n/a					
Extraction Date	25-Nov-20					
Target Analytes	% Rec					
PCB-081	95					
PCB-077	94					
PCB-123	95					
PCB-118	95					
**************************************	A 18 A 18 A 18 A 18 A 18 A 18 A 18 A 18					
PCB-105 PCB-126	89					
PCB-120 PCB-167	94 91					
PCB-156/157	93					
PCB-169	94					
PCB-189	97					
그 시간 사람들은 사람들이 없다.						
Extraction Standards	% Rec					
13C12-PCB-081	81					
13C12-PCB-077	84					
13C12-PCB-123	90					
13C12-PCB-118	90					
13C12-PCB-114	93					
13C12-PCB-105	96					
13C12-PCB-126 13C12-PCB-167	99 96					
13C12-PCB-167	96 98					
13C12-PCB-169	125					
13C12-PCB-189	135					
Field Spike Standards						
The Spine Stainer						
13C12-PCB-031	NS					
13C12-PCB-095	NS					
13C12-PCB-153	NS					
Cleanup Standards						
13C12-PCB-028	62					
13C12-PCB-026	74					
13C12-PCB-178	7 <b>5</b>					

## **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1 Sampling Date 11-Nov-20 ALS Sample ID L2529311-1 Extraction Date 25-Nov-20 Approved: Analysis Method Analysis Type EPA 1668C Sample Size Percent Moisture sample 5. Jin --e-signature--Sample n/a Stack Sample Matrix Solit Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210409 Run Date 10-Dec-20 21:13 Final Volume 25 - 11 Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags LQL pg pg PCB-081 0.0003 NotFnd <27 27 Ū 300 PCB-077 0.0001 22.13 66,9 28 Μ,3 300 PCB-123 0.00003 NotFnd <27 27 U 300 PCB-118 0.00003 23.26 859 26 300 PCB-114 0.00003 23.55 30.6 22 M,J 300 PCB-105 0.00003 23.91 251 22 300 PCB-126 0.1 NotFnd <25 25 υ 300 PCB-167 0.00003 26.39 27.2 16 1 300 PCB-156/157 0.00003 27.00 79.8 23 M,J 600 PCB-169 0.03 28.67 31.4 17 M,J 300 PCB-189 0.00003 29.95 37.4 11 300 Extraction Standards pg Time % Rec Limits 13C12-PCB-081 12000 21.81 74 10-145 13C12-PCB-077 12000 22.11 75 10-145 13C12-PCB-123 12000 23.07 73 10-145 13C12-PCB-118 12000 23.24 72 10-145 13C12-PCB-114 12000 23.55 85 10-145 13C12-PCB-105 12000 23.90 87 10-145 13C12-PCB-126 12000 25.50 93 10-145 13C12-PCB-167 12000 26.37 77 10-145 13C12-PCB-156/157 24000 27.01 75 10-145 13C12-PCB-169 12000 28.66 88 10-145 13C12-PCB-189 12000 88 10-145 29.93 Field Spike Standards 13C12-PCB-031 10000 15.81 89 70-130 13C12-PCB-095 10000 19.11 95 70-130 13C12-PCB-153 10000 85 70-130 24.16 Cleanup Standards 13C12-PCB-028 12000 15.99 50 5-145 13C12-PCB-111 12000 22.00 64 10-145 13C12-PCB-178 12000 25.04 66 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TEO 0.987 Mid Point PCB TEQ 2.24 Upper Bound PCB TEQ 3.50 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

TEQ

Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

Indicates that the analyte was positively identifed. The associated numerical result is an estimate.

Indicates the Toxic Equivalency

TEF

LQL

EMPC

M

Indicates the Toxic Equivalency Factor

Indicates that a peak has been manually integrated.

Indicates that this compound was not detected above the EDL.

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1 Sampling Date 11-Nov-20 ALS Sample ID L2529311-2 Extraction Date 25-Nov-20 Approved; Analysis Method EPA 1668C Sample Size Percent Moisture sample S. Jin --e-signature--Analysis Type Sample n/a Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210A10 Run Date 10-Dec-20 21:55 Final Volume 25 111 Dilution Factor 1 pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags LQL pg .pg ₽CB-081 0.0003 NotFnd <26 26 u 300 0.0001 PCB-077 22.13 213 27 . 3 300 PCB-123 0.00003 23.07 135 35 M,J 300 PCB-118 0.00003 23.26 6370 32 300 PCB-114 0.00003 23.56 181 29 M,3 300 PCB-105 0.00003 23.93 2070 30 300 PCB-126 0.1 3% 25.52 <35 35 M,U 27 300 PCB-167 0.00003 26.38 85.8 19 Ü ้ากก PCB-156/157 0.00003 27.01 330 26 ij 600 PCB-169 0.03 28.69 32.5 20 М,3 300 PCB-189 0.00003 29.96 42.6 12 300 Extraction Standards pg Time % Rec Limits 13C12-PCB-081 12000 21.81 93 10-145 13C12-PCB-077 12000 22.12 96 10-145 13C12-PCB-123 12000 23.08 92 10-145 13C12-PCB-118 12000 23.25 93 10-145 13C12-PCB-114 12000 23.55 108 10-145 13C12-PCB-105 12000 23.91 107 10-145 13C12-PCB-126 12000 25.51 113 10-145 13C12-PCB-167 12000 26.38 95 10-145 13C12-PCB-156/157 24000 27.02 98 10-145 13C12-PCB-169 12000 28.67 112 10-145 13C12-PCB-189 12000 29.93 114 10-145 Field Spike Standards 13C12-PCB-031 10000 15.82 94 70-130 13C12-PCB-095 10000 84 70-130 19.12 13C12-PCB-153 10000 89 70-130 24.17 Cleanup Standards 13C12-PCB-028 12000 15.99 56 5-145 13C12-PCB-111 12000 22.01 73 10-145 13C12-PCB-178 12000 25.04 88 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TEO 1.27 Mid Point PCB TEQ 3,03 Upper Bound PCB TEQ 4.78 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Indicates that a peak has been manually integrated. M U Indicates that this compound was not detected above the EDL. Indicates that the analyte was positively identified. The associated numerical result is an estimate, EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1 Sampling Date 12-Nov-20 ALS Sample ID L2529311-3 Extraction Date 25-Nov-20 Approved: Analysis Method Analysis Type EPA 1668C Sample Sample Size Percent Moisture sample S. Jin n/a --e-signature--Sample Matrix Stack Solit Ratio 12 11-Dec-2020 Run 1 Filename 5-201210A11 Run Date 10-Dec-20 22:38 Final Volume 25 ul Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags LQL pg pg PCB-081 0.0003 NotFnd <27 27 U 300 PCB-077 0.0001 22.14 <63 28 M,J,R .63 300 PCB-123 0.00003 23.07 <27 27 M,U 300 PCB-118 0.00003 23.26 1010 26 300 PCB-114 0.00003 NotFnd <22 22 U 300 PCB-105 0.00003 23.93 331 25 300 PCB-126 0.1 NotFnd 27 U <27 300 PCB-167 0.00003 NotFnd <17 17 ΉJ 300 PCB-156/157 0.00003 27,03 55.0 24 M.J 600 PCB-169 0.03 28.66 <23 19 M, J, R 23 300 PCB-189 0.00003 29,96 24.3 15 300 **Extraction Standards** Time % Rec Limits pq 13C12-PCB-081 12000 21.81 54 10-145 13C12-PCB-077 12000 22.12 55 10-145 13C12-PCB-123 12000 23.08 55 10-145 13C12-PCB-118 12000 52 10-145 23,25 13C12-PCB-114 12000 23.55 62 10-145 13C12-PCB-105 12000 61 10-145 23.91 13C12-PCB-126 12000 25.50 67 10-145 13C12-PCB-167 12000 26.37 56 10-145 13C12-PCB-156/157 24000 27.02 55 10-145 13C12-PCB-169 12000 28.67 64 10-145 13C12-PCB-189 12000 29.93 62 10-145 Field Spike Standards 13C12-PCB-031 10000 15.82 92 70-130 13C12-PCB-095 10000 19.12 94 70-130 13C12-PCB-153 10000 24.17 88 70-130 Cleanup Standards 13C12-PCB-028 12000 16.00 41 5-145 13C12-PCB-111 12000 22.00 10-145 53 13C12-PCB-178 25.04 54 10-145 Toxic Equivalency - (WHO 2005) pq Lower Bound PCB TEQ 0.0426 Mid Point PCB TEQ 2.09 Upper Bound PCB TEQ 3.45 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Indicates that a peak has been manually integrated. . U Indicates that this compound was not detected above the EDL. Indicates that the analyte was positively identifed. The associated numerical result is an estimate. Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration, EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(16 THRU 20) BLANK#1 Sampling Date 12-Nov-20 ALS Sample ID Extraction Date 25-Nov-20 Approved: Analysis Method Analysis Type EPA 1668C Sample Size Percent Moisture 1 n/a sample S. Jin -e-signature--Sample Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210A07 Run Date 10-Dec-20 19:49 Final Volume 25 ul Dilution Factor 1 Analysis Units pq Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg pg Flags pg LQL PCB-081 0.0003 NotEnd <22 22 11 300 PCB-077 0.0001 NotFnd. <23 23 U 300 PCB-123 0.00003 NotFnd <27 27 υ 300 PCB-118 0.00003 23.26 61.5 26 м,ј,в 300 PCB-114 0.00003 NotFnd <21 21 300 PCB-105 0.00003 NotFnd <21 21 υ 300 PCB-126 0.1 NotFnd <24 24 υ 300 PCB-167 0.00003 NotFnd <13 13 υ 300 PCB-156/157 0.00003 NotFnd <19 19 600 PCB-169 0.03 NotFnd <15 15 υ 300 PCB-189 0.00003 NotFnd <11 11 300 **Extraction Standards** Time % Rec Limits 13C12-PCB-081 12000 21.82 68 10-145 13C12-PCB-077 12000 22.13 71 10-145 13C12-PCB-123 12000 23.08 69 10-145 13C12-PCB-118 12000 23.25 67 10-145 13C12-PCB-114 12000 23.55 81 10-145 13C12-PCB-105 12000 23.91 82 10-145 13C12-PCB-126 12000 25.51 92 10-145 13C12-PCB-167 12000 26.38 68 10-145 13C12-PCB-156/157 24000 27.02 68 10-145 13C12-PCB-169 12000 28.67 75 10-145 13C12-PCB-189 12000 29.93 79 10-145 Field Spike Standards 13C12-PCB-031 10000 15.82 119 70-130 13C12-PCB-095 10000 19.12 87 70-130 13C12-PCB-153 10000 24.17 92 70-130 Cleanup Standards 13C12-PCB-028 12000 16.00 64 5-145 13C12-PCB-111 12000 22.01 77 10-145 13C12-PCB-178 12000 25.05 67 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TFO 0.00185 Mid Point PCB TEO 1.43 Upper Bound PCB TEO 2.86 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. M Indicates that a peak has been manually integrated. U Indicates that this compound was not detected above the EDL. ر Indicates that the analyte was positively identifed. The associated numerical result is an estimate. В Indicates that this target was detected in the blank at greater than 10% of the sample concentration. EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2 Sampling Date 11-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-5 Extraction Date 25-Nov-20 Approved: EPA 1668C Sample Sample Size Percent Moisture sample S. Jin n/a --e-signature--Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210A12 Run Date 10-Dec-20 23:20 Final Volume 25 ul Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time LQL pg Flags pg P9 PCB-081 0.0003 NotFnd <27 27 U 300 PCB-077 0.0001 22.13 70.8 28 300 PCB-123 0.00003 23.09 25.7 16 М,3 300 PCB-118 0.00003 23,26 1780 15 300 PCB-114 0.00003 23,55 40.9 13 M,J 300 PCB-105 0.00003 23.91 456 14 300 PCB-126 0.1 25.52 <15 15 M,U 9.3 300 0.00003 PCB-167 26.39 27.6 8.0 1 300 PCB-156/157 0.00003 27.01 79.5 11 600 PCB-169 0.03 28.70 <B,3 8.3 M.U 7.1 300 PCB-189 0.00003 29.95 18.9 6.6 M,J 300 Extraction Standards Time po % Rec Limits 13C12-PCB-081 12000 79 10-145 21.81 13C12-PCB-077 12000 22.11 82 10-145 13C12-PCB-123 12000 23.08 82 10-145 13C12-PCB-118 12000 23,25 79 10-145 13C12-PCB-114 12000 23.55 97 10-145 13C12-PCB-105 12000 23.90 96 10-145 13C12-PCB-126 12000 25.50 99 10-145 13C12-PCB-167 12000 26.38 87 10-145 13C12-PCB-156/157 24000 27.02 87 10-145 13C12-PCB-169 12000 100 10-145 28.67 13C12-PCB-189 12000 29.93 99 10-145 Field Spike Standards 13C12-PCB-031 10000 15.82 93 70-130 13C12-PCB-095 10000 19.11 89 70-130 13C12-PCB-153 10000 91 70-130 24.17 Cleanup Standards 13C12-PCB-028 12000 15.99 46 5-145 13C12-PCB-111 12000 22.00 10-145 73 13C12-PCB-178 12000 85 25.04 10-145 Toxic Equivalency - (WHO 2005) pq Lower Bound PCB TEQ 0.0799 Mid Point PCB TEQ 0.958 Upper Bound PCB TEQ 1.84 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEO Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the EDL. Indicates that the analyte was positively identifed. The associated numerical result is an estimate. EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2 Sampling Date 11-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-6 25-Nov-20 Extraction Date Approved: **EPA 1668C** Sample Size Percent Moisture sample S. Jin --e-signature-n/a Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210A13 Run Date 11-Dec-20 00:02 Final Volume 25 ul Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags LQL pg pg PCB-081 0.0003 NotFnd <24 24 ·U 300 PCB-077 0.0001 22.10 226 25 M,3 300 PCB-123 0.00003 23.06 84.7 26 Μ,3 300 PCB-118 0.00003 23.25 4710 25 300 PCB-114 0.00003 23.55 118 22 3 300 PCB-105 0.00003 23.91 1350 22 300 PCB-126 0.1 NotFnd <26 26 U 300 PCB-167 0.00003 < 50 26.38 16 J,R 50 300 PCB-156/157 0.00003 27.01 142 23 ij 600 PCB-169 0.03 NotFnd <17 17 ·U 300 PCB-189 0.00003 29.93 15.0 12 M,3 300 Extraction Standards PG Time % Rec Limits 13C12-PCB-081 12000 21.80 70 10-145 13C12-PCB-077 12000 22.11 73 10-145 13C12-PCB-123 12000 23.07 71 10-145 13C12-PCB-118 12000 23.24 69 10-145 13C12-PCB-114 12000 23.54 82 10-145 13C12-PCB-105 12000 23.90 82 10-145 13C12-PCB-126 12000 25,50 88 10-145 13C12-PCB-167 12000 26.37 75 10-145 13C12-PCB-156/157 24000 27.01 74 10-145 13C12-PCB-169 12000 28.66 86 10-145 13C12-PCB-189 12000 29.92 83 10-145 Field Spike Standards 10000 13C12-PCB-031 15.81 84 70-130 13C12-PCB-095 10000 19.10 91 70-130 13C12-PCB-153 10000 24.16 86 70-130 Cleanup Standards 13C12-PCB-028 12000 15.98 42 5-145 13C12-PCB-111 12000 21.99 10-145 64 13C12-PCB-178 12000 25.04 66 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TEQ 0.215 Mid Point PCB TEQ 1.78 Upper Bound PCB TEQ 3.33 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Indicates that a peak has been manually integrated. U Indicates that this compound was not detected above the EDL. j Indicates that the analyte was positively identified. The associated numerical result is an estimate. Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration. EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2 Sampling Date 12-Nov-20 ALS Sample ID L2529311-7 Extraction Date 25-Nov-20 Approved: EPA 1668C Sample Analysis Method Analysis Type Sample Size Percent Moisture sample S. Jin --e-signature-n/a Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run 1 Filename 5-201210A14 Run Date 11-Dec-20 00:44 Final Volume 25 ul Dilution Factor :1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time LQL pg Flags Pg pg PCB-081 0.0003 NotFnd < 25 25 U 300 PCB-077 0.0001 22.12 194 26 3 300 PCB-123 0.00003 23.09 76.9 42 3 300 PCB-118 0.00003 23.25 5080 38 M. 300 PCB-114 0.00003 23.55 35 144 M,3 300 PCB-105 0.00003 23.91 2240 36 300 PCB-126 0.1 NotFnd <39 39 U 300 0.00003 PCB-167 26.38 177 16 ٠ ۲ 300 PCB-156/157 0.00003 27.01 617 23 600 PCB-169 0.03 28.66 <18 18 M.U 14 300 PCB-189 0.00003 29,93 40.9 12 M,J 300 Extraction Standards Time Dα % Rec Limits 13C12-PCB-081 12000 21,80 64 10-145 13C12-PCB-077 12000 22.11 65 10-145 13C12-PCB-123 12000 23.07 64 10-145 13C12-PCB-118 12000 23.24 64 10-145 13C12-PCB-114 12000 23.54 73 10-145 13C12-PCB-105 12000 23,90 72 10-145 13C12-PCB-126 12000 25.50 81 10-145 13C12-PCB-167 12000 26.37 67 10-145 13C12-PCB-156/157 24000 27.01 66 10-145 13C12-PCB-169 12000 28.66 73 10-145 13C12-PCB-189 12000 29,93 77 10-145 Field Spike Standards 13C12-PCB-031 10000 15.81 88 70-130 13C12-PCB-095 10000 19.11 88 70-130 13C12-PCB-153 10000 82 70-130 24.16 Cleanup Standards 13C12-PCB-028 12000 15.99 5-145 44 13C12-PCB-111 12000 21.99 10-145 59 13C12-PCB-178 12000 25.04 64 10-145 Toxic Equivalency - (WHO 2005) pq Lower Bound PCB TEQ 0.271 Mid Point PCB TEQ 2.49 Upper Bound PCB TEQ 4.72 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. Indicates that a peak has been manually integrated. U Indicates that this compound was not detected above the EDL. Indicates that the analyte was positively identifed. The associated numerical result is an estimate.

Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

EMPC

# **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(36 THRU 40) BLANK#2 Sampling Date 12-Nov-20 ALS Sample ID Analysis Method Analysis Type L2529311-8 Extraction Date 25-Nov-20 Approved: **EPA 1668C** Sample Size Percent Moisture S. Jin -e-signature-Sample n/a Sample Matrix Stack Split Ratio 12 11-Dec-2020 Run Information Run 1 Filename 5-201210408 Run Date 10-Dec-20 20:31 Final Volume 25 10 Dilution Factor 1 Analysis Units pg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC Target Analytes (WHO 2005) Time pg Flags pg pg LQL PCB-081 0.0003 NotFnd <22 22 u 300 PCB-077 0.0001 22.14 33.2 23 М,Э 300 PCB-123 0.00003 NotFnd <29 29 U 300 PCB-118 0.00003 23.26 680 28 300 PCB-114 0.00003 NotFnd <23 23 U 300 PCB-105 0.00003 23.93 304 23 300 PCB-126 0.1 NotFnd <26 26 Ð 300 PCB-167 0.00003 26.39 51.4 20 м,3 300 PCB-156/157 0.00003 27.01 144 28 600 PCB-169 0.03 NotFnd <22 22 υ 300 PCB-189 0.00003 29.93 20.2 8.9 300 Extraction Standards pg Time % Rec Limits 13C12-PCB-081 12000 21.82 70 10-145 13C12-PCB-077 12000 22.12 69 10-145 13C12-PCB-123 12000 23.08 70 10-145 13C12-PCB-118 12000 23.25 68 10-145 13C12-PCB-114 12000 23,55 83 10-145 13C12-PCB-105 12000 23.91 83 10-145 13C12-PCB-126 12000 25,51 90 10-145 13C12-PCB-167 12000 26.38 69 10-145 13C12-PCB-156/157 24000 27.02 69 10-145 13C12-PCB-169 12000 28.67 79 10-145 13C12-PCB-189 12000 29.93 81 10-145 Field Spike Standards 13C12-PCB-031 10000 15.82 95 70-130 13C12-PCB-095 10000 19.12 85 70-130 13C12-PCB-153 10000 24.17 92 70-130 Cleanup Standards 13C12-PCB-028 12000 16.00 49 5-145 13C12-PCB-111 12000 22.01 64 10-145 13C12-PCB-178 12000 25.05 59 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TEQ 0.0393 Mid Point PCB TEQ 1.67 Upper Bound PCB TEQ 3.31 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample. TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions. М Indicates that a peak has been manually integrated. υ Indicates that this compound was not detected above the EDL. Indicates that the analyte was positively identified. The associated numerical result is an estimate. EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# **ALS Life Sciences** Laboratory Method Blank Analysis Report Sample Name Method Blank Sampling Date n/a ALS Sample 1D WG3444637-1 Extraction Date 25-Nov-20 Approved: EPA 1668C Blank Analysis Method Analysis Type Sample Size Percent Moisture samole S. Jin -e-signature n/a Sample Matrix QC Split Ratio 12 11-Dec-2020 Run 1 Filename 5-201211A05 Run Date 11-Dec-20 10:37 Final Volume 25 ul Dilution Factor 1 Analysis Units рg Instrument - Column HRMS-5 SPBOctyl 256001-01 TEF Ret. Conc. EDL EMPC **Target Analytes** (WHO 2005) Time pg Flags LQL Pg pg PCB-081 0.0003 NotFnd <12 12 U 300 PCB-077 0.0001 NotFnd. <12 12 U 300 PCB-123 0.00003 NotFnd <14 14 U 300 PCB-118 0.00003 23.27 18.3 14 M,3 300 PCB-114 0.00003 NotFnd <14 14 U 300 PCB-105 0.00003 NotEnd <14 14 Ù 300 PCB-126 0.1 NotFnd <17 17 Ù. 300 PCB-167 0.00003 NotEnd <11 11 41 300 PCB-156/157 0.00003 NotFnd <16 16 U 600 PCB-169 0.03 NotFnd <13 13 U 300 PCB-189 0.00003 NotFnd <10 10 300 Extraction Standards pg Time % Rec Limits 13C12-PCB-081 12000 21.82 89 10-145 13C12-PCB-077 12000 22.13 92 10-145 13C12-PCB-123 12000 23.09 87 10-145 13C12-PCB-118 12000 23.26 83 10-145 13C12-PCB-114 12000 23.56 90 10-145 13C12-PCB-105 12000 23.93 94 10-145 13C12-PCB-126 12000 25.52 94 10-145 13C12-PCB-167 12000 26.38 79 10-145 13C12-PCB-156/157 24000 27.03 77 10-145 13C12-PCB-169 12000 28.69 84 10-145 13C12-PCB-189 12000 29,95 75 10-145 Field Spike Standards 13C12-PCB-031 NS 70-130 13C12-PCB-095 NS 70-130 13C12-PCB-153 NS 70-130 Cleanup Standards 13C12-PCB-028 12000 16.01 70 5-145 13C12-PCB-111 12000 22.02 10-145 77 13C12-PCB-178 12000 25.05 72 10-145 Toxic Equivalency - (WHO 2005) pg Lower Bound PCB TEQ 0.000549 Mid Point PCB TEQ 1.05 Upper Bound PCB TEQ 2.10 EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

TEQ

Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

Indicates that the analyte was positively identifed. The associated numerical result is an estimate,

Indicates the Toxic Equivalency

TEF

LQL

M

υ

NS

EMPC

Indicates the Toxic Equivalency Factor

Indicates that a peak has been manually integrated.

Indicates that this compound was not added.

Indicates that this compound was not detected above the EDL.

# **ALS Life Sciences**

# **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type

Sample Matrix

Laboratory Control Sample

WG3444637-2 EPA 1668C LCS QC

Sampling Date Extraction Date Sample Size Percent Moisture

Split Ratio

n/a 25-Nov-20 n/a 1 n/a

1

Approved: S. Jin --e-signature--11-Dec-2020

Run Information

Run 1 Filename 5-201210A03 Run Date 10-Dec-20 17:00 Final Volume 25 ul Dilution Factor 1

Analysis Units % Rec

Instrument - Column HRMS-5 SPBOctyl 256001-01

et Analytes		Ret.		
et Analytes	pg	Time	% Rec Flags	
PCB-081	6000	21.84	95 60-135	
PCB-077	6000	22.15		
PCB-123	6000	23.10	<ul> <li>400.135</li> <li>40.135</li> <li>40.135</li> <li>40.135</li> <li>40.135</li> <li>40.135</li> <li>40.135</li> </ul>	
PCB-118	6000	23.27	95 60-135	
PCB-114	6000	23.58	91 60-135	
PCB-105	6000	23.94	89 60-135	
PCB-126	6000	25.53	94 60-135	
PCB-167	6000	26.40	91 60-135	
PCB-156/157	12000	27.04	93 60-135	
PCB-169	6000	28.70	94 60-135	
PCB-189	6000	29.96	97 60-135	
		23.30		
Extraction Standards		Time	% Rec Limits	
13C12-PCB-081	12000	21.83	81 40-145	
13C12-PCB-077	12000	22.13	84 40-145	
13C12-PCB-123	12000	23.09	90 40-145	
13C12-PCB-118	12000	23.26	90 40-145	
13C12-PCB-114	12000	23.56	93 40-145	
13C12-PCB-105	12000	23.93	96 40-145	
13C12-PCB-126	12000	25.52	99 40-145	
13C12-PCB-167	12000	26.39	96 40-145	
13C12-PCB-156/157	24000	27.03	98 40-145	
13C12-PCB-169	12000	28,69	125 40-145	
13C12-PCB-189	12000	29.95	135 40-145	
Field Spike Standards				
			추천병원을 보고 되어 되는 데에 관심을 보고 아직하는 그를 하는 것이다. 그는 그는 그는 것은 사람들은 그리	
13C12-PCB-031			NS 70-130	
13C12-PCB-095			(1) NS 70-130 (1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
13C12-PCB-153			HINS 70-130 ( )	
Cleanup Standards				
13C12-PCB-028	12000	16.01		
13C12-PCB-111	12000	22.02	열등74/40-145 - 본스 방문 등 본 등 발문 사람들은 항 가장을 받아 할 수 있는 모양을 받았는데 된 장상 가는 장상 전문이 달라고 있었다.	
13C12-PCB-178	12000	25.06		

NS

Indicates that this compound was not added.



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#: L2529311 Date of Report 8-Dec-20

Date of Sample Receipt 13-Nov-20

Client Name: C

ORTECH Environmental 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore
Client Project ID: 22050 Covanta

COMMENTS:

CB by LRGC/MS - Isotope dilution

Certified by:

Ron McLeod, Ph.D, Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

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		Sample Analysis Summary R	eport			
Sample Name	Method Blank (Media)	20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1	20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC- (16 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1	L2529311-1	L2529311-2	L2529311-3	L2529311-4	ĤΉ
Sample Size		그리아 얼마 얼마 그리는 얼마를 가셨다.				
sample units	sample	sample	sample	sample	sample	10.3
Moisture Content	n/a	n/a	n/a	n/a	n/a	
Matrix	QC	Stack	Stack		Stack	
Sampling Date	n/a	11-Nov-20	11-Nov-20	12-Nov-20	12-Nov-20	
Extraction Date	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	25-Nov-20	
Target Analytes	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	
Chlorobenzene	<b>&lt;12</b> .	U 3120	4210	3240	<12	
1,3-Dichlorobenzene	<12	U 588	564	722	<12	
1,4-Dichlorobenzene	<12	U 419	360	443	<12	
1,2-Dichlorobenzene	<12	U 485	474	586	<12	
1,3,5-Trichlorobenzene	<12		65	M	<b></b>	
1,2,4-Trichiorobenzene	<12	U 164	179	281	<12	
1,2,3-Trichlorobenzene	<12	U 49.7	51.4	59	<12	ı i
1,2,3,5/1,2,4,5-Tetrachloroben:		U 37.3	36.5	43.4	<12	
1,2,3,4-Tetrachlorobenzene	<12	U <12	U <12	U <12	U <12	ι
Pentachiorobenzene	<12	Ų <12	U 13.2	<12	U <12	···U
Hexachlorobenzene	<12	U <12	U <12	U <12	U <12	· U
Field Sampling Standards	%Rec	%Rec	%Rec	%Rec	%Rec	
1-Bromo-2,3-Dichlorobenzene	NS	107	99	110	107	
Extraction Standards	%Rec	%Rec	%Rec	%Rec	%Rec	
13C6-Chlorobenzene	31	19	19	23	27	
13C6-1,4-Dichlorobenzene	57	48	55	46	51	
13C6-1,2,3-Trichlorobenzene	65	58	69	.58	62	
13C6-1,2,3,4-Tetrachlorobenze		66	67	69	76	
	87	66 70	76	77	83	
13C6-Pentachlorobenzene 13C6-Hexachlorobenzene	101				91	

		1 + 41 (1 + 41 <b>V</b>	ALS Life Sciences					
		Sample	Analysis Summary Re	eport				
Sample Name	20-22050-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2	20-22050-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2	20-22050-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2		20-220S0-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample (300ng)	Laboratory Control Sample (30ng)
LS Sample ID	L2529311-5	L2529311-6	£2529311-7		L2529311-8		WG3444637-2	WG3444637-5
ample Size								1
ample units	sample	sample	sample		sample		n/a	n/a
oisture Content	п/а	n/a	n/a		n/a		n/a	n/a
atrix	Stack	Stack	Stack		Stack		QC	QC
ampling Date	11-Nov-20	11-Nov-20	12-Nov-20		12-Nov-20		n/a	n/a
xtraction Date	25-Nov-20	25-Nov-20	25-Nov-20		25-Nov-20		25-Nov-20	25-Nov-20
arget Analytes	ng/sample	ng/sample	ng/sample		ng/sample		% Recovery	% Recovery
hlorobenzene	1950	1970	1430		<12	U	NS	NS
3-Dichlorobenzene	188	198	144		<12	U	113	120
4-Dichlorobenzene	133	128	91.8		<12	U	108	111
,2-Dichlorobenzene	141	148	109		<12	U	115	116
,3,5-Trichlorobenzene	23.9	19.3	18.1		<12	U	94	109
,2,4-Trichlorobenzene	42.9	45.1	35		<12	U	90	103
,2,3-Trichlorobenzene	20.5	20.2	22	M	<12	U	93	109
,2,3,5/1,2,4,5-Tetrachlorobenzene		M <12	U <12	U	<12	U	111	135
,2,3,4-Tetrachlorobenzene		U <12	U . <12	U	<12	U	110	111
entachlorobenzene		U <12	U <12	U	<12	U	115	103
iexachlorobenzene	<12	U <12	U <12	U	<12	U	113	103
ield Sampling Standards	%Rec	%Rec	%Rec		%Rec		%Rec	%Rec
-Bromo-2,3-Dichlorobenzene	100	95	93		102		NS	NS
xtraction Standards	%Rec	%Rec	%Rec		%Rec		%Rec	%Rec
3C6-Chlorobenzene	22	29	31		26		24	30
3C6-1,4-Dichlorobenzene	51	58	63		52		58	47
3C6-1,2,3-Trichlorobenzene	65	. 69	73		. 65		80	56
3C6-1,2,3,4-Tetrachlorobenzene	82	69	77		74		86	59
3C6-Pentachlorobenzene 3C6-Hexachlorobenzene	91 93	76 77	84 86		81 88		90 111	66 89

Indicates that this compound was not detected above the LOD. Indicates that a peak has been manually integrated. Indicates that this compound was not spiked in

U M NS

### Sample Analysis Report

Sample Name ALS Sample ID **Analysis Method**  Method Blank (Media)

WG3444637-1 SIM GC/MS sample

Analysis Type Sample Matrix Sample Size QC 1 sample n/a 6 Percent Moisture Split Ratio

Sampling Date Extraction Date

n/a 25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120706.D 12/7/2020 15:39 mL ng/sample

MSD-2 HP-5MS US0411816H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Chlorobenzene	NotFnd	<12	U
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.88	<12	.U
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U
Hexachlorobenzene	NotFnd	<12	υ
Extraction Standards		%Rec	
13C6-Chlorobenzene	300 459	21	

Extraction Standards			%Rec
13C6-Chlorobenzene	300	4.59	31
13C6-1,4-Dichlorobenzene	300	6.88	57
13C6-1,2,3-Trichlorobenzene	300	9.26	65
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	77
13C6-Pentachlorobenzene	300	12.33	87
13C6-Hexachlorobenzene	300	13.97	101

#### Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1

Sampling Date Extraction Date 11-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size

L2529311-1 SIM GC/MS sample

Stack 1 sample Approved: Andrew Reid --e-signature--08-Dec-2020

Percent Moisture Split Ratio

Analysis Units

Instrument

n/a 6 **Run Information** Filename Run Date Final Volume Dilution Factor

Run 1 20120710.D 12/7/2020 17:03 mL ng/sample MSD-2

Column HP-5MS US0411816H

Target Analytes	Ret Tin		n de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La <b>Flags</b>
Chlorobenzene		4.58 3120	
1,3-Dichlorobenzene		5.81 588	
1,4-Dichlorobenzene		5.89 419	
1,2-Dichlorobenzene		7.17 485	
1,3,5-Trichlorobenzene		3.34 64.6	
1,2,4-Trichlorobenzene		3.86 164	
1,2,3-Trichlorobenzene		9.27 49.7	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	1	37.3	
1,2,3,4-Tetrachlorobenzene	1	0.98 <12	
Pentachlorobenzene	1	2.32 <12	
Hexachlorobenzene	1	3.95 <12	gw 그리 그 시험으로 보임되었다. 그 사는 사고를 가는 보고 본 없는 수
Field Sampling Standards	ng spiked	%Rec	
1-Bromo-2,3-Dichlorobenzene	600 1	0.28 107	
Extraction Standards		%Rec	
13C6-Chlorobenzene	300	1.58 19 1	<b>,</b> 하는 항상 등은 전쟁을 하고 있다는 아이트 아이는 하는 것은 것을 하는 것은 것을 받았다.
13C6-1,4-Dichlorobenzene	300	5.89 48	
13C6-1,2,3-Trichlorobenzene	300	9.26 58	
13C6-1,2,3,4-Tetrachlorobenzene	300 1	).98 66	
13C6-Pentachlorobenzene	300 1	2.32 66	보통 회사 경찰으로 보는 사람들은 그는 그는 그 그는 그는 그를 모르고 말했다.
13C6-Hexachlorobenzene	300 1	3.96 70	

M U

Indicates that a peak has been manually integrated.

### Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1 L2529311-2

Sampling Date Extraction Date 11-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size

Percent Moisture

Split Ratio

SIM GC/MS sample Stack 1

sample

n/a 6

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120711.D 12/7/2020 17:23 mL ng/sample MSD-2

HP-5MS US0411816H

Target Analytes		Ret. Time	Concentration ng/sample Flags
Chlorobenzene		4.58	4210
1,3-Dichlorobenzene		6.81	564
1,4-Dichlorobenzene		6.89	360
1,2-Dichlorobenzene		7.18	474
1,3,5-Trichlorobenzene		8.34	65 M
1,2,4-Trichlorobenzene		8.86	179
1,2,3-Trichlorobenzene		9.27	51.4
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48	36.5
1,2,3,4-Tetrachlorobenzene		10.98	<12 U
Pentachlorobenzene		12.32	13.2
Hexachlorobenzene		13.96	<12 U
Field Sampling Standards no	g spiked		%Rec
1-Bromo-2,3-Dichlorobenzene	600	10.28	99
Extraction Standards			%Rec
13C6-Chlorobenzene	300	4.58	19 M
13C6-1,4-Dichlorobenzene	300	6.89	55
13C6-1,2,3-Trichlorobenzene	300	9.26	69

300

300

300

10.98

12.32

13.96

M

Indicates that a peak has been manually integrated.

13C6-1,2,3,4-Tetrachlorobenzene

13C6-Pentachlorobenzene

13C6-Hexachlorobenzene

Indicates that this compound was not detected above the MDL.

67

76

#### Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

Split Ratio

L2529311-3 SIM GC/MS sample Stack

n/a 6

sample

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120712,D 12/7/2020 17:44 mL ng/sample MSD-2

HP-5MS US0411816H

Target Analytes		Ret. Time	Concentration ng/sample	Flags
Chlorobenzene		4.63	3240	
1,3-Dichlorobenzene		6.81	722	
1,4-Dichlorobenzene		6.89	443	
1,2-Dichlorobenzene		7.18	586	
1,3,5-Trichlorobenzene		8.34	82.1	
1,2,4-Trichlorobenzene		8.86	281	
1,2,3-Trichlorobenzene		9.27	59	
1,2,3,5/1,2,4,5-Tetrachlorobenzer	n die ee	10.48	43.4	
1,2,3,4-Tetrachlorobenzene		10.98	<12	U
Pentachlorobenzene		12.32	<12	U
Hexachlorobenzene		NotFnd	<12	υ
Field Sampling Standards	ng spiked		%Rec	
1-Bromo-2,3-Dichlorobenzene	600	10.28	110	
Extraction Standards			%Rec	
13C6-Chlorobenzene	300	4.62	23	
13C6-1,4-Dichlorobenzene	300	6.89	46	
13C6-1,2,3-Trichlorobenzene	300	9.27	58	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	69	

300

300

12.32

13.96

U

13C6-Pentachlorobenzene

13C6-Hexachlorobenzene

Indicates that this compound was not detected above the MDL.

77

## Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

Sample Matrix

20-22050-SVOC-(16 THRU 20) BLANK#1

L2529311-4 SIM GC/MS sample Stack

ock sample

Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

> Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

13C6-Chlorobenzene

13C6-1,4-Dichlorobenzene

13C6-Pentachlorobenzene

13C6-Hexachlorobenzene

13C6-1,2,3-Trichlorobenzene

13C6-1,2,3,4-Tetrachlorobenzene

Run 1 20120708.D 12/7/2020 16:21 1 mL 1 ng/sample MSD-2

HP-5MS US0411816H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Chlorobenzene	NotFno	i <12	U
1,3-Dichlorobenzene	NotFno	i <12	U
1,4-Dichlorobenzene	NotFno	i <12	U
1,2-Dichlorobenzene	NotFno	<12	U
1,3,5-Trichlorobenzene	NotFnc	<12	U
1,2,4-Trichlorobenzene	NotFno	<12	U
1,2,3-Trichlorobenzene	NotFno	<12	Ü
1,2,3,5/1,2,4,5-Tetrachlorobenzer	n NotFno	<12	υ
1,2,3,4-Tetrachlorobenzene	NotFno	i <12	U
Pentachlorobenzene	NotFno	<12	U
Hexachlorobenzene	NotFno	l <12	U
Field Sampling Standards	ng spiked	%Rec	
1-Bromo-2,3-Dichlorobenzene	600 10.2	8 107	
Extraction Standards		%Rec	

300

300

300

300

300

300

4.60

6.91

9.27

10.98

12.32

13.97

υ

Indicates that this compound was not detected above the MDL.

27

51

62

76

83

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2

Sampling Date Extraction Date

11-Nov-20 25-Nov-20

Sample Matrix Sample Size Percent Moisture

Split Ratio

L2529311-5 SIM GC/MS sample Stack 1

6

sample

n/a

Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Pentachlorobenzene

Run 1 20120713.D 12/7/2020 18:05 ng/sample MSD-2

HP-5MS US0411816H

12.19

Ret. Concentration **Target Analytes** Time ng/sample Chlorobenzene 4.59 1950 1,3-Dichlorobenzene 6.81 188 1,4-Dichlorobenzene 6.89 133 1,2-Dichlorobenzene 7.18 141 1,3,5-Trichlorobenzene 8.34 23.9 1,2,4-Trichlorobenzene 8.86 42.9 1,2,3-Trichlorobenzene 9.26 20.5 1,2,3,5/1,2,4,5-Tetrachlorobenzen 10.49 17.8 M 1,2,3,4-Tetrachlorobenzene 10.94 <12 U

Hexachlorobenzene		13.59	<12 U
Field Sampling Standards	ng spiked		%Rec
1-Bromo-2,3-Dichlorobenzene	600	10.28	100
Extraction Standards			%Rec
13C6-Chlorobenzene	300	4.59	22
13C6-1,4-Dichlorobenzene	300	6.89	51
13C6-1,2,3-Trichlorobenzene	300	9.27	65
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	82
13C6-Pentachiorobenzene	300	12.32	91
13C6-Hexachlorobenzene	300	13.96	93

M

Indicates that a peak has been manually integrated.

Indicates that this compound was not detected above the MDL.

<12 U

### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method 20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2

Sampling Date Extraction Date

11-Nov-20 25-Nov-20

Analysis Type Sample Matrix Sample Size Percent Moisture

Split Ratio

L2529311-6 SIM GC/MS sample Stack 1

sample

n/a

Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120714.D 12/7/2020 18:26 mL ng/sample

MSD-2

HP-5MS US0411816H

Target Analytes		Ret. Time	Concentration ng/sample	of the first of the first of the first state of the
Chlorobenzene		4.60	1970	
1,3-Dichlorobenzene		6.81	198	
1,4-Dichlorobenzene		6.89	128	
1,2-Dichlorobenzene		7.18	148	
1,3,5-Trichlorobenzene		8.34		
1,2,4-Trichlorobenzene		8.86		
1,2,3-Trichlorobenzene		9.27		
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.48		
1,2,3,4-Tetrachlorobenzene		10.98		
Pentachlorobenzene		12.32		
Hexachlorobenzene		NotFnd	1.4 7 7 7	
Field Sampling Standards	ng spiked		%Rec	생활되는 것이 얼마나 하는 사람들은 그리고 말했다.
1-Bromo-2,3-Dichlorobenzene	600	10.28	95	
Extraction Standards			%Rec	
13C6-Chlorobenzene	300	4.59	29	
13C6-1,4-Dichlorobenzene	300	6.89	58	
13C6-1,2,3-Trichlorobenzene	300	9.26	69	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	69	
13C6-Pentachlorobenzene	300	12.32	76	
13C6-Hexachlorobenzene	300	13.96		

U

### Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2 L2529311-7

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture Split Ratio SIM GC/MS sample Stack

sample

n/a 6

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

Column

Run 1 20120715.D 12/7/2020 18:46 ng/sample MSD-2

HP-5MS US0411816H

Target Analytes		Ret. Time	Concentration ng/sample	Flags
Chlorobenzene		4.59	1430	
1,3-Dichlorobenzene		6.82	144	
1,4-Dichlorobenzene		6.90	91.8	
1,2-Dichlorobenzene		7.19	109	
1,3,5-Trichlorobenzene		8.34	18.1	
1,2,4-Trichlorobenzene		8.86	35	
1,2,3-Trichlorobenzene		9.27	22 M	1 .
1,2,3,5/1,2,4,5-Tetrachlorobenzen		10.47	<12	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<12	U
Pentachlorobenzene		NotFnd	<12	U
Hexachlorobenzene		NotFnd	<12	U
Field Sampling Standards	ıg spiked		%Rec	
1-Bromo-2,3-Dichlorobenzene	600	10.28	93	
Extraction Standards			%Rec	
13C6-Chlorobenzene	300	4.59	31	
13C6-1,4-Dichlorobenzene	300	6.90	63	
13C6-1,2,3-Trichlorobenzene	300	9.27	73	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98	77	
13C6-Pentachlorobenzene	300	12.32	84	

300

13.96

M U

Indicates that a peak has been manually integrated.

13C6-Hexachlorobenzene

Indicates that this compound was not detected above the MDL.

### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

**20-22050-SVOC-(36 THRU 40) BLANK#2** L2529311-8 SIM GC/MS

sample Stack

Sample Matrix
Sample Size
Percent Moisture
Split Ratio n/a

6

**Run Information** 

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

> Approved: Andrew Reid --e-signature--08-Dec-2020

Run 1

sample

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

20120709.D 12/7/2020 16:42 mL ng/sample MSD-2 HP-5MS US0411816H

Target Analytes	Ret. Time	Concentration ng/sample	Flags
Chlorobenzene	NotFnd	<12	U.
1,3-Dichlorobenzene	NotFnd	<12	U
1,4-Dichlorobenzene	6.90	<12	U
1,2-Dichlorobenzene	NotFnd	<12	U
1,3,5-Trichlorobenzene	NotFnd	<12	U
1,2,4-Trichlorobenzene	NotFnd	<12	U
1,2,3-Trichlorobenzene	NotFnd	<12	U
1,2,3,5/1,2,4,5-Tetrachlorobenze	n NotFnd	<12	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<12	U
Pentachlorobenzene	NotFnd	<12	U :
Hexachlorobenzene	NotFnd	<12	U
Field Sampling Standards	ng spiked	%Rec	

ricia Samping Standards	ng spikeu		70KeC
1-Bromo-2,3-Dichlorobenzene	600	10.28	102 M
Extraction Standards			%Rec
13C6-Chlorobenzene	300	4.59	26
13C6-1,4-Dichlorobenzene	300	6.90	52
13C6-1,2,3-Trichlorobenzene	300	9.27	65
13C6-1,2,3,4-Tetrachlorobenzene	≥ 300	10.98	74
13C6-Pentachlorobenzene	300	12.32	81
13C6-Hexachlorobenzene	300	13.97	88

M U

Indicates that a peak has been manually integrated.

### **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type

Sample Matrix

Sample Size

Laboratory Control Sample WG3444637-2 SIM GC/MS LCS QC n/a

Sampling Date Extraction Date n/a 25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

Percent Moisture Split Ratio n/a 6

**Run Information** Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120704.D 12/7/2020 14:58 mL % MSD-2 HP-5MS US0411816H

[ 유명함 제품 등을 가는 것	Ret.		
Target Analytes	ng spiked Time %	∕o Recovery	Flags
Chlorobenzene			
1,3-Dichlorobenzene	300 6.84	113	
1,4-Dichlorobenzene	300 6.92	108	
1,2-Dichlorobenzene	300 7.20	115	
1,3,5-Trichlorobenzene	300 8.35	94	
1,2,4-Trichlorobenzene	300 8.87	90	
1,2,3-Trichlorobenzene	300 9.28	93	
1,2,3,5/1,2,4,5-Tetrachiorobenzen		111	
1,2,3,4-Tetrachlorobenzene Pentachlorobenzene	300 10.98 300 12.32	110 115	
Hexachiorobenzene	300 13.97	113	
Extraction Standards		%Rec	
13C6-Chlorabenzene	300 4.57	24	
13C6-1,4-Dichlorobenzene	300 6.92	58	
13C6-1,2,3-Trichlorobenzene	300 9.27	80	
13C6-1,2,3,4-Tetrachlorobenzene	300 10.98	86	
13C6-Pentachlorobenzene 13C6-Hexachlorobenzene	300 12.32 300 13.97	90 111	

R

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

### **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type

Laboratory Control Sample WG3444637-5

SIM GC/MS LCS QC

Sample Matrix Sample Size Percent Moisture Split Ratio n/a 6

Sampling Date Extraction Date n/a 25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120703.D 12/7/2020 14:37 mL %

MSD-2 HP-5MS US0411816H

Target Analytes	ng spiked	Ret. Time	% Recovery	Flags
Chlorobenzene				
1,3-Dichlorobenzene	30	6.81	120	
1,4-Dichlorobenzene	30	6.89	111	
1,2-Dichlorobenzene	30	7.18	116	그리고 살아 된 현대에 가운데 아름다면 사람들이 내려가 있다. 하나는 하나 하나 하나는 것이다는 하는
1,3,5-Trichlorobenzene	30	8.35	109	化氯化氯化 化铁铁 化基氯基 不完,其他这些原则有更大的大概是有原则,就是这个大概是是是
1,2,4-Trichlorobenzene	30	8.87	103	
1,2,3-Trichlorobenzene	30	9.27	109	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	60	10.50	135	
1,2,3,4-Tetrachlorobenzene	30	10.99	111	化二氯基丁基二二氯甲二二二氯甲基乙基二氯二甲二氯二甲二氯二异甲二二异二
Pentachlorobenzene	30	12.35	103	
Hexachiorobenzene	30	13.98	103	
Extraction Standards			%Rec	
13C6-Chlorobenzene	300	4.61	30	
13C6-1,4-Dichlorobenzene	300	6.89	47	
13C6-1,2,3-Trichlorobenzene	300	9.27	56	
13C6-1,2,3,4-Tetrachlorobenzene	300	10.98		
13C6-Pentachlorobenzene	300	12.34	66	
13C6-Hexachlorobenzene	300	13.98	89	



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#: L2529311

Date of Report 8-Dec-20

Date of Sample Receipt 13-Nov-20

Client Name:

Client Address:

ORTECH Environmental 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore

Client Project ID: 22050 Covanta

COMMENTS:

Chlorophenols as acetate derivatives by SIM GC/MS

Selected C-13 extraction/internal standards were biased low and below the targeted 20% lower control limit. Due to isotope dilution corrections such lower recoveries will not compromise the quantitation of postive target responses.

Certified by:

Ron McLeod, PhD

Laboratory Manager and Technical Director

		ALS Environmental	313	francisco de la facilita de la facil					
		Sample Analysis Summary Re	port		NAMES VERICES		SOURCE STATE		anesau
Sample Name	Method Blank (Media)	20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1		20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC- (11 THRU 15) TEST#3 APC OUTLET #1		20-22050-SVOC- (15 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1	L2529311-1		L2529311-2		L2529311-3		L2529311-4	
Sample Size									
Sample units	sample	sample		sample		sample		sample	
Moisture Content	n/a	n/a		n/a		n/a		n/a	
Matrix	QC	Stack		Stack		Stack		Stack	
Sampling Date	n/a	11-Nov-20		11-Nov-20		12-Nov-20		12-Nov-20	
Extraction Date	25-Nov-20	25-Nov-20		25-Nov-20		25-Nov-20		25-Nov-20	
Target Analytes	ng/sample	ng/sample		ng/sample		ng/sample		ng/sample	CHINOSO
2-Chlorophenol	<60 U	<60	U	<60	U	<60	U	<60	U
3-Chlorophenol	<60 U	<60	U	<60	U	<60	U	<60	U
4-Chlorophenol	: : : : : : : : : : : : : : : : : : :		U	<60	U	<60	U	<60	U
2,6-Dichlorophenol	<60 U	<60	U	<60	U	<60	U	<60	U
2,4/2,5-Dichlorophenol	<60 U	<60	Ü	76.1	M	65.6	M	<60	U
3,5-Dichlorophenol	<60 U	<60	, U	<60	. ; U	<60	U	<60	U
2,3-Dichlorophenol	<60 U	<60	U	<60	U	<60	U	<60	u
3,4-Dichlorophenol	<60 U	<60	U	<60	U	<60	U	<60	ι
2,4,6-Trichlorophenol	<60 U	200	M	201	M	171		<60	ŭ
2,3,6-Trichlorophenol	<60 U	<60	Ų	<60	.U	<60	U	<60	, U
2,3,5-Trichlorophenol	<60 U	<60	,U	<60	U	<60	U	<60	J
2,4,5-Trichlorophenol	<60 U	<60	U	<60	U	<60	U	<60	U
2,3,4-Trichlorophenol	<60 U	<60	U.	<60	U.	<60	U	<60	U
3,4,5-Trichlorophenol	<60 U	<60	U	<60	-, U	<60	U	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60 U	<60	U,	<60	U	<60	U	<60	U
2,3,4,5-Tetrachiorophenol	<60 U	<60	U	<60	U	<60	υŲ	<60	U
Pentachlorophenol	<60 U	<60	U	<60	U	<60	U	<60	U
Extraction Standards	% Rec	% Rec		% Rec		% Rec		% Rec	
13C6-4-Chlorophenol (ES)	12 M	52		29		25		49	
13C6-2,4-Dichlorophenol (ES)	4	38		34		41		49	
13C6-2,4,5-Trichlorophenol (ES)	21	10.		27		33		47	
13C6-2,3,4,5-Tetrachlorophenol (ES)	35 M	. : : : : : : : : : : : : : : : : : : :		32		31		53	
13C6-Pentachlorophenol (ES)	26		M	25		6		46	

U Indicates that this compound was not detected above the LOR, M Indicates that a peak has been manually integrated.

		AL	SE	nvironmental						
SUPPLIES STATES OF PRINCIPES AND AUTOMAS AND AREA AND AUTOMAS AND AREA AND AND AREA AND AUTOMAS AND AREA AND AUTOMAS AND AUTOM	No. of the second secon	Sample A	naly	sis Summary Re	port		NAME WAS		SidentNewshitzsнocrawssanach в сполько шисон шерүүддэгсэ	~~
Sample Name	20-22050-SVOC- (21 THRU 25) TEST#1 APC OUTLET #2	20-22050-SVOC- (26 THRU 30) TEST#2 APC OUTLET #2		20-22050-SVOC- (31 THRU 35) TEST#3 APC OUTLET #2		20-22050-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample (1.2ug)	Laboratory Control Sample (0.12ug)	
ALS Sample ID	12529311-5	L2529311-6		L2529311-7		L2529311-8		WG3444637-2	WG3444637-5	
Sample Size										
Sample units	sample	sample		sample		sample		n/a	n/a	
Moisture Content	n/a	n/a		n/a		n/a		n/a	n/a	
Matrix	Stack	Stack		Stack		Stack		QC	QC	
Sampling Date	11-Nov-20	11-Nov-20		12-Nov-20		12-Nov-20		n/a	n/a	
Extraction Date	25-Nov-20	25-Nov-20		25-Nov-20		25-Nov-20	1.	25-Nov-20	25-Nov-20	
Target Analytes	n/a	ng/sample		ng/sample		ng/sample		% Recovery	% Recovery	
2-Chlorophenol	<60 U	<60	U	<60	U	<60	U	109	M 87	М
3-Chlorophenol	≤60 U	<60	U	<60	U	<60	Ū			
1-Chlorophenol		<60	U	<60	U	<60	U			
2,6-Dichlorophenoi	<60 U	<60	U	<60	U	<60	Ü	89	M 86	М
2,4/2,5-Dichlorophenol	<60 U	<60	U	<60	U	<60	U	105	83	М
3,5-Dichlorophenol	238 M	<60	U ·	248	M	<60	. ·U			
2,3-Dichlorophenol	<60 U	<60	U.	<60	u	<60	U,			
3,4-Dichlorophenol	<60 U	<60	U	<60	U	<60	U			
2,4,6-Trichlorophenol	<60 U	<60	U	<60	U	<60	U	100	79	М
2,3,6-Trichlorophenol	<60 U	<60	U	<60	Ų	<60	U			
2,3,5-Trichlorophenol	<60 U	<60	U	<60	U	<60	U			
2,4,5-Trichlorophenol	<60 U	<60	U	<60	Ü	<60	υ	117	96	М
2,3,4-Trichlorophenol	<60 U	< 60	U	<60	U	<60	. U			
3,4,5-Trichlorophenol	<60 U	<60	U	<60	U	<60	U			
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60 U	<60	U	<60	U	<60	U	96	м	М
2,3,4,5-Tetrachlorophenol	<60 U	<60	U	<60	U	<60	U	108	90	
Pentachlorophenol	<60 U	<60	U	<60	U	<60	U	102	99	
Extraction Standards	% Rec	% Rec		% Rec		% Rec		% Rec	% Rec	
13C6-4-Chlorophenol (ES)	42	21		30		29		54	36	
13C6-2,4-Dichlorophenol (ES)	30	13		16		12		56	33	
13C6-2,4,5-Trichlorophenol (ES)	42	19		23		25		47	34	
13C6-2,3,4,5-Tetrachlorophenol (ES)	44	27		16		39		44	40	
13C6-Pentachlorophenol (ES)	38	10		23		44		28	35	

Indicates that this compound was not detected above the LOR.
Indicates that a peak has been manually integrated,

U M

## Laboratory Method Blank Analysis Report

Sample Name ALS Sample ID **Analysis Method**  Method Blank (Media)

WG3444637-1 SIM GC/MS

blank

Analysis Type Sample Matrix QC Sample Size sample Percent Moisture n/a 6

Sampling Date Extraction Date n/a 25-Nov-20

> Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Split Ratio

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Col

Run 1 20120724.D 12/7/2020 22:09 mL ng/sample MSD-2

Н

Target Analytes		ncentration Sample Flags		
2-Chiorophenol	NotFnd	<60 U		
3-Chlorophenol	NotFnd	<60 U		
化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基				
4-Chlorophenol	NotFnd	<60 U		
2,6-Dichlorophenol	NotFnd	<60 U		
2,4/2,5-Dichlorophenol	NotFnd	<60 U		
3,5-Dichlorophenol	NotFnd	<60 U		
2,3-Dichlorophenol	NotFnd	<60 U		
3,4-Dichlorophenol	NotFnd	<60 U		
2,4,6-Trichlorophenol	NotFnd	<60 U		
2,3,6-Trichlorophenol	NotFnd	<60 U		
2,3,5-Trichlorophenol	NotFnd	<60 U		
2,4,5-Trichlorophenol	NotFnd	<60 U		
2,3,4-Trichlorophenol	NotFnd	<60 U		
3,4,5-Trichlorophenol	NotFnd	<60 U		
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U		
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U		
Pentachiorophenol	NotFnd	<60 U		
, 2015년 1월 1일 1일 1일 1일 1일 1일 1일 1일 1일 1일 1일 1일 1일				
Extraction Standards		% Rec		
13C6-4-Chlorophenol (ES)	1200 8.35	12 M	20-150	
13C6-2,4-Dichlorophenol (ES)	1200 9.52	4	20-150	
13C6-2,4,5-Trichlorophenol (ES)	1200 10.99	21	20-150	
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.60	35 M	20-150	
13C6-Pentachlorophenol (ES)	1200 13.57	26	20-150	

U

Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the LOR.

## Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1

Sampling Date Extraction Date

11-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size L2529311-1 SIM GC/MS sample Stack

Stack 1 sample

Percent Moisture n/a Split Ratio 6

n/a

Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information Run 1

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument 20120728.D 12/7/2020 23:44 1 mL 1 ng/sample

MSD-2 HP5MS US0411816H

Column HP5MS US0411816

arget Analytes		Concentration ng/sample Flags	andra francische Deutschleiter der State der State der State der State der State der State der State der State Deutschleiter der State der State der State der State der State der State der State der State der State der St
2-Chlorophenol	NotFnd	<60 U	
3-Chlorophenol	NotFnd	<60 U	
4-Chlorophenol	NotFnd	<60 U	
2,6-Dichlorophenol	NotFnd	<60 U	
2,4/2,5-Dichlorophenol	9.52	<60 U	
3,5-Dichlorophenol	NotFnd	<60 U	
2,3-Dichlorophenol	NotFnd	<60 U	
3,4-Dichlorophenol	NotFnd	<60 U	
2,4,6-Trichlorophenol	10.44	200 M	
2,3,6-Trichlorophenol	NotFnd	<60 U	
2,3,5-Trichlorophenol	NotFnd	<60 U	
2,4,5-Trichlorophenol	NotFnd	<60 U	
2,3,4-Trichlorophenol	NotFnd	<60 U	
3,4,5-Trichlorophenol	NotFnd	<60 U	
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U	
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U	
Pentachlorophenol	NotFnd	<60 U	
Extraction Standards		% Rec	
13C6-4-Chlorophenol (ES)	1200 8.35	52	
13C6-2,4-Dichlorophenol (ES)	1200 9.52	38	
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	10	20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	5	20-150
13C6-Pentachlorophenol (ES)	1200 13.57	4 M	

M

Indicates that a peak has been manually integrated.

## Sample Analysis Report

20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1 L2529311-2 SIM GC/MS

Sampling Date Extraction Date 11-Nov-20 25-Nov-20

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size

sample Stack

1 sample

Percent Moisture Split Ratio n/a

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

Run 1 20120729.D 12/8/2020 0:08 mL ng/sample

MSD-2

O1	uı	mn							100	пP:	) IVI	o U	504	+11	810	) TI	

Target Analytes		oncentration g/sample Flags					
2-Chlorophenol	NotFnd	<60 U					
3-Chlorophenol	NotFnd	<60 U					
4-Chlorophenol	NotFnd	<60 U					
2,6-Dichlorophenol	NotFnd	<60 U					
2,4/2,5-Dichlorophenol	9.52	76.1 M					
3,5-Dichlorophenol	NotFnd	<60 U					
2,3-Dichlorophenol	NotFnd	<60 U					
3,4-Dichlorophenol	NotFnd	<60 U					
2,4,6-Trichlorophenol	10.44	201 M					
2,3,6-Trichlorophenol	NotFnd	<60 U					
2,3,5-Trichlorophenol	NotFnd	<60 U					
2,4,5-Trichlorophenol	NotFnd	<60 U					
2,3,4-Trichlorophenol	NotFnd	<60 U					
3,4,5-Trichlorophenol	NotFnd	<60 U					
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U					
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U					
Pentachlorophenol	NotFnd	<60 U					
Extraction Standards		% Rec					
13C6-4-Chlorophenol (ES)	1200 8.35	29	20-150				
13C6-2,4-Dichlorophenol (ES)	1200 9.52	34	20-150				
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	27	20-150				
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	32	20-150				
13C6-Pentachlorophenol (ES)	1200 13.56	25	20-150				

Indicates that a peak has been manually integrated.

## Sample Analysis Report

Sample Name ALS Sample ID

20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix Sample Size

Percent Moisture

Split Ratio

Column

L2529311-3 SIM GC/MS sample Stack

sample

n/a

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** Run 1

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

20120730.D 12/8/2020 0:32 ng/sample MSD-2

HP5MS US0411816H

arget Analytes		oncentration g/sample Flags	
	tinic ili	g/sample riags	
2-Chlorophenol	NotFnd	<60 U	
3-Chlorophenol	NotFnd	<60 U	
4-Chlorophenol	NotFnd	<60 U	
2,6-Dichlorophenol	NotFnd	<60 U	
2,4/2,5-Dichlorophenol	9.52	65.6 M	
3,5-Dichlorophenol	NotFnd	<60 U	
2,3-Dichlorophenol	NotFnd	<60 U	
3,4-Dichlorophenol	NotFnd	<60 U	
2,4,6-Trichlorophenol	10.44	171	
2,3,6-Trichlorophenol	NotFnd	<60 U	
2,3,5-Trichlorophenol	NotFnd	<60 U	
2,4,5-Trichlorophenol	NotFnd	<60 U	
2,3,4-Trichlorophenol	NotFnd	<60 U	
3,4,5-Trichlorophenol	NotFnd	<60 U	
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U	
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U	나는 사람들은 물로 그리는 걸로 살을 받는 사람들이 되는 사람이 되고 있는데 없다.
Pentachlorophenol	NotFnd	<60 U	
Extraction Standards		% Rec	
13C6-4-Chlorophenol (ES)	1200 8.35	25	20-150
13C6-2,4-Dichlorophenol (ES)	1200 9.52	41	
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	33	[1] [20-150] - [1
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	31	20-150
13C6-Pentachlorophenol (ES)	1200 13.56	6	<b>20-15</b> 0

## Sample Analysis Report

**Sample Name** ALS Sample ID Analysis Method Analysis Type

20-22050-SVOC-(16 THRU 20) BLANK#1 L2529311-4

SIM GC/MS sample

Sample Matrix Stack Sample Size sample Percent Moisture Split Ratio n/a

Sampling Date 12-Nov-20 Extraction Date 25-Nov-20

> Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120726.D 12/7/2020 22:57 mL ng/sample

MSD-2

HP5MS US0411816H

승규를 가는 것이 그 그 가는 것이 없다.	Ret. Concentr	ation					
Target Analytes	Time ng/samp	le Flags					
2-Chlorophenol	NotFnd	<60 U					
3-Chlorophenol		<60 U					
4-Chlorophenol	NotFnd	<60 U					
2,6-Dichlorophenol	NotFnd	<60 U					
2,4/2,5-Dichlorophenol	NotFnd	<60 U					
3,5-Dichlorophenol	NotFnd	<60 U					
2,3-Dichlorophenol	NotFnd	<60 U					
3,4-Dichlorophenol	NotFnd	<60 U					
2,4,6-Trichlorophenol	10.44	<60 U					
2,3,6-Trichlorophenol	NotFnd	<60 U					
2,3,5-Trichlorophenol	NotFnd	<60 U					
2,4,5-Trichlorophenol	NotFnd	<60 U					
2,3,4-Trichlorophenol	NotFnd	<60 U					
3,4,5-Trichlorophenol	NotFnd	<60 U					
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U					
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U					
Pentachlorophenol	NotFnd	<60 U					
Extraction Standards	%	Rec					
13C6-4-Chlorophenol (ES)	1200 8.35	49	20-150				
13C6-2,4-Dichlorophenol (ES)	1200 9.52	49	20-150				
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	47	20-150				
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	53	20-150				
13C6-Pentachlorophenol (ES)	1200 13.56	46	20-150				

U

## Sample Analysis Report

Sample Name 20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2 ALS Sample ID L2529311-5 Analysis Method

SIM GC/MS sample

Stack

Sample Size Percent Moisture n/a Split Ratio

Analysis Type

Sample Matrix

Sampling Date Extraction Date

11-Nov-20

25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** Run 1

Filename Run Date Final Volume **Dilution Factor** Analysis Units Instrument

20120731.D 12/8/2020 0:56 n/a MSD-2

sample

Column	HP5MS US0411816
--------	-----------------

Target Analytes	Ret. Concentra Time n/a	tion The Flags
		eringsille annual annual bear agus gu ann ar ear ann agus gu ann aighean an agus agus an Aireann, at gliang
2-Chlorophenol		
3-Chlorophenol		
4-Chlorophenol		
2,6-Dichlorophenol	NotFnd <	
2,4/2,5-Dichlorophenol	NotFnd <	<b>60</b> Paulinia – Paulinia Karajas II. Laikin katang kabagai dan terbigai kabagai Sebagai Kabagai Kabagai Kabagai
3,5-Dichlorophenol	9.64 2	
2,3-Dichlorophenol	NotFnd <	60 au 🗀 chairtean agus an t-airean an t-airean agus an t-airean a
3,4-Dichlorophenol	NotFnd <	60 - Quinner and the company of the control of the control of the control of the control of the control of the
2,4,6-Trichlorophenol	10.44 <	so nounce in a colon fermion of the large frame to the graph of the colonial color
2,3,6-Trichlorophenol	NotFnd <	
2,3,5-Trichlorophenol	NotFnd <	
2,4,5-Trichlorophenol	NotFnd <	60일 입자 기계를 받는 사람들이 살아왔다. 그는 사람들이 가는 사람들이 되고 있는 것 같다.
2,3,4-Trichlorophenol	NotFnd <	
3,4,5-Trichlorophenol		
2,3,5,6/2,3,4,6-Tetrachlorophenol		
2,3,4,5-Tetrachlorophenol		
Pentachlorophenol		**************************************
		선생들이 살아가 있는데 모든 것이 하고 말을 하는데 되는데 하는데 하는데 이 모든데 되었다. 그 것은
Extraction Standards	% R	<b>속</b> 그리는 사람들이 되는 것이 하는 것은 것이라면 하는 것이 없는 것이다.
13C6-4-Chlorophenol (ES)	1200 8.35	42 20-150
13C6-2,4-Dichlorophenol (ES)	그는 사람들은 경기를 받는데 하시는 것이다.	30 · · · · · · · · · · · · · · · · · · ·
13C6-2,4,5-Trichlorophenol (ES)		42 20-150
13C6-2,3,4,5-Tetrachlorophenol (ES)		72 44 44
13C6-Pentachlorophenol (ES)		38 20-150

Indicates that a peak has been manually integrated.

## Sample Analysis Report

Sample Name ALS Sample ID 20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2

Sampling Date Extraction Date 11-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix L2529311-6 SIM GC/MS sample Stack

ck sample

Sample Size 1 Percent Moisture n/a Split Ratio 6 Approved: Andrew Reid --e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Run 1

20120732.D 12/8/2020 1:20 1 mL 1 ng/sample

MSD-2

Column HP5MS US0411816H

	Ret. Concent					
Target Analytes	Time ng/sam	ple Flags				
2-Chlorophenol	NotFnd	<60 U				
3-Chlorophenol	NotFnd	<60 U				
4-Chlorophenol	NotFnd	<60 U				
2,6-Dichlorophenol	NotFnd	<60 U				
2,4/2,5-Dichlorophenol	9.52	<60 U				
3,5-Dichlorophenol	NotFnd	<60 U				
2,3-Dichlorophenol	NotFnd	<60 U				
3,4-Dichlorophenol	NotFnd	<60 U				
2,4,6-Trichlorophenol	NotFnd	<60 U				
2,3,6-Trichlorophenol	NotFnd	<60 U				
2,3,5-Trichlorophenol	NotFnd	<60 U				
2,4,5-Trichlorophenol	NotFnd	<60 U				
2,3,4-Trichlorophenol	NotFnd	<60 U				
3,4,5-Trichlorophenol	NotFnd	<60 U				
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60 U				
2,3,4,5-Tetrachlorophenol	NotFnd	<60 U				
Pentachlorophenol	NotFnd	<60 U				
Extraction Standards	9/	Rec				
13C6-4-Chlorophenol (ES)	1200 8.35	21	20-150			
13C6-2,4-Dichlorophenol (ES)	1200 9.52	13	20-150			
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	19	20-150			
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	27	20-150			
13C6-Pentachlorophenol (ES)	1200 13.56	10	20-150			

L

### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method 20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2 L2529311-7 SIM GC/MS

Sampling Date Extraction Date 12-Nov-20 25-Nov-20

Analysis Method Analysis Type Sample Matrix

Instrument

SIM GC/MS sample Stack

1 sample

Sample Size 1
Percent Moisture n/a
Split Ratio 6

Sumple

Approved: Andrew Reid -e-signature--08-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Run 1 20120733.D 12/8/2020 1:43 1 mL 1 ng/sample

MSD-2

Column HP5MS US0411816H

Target Analytes	Ret. Concentration Time ng/sample	grade traffice (traffice) de la gradie de la companya de la companya de la companya de la companya de la compa D <b>Flags</b> de la companya de la companya de la companya de la companya de la companya de la companya de la companya
2-Chlorophenol	NotFnd <60	
3-Chlorophenol	NotFnd <60	
4-Chlorophenol	NotFnd <60	$B(\mathbf{U})$ is the section of $S(\mathbf{v})$ and $S(\mathbf{v})$ is the section $S(\mathbf{v})$ and $S(\mathbf{v})$ is $S(\mathbf{v})$ and $S(\mathbf{v})$
2,6-Dichlorophenol	NotFnd <60	agur - The thing of the figure at a first of the contract of the figure of the contract of the
2,4/2,5-Dichlorophenol	NotFnd <60	an <b>u</b> n en egit i keyeri ang kiliking mengalang ang kalang ang keyeri ang kalang ang keyeri ang kelang ang keyer
3,5-Dichlorophenol	9.65 248	
2,3-Dichlorophenol	NotFnd <60	ignor in the contract of the c
3,4-Dichlorophenol	NotFnd <60	
2,4,6-Trichlorophenol	NotFnd <60	ilione a cientico de Alexandro interese de ciente de la companya de la companya de la companya de la companya
2,3,6-Trichlorophenol	NotFnd <60	
2,3,5-Trichlorophenol	NotFnd <60	#w 이번 14 - 14 - 이번 시간 보고 있는 사람들의 사람들이 되는 것 같아.
2,4,5-Trichlorophenol	NotFnd <60	불합 그는 사람들이 얼마를 하는 사람들이 보고 하는 사람들이 살 때문에 살다.
2,3,4-Trichlorophenol	NotFnd <60	ligo de la Calenda de la Calenda de la Calenda de la Calenda de la Calenda de la Calenda de la Calenda de la C
3,4,5-Trichlorophenol	NotFnd <60	
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd <60	
2,3,4,5-Tetrachlorophenol	NotFnd <60	[86g - 기타의 IP : 1 등 기자 및 시 하실 : 1 등 기타 하는 1 등 1 등 1 등 기자 기타
Pentachlorophenol	NotFnd <60	돌 <b>i</b> 그는 물을 보면 하는 것 같은 것이 얼마나 있는 것 같아.
Extraction Standards	% Rec	
13C6-4-Chlorophenol (ES)	1200 8.36 30	20-150
13C6-2,4-Dichlorophenol (ES)	1200 9.52 16	- 15 - 15 - 15 - 15 - 15 - 15 - 15 - 15
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98 23	20-150 <b>20-150</b>
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59 16	20-150 (20-150)
13C6-Pentachlorophenol (ES)	1200 13.57 23	$10^{-1}$

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Indicates that a peak has been manually integrated.

## Sample Analysis Report

Sample Name ALS Sample ID Analysis Method 20-22050-SVOC-(36 THRU 40) BLANK#2

L2529311-8 SIM GC/MS sample

Analysis Type Sample Matrix Stack Sample Size n/a

Percent Moisture Split Ratio

sample

Sampling Date Extraction Date

12-Nov-20

25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** Run 1

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

6

20120727.D 12/7/2020 23:20 mL

ng/sample

MSD-2 HP5MS US0411816H

Target Analytes		Concentration ng/sample	Flags									
2-Chlorophenol	NotFnd	<60	U									
3-Chlorophenol	NotFnd	<60	ับ									
4-Chlorophenol	NotFnd	<60	U									
2,6-Dichlorophenol	NotFnd	<60	U									
2,4/2,5-Dichlorophenol	NotFnd	<60	U									
3,5-Dichlorophenol	NotFnd	<60	U									
2,3-Dichlorophenol	NotFnd	<60	υ .									
3,4-Dichlorophenol	NotFnd	<60	U									
2,4,6-Trichlorophenol	NotFnd	<60	U									
2,3,6-Trichlorophenol	NotFnd	<60	U									
2,3,5-Trichlorophenol	NotFnd	<60	U									
2,4,5-Trichlorophenol	NotFnd	<60	U									
2,3,4-Trichlorophenol	NotFnd	<60	U									
3,4,5-Trichlorophenol	NotFnd	<60	U									
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<60	U									
2,3,4,5-Tetrachlorophenol	NotFnd	<60	U									
Pentachlorophenol	NotFnd	<60	U									
Extraction Standards		% Rec										
13C6-4-Chlorophenol (ES)	1200 8.35	29		20-150								
13C6-2,4-Dichlorophenol (ES)	1200 9.52	12		20-150								
13C6-2,4,5-Trichlorophenol (ES)	1200 10.98	25		20-150								
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200 12.59	39		20-150								
13C6-Pentachlorophenol (ES)	1200 13.57	44		20-150								

## **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type

Sample Matrix

Percent Moisture

Sample Size

Split Ratio

**Laboratory Control Sample** 

WG3444637-2 SIM GC/MS

LCS QC

6

n/a n/a

Sampling Date Extraction Date

n/a 25-Nov-20

Approved: Andrew Reid -e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

Run 1 20120722.D 12/7/2020 21:21 mL %

MSD-2 HP5MS US0411816H

Column

Target Analytes	l ng spiked 1	Ret. Time %	Recovery Flags	
-Chlorophenol -Chlorophenol -Chlorophenol	1200	8.00	109 M	211-124
4-Cinorophenol 2,6-Dichlorophenol	1200	9.31	89 M	10-110
2,4/2,5-Dichlorophenol	1200	9.52	105	35-98
3,5-Dichlorophenol				
2,3-Dichlorophenol				
3,4-Dichlorophenol				
2,4,6-Trichlorophenol	1200	10.44	100	10-102
2,3,6-Trichlorophenol 2,3,5-Trichlorophenol				
2,4,5-Trichlorophenol	1200	10.99	117	45-95
2,3,4-Trichlorophenol				
3,4,5-Trichlorophenol				
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.10	96 M	30-109
2,3,4,5-Tetrachlorophenol	1200	12.60	108	44-103
Pentachlorophenol	1200	13.57	102	32-121
Extraction Standards			% Rec	
13C6-4-Chlorophenol (ES)	1200	8.35	54	50-150
13C6-2,4-Dichlorophenol (ES)	1200	9.52	56	50-150
13C6-2,4,5-Trichlorophenol (ES)	1200	10.99	47	50-150
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.60	44	50-150
13C6-Pentachlorophenol (ES)	1200	13.57	28	50-150

Indicates that a peak has been manually integrated.

## **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type

Laboratory Control Sample (Low Level)

WG3444637-5 SIM GC/MS

LCS QC

Sample Matrix Sample Size Percent Moisture n/a Split Ratio 6

n/a

Sampling Date Extraction Date

n/a 25-Nov-20

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** Run 1

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

20120721.D 12/7/2020 20:57 mL MSD-2

Column HP5MS US0411816H

		Ret.			
Target Analytes	ng spiked	fime %	Recovery Flags		
2-Chlorophenol	120	8.01	87 M	212-124	
3-Chlorophenol					
4-Chlorophenol					
2,6-Dichlorophenol	120	9.31	86 M	10-110	
2,4/2,5-Dichlorophenol	120	9.52	83 M	35-98	
3,5-Dichlorophenol					
2,3-Dichlorophenol					
3,4-Dichlorophenol					
2,4,6-Trichlorophenol	120	10.44	. 79 M	10-102	
2,3,6-Trichlorophenol					
2,3,5-Trichlorophenol					
2,4,5-Trichlorophenol	120	11.00	96 M	45-95	
2,3,4-Trichlorophenol					
3,4,5-Trichlorophenol					
2,3,5,6/2,3,4,6-Tetrachlorophenol	240	12.10	88 M	30-109	
2,3,4,5-Tetrachlorophenol	120	12.60	90	44-103	
Pentachlorophenol	120	13.57	99	32-121	
Extraction Standards			% Rec		
			70 Ket		
13C6-4-Chlorophenol (ES)	1200	8.35	36	50-150	
13C6-2,4-Dichlorophenol (ES)	1200	9.52	33	50-150	
13C6-2,4,5-Trichlorophenol (ES)	1200	11.00	34	50-150	
13C6-2,3,4,5-Tetrachlorophenol (ES)	1200	12.60	40	50-150	
13C6-Pentachlorophenol (ES)	1200	13.57	35	50-150	

Indicates that a peak has been manually integrated.



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact:

Lynne Wrona

ALS Project ID:

**ORT100** 

ALS WO#: L2529311

Date of Sample Receipt

Date of Report 8-Dec-20 13-Nov-20 Client Name:

**ORTECH Environmental** 

Client Address:

804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

**Client Contact:** 

Chris Belore

Client Project ID:

22050 Covanta

COMMENTS:

PAH by CARB method 429 (LR option)- Isotope dilution

Certified by:

Ron McLeod, Ph.D. **Technical Director** 

			Sample Analysis Summar							
Sample Name	Method Blank (Media)		20-22050-SVOC- (1 THRU 5) TEST#1 APC OUTLET #1		20-22050-SVOC- (6 THRU 10) TEST#2 APC OUTLET #1		20-22050-SVOC- (11 THRU 15) TEST#3 APC OUTLET #1		20-22050-SVOC- (16 THRU 20) BLANK#1	
ALS Sample ID	WG3444637-1		L2529311-1		L2529311-2		L2529311-3		L2529311-4	
Sample Size							4			
ample units	sample		sample		sample		sample		sample	
loisture Content latrix	n/a		n/a		n/a		n/a		n/a	
Sampling Date	QC n/a		Stack 11-Nov-20		Stack 11-Nov-20		Stack 12-Nov-20		Stack	
Extraction Date	25-Nov-20		25-Nov-20		25-Nov-20		25~Nov-20		12-Nov-20 25-Nov-20	
Target Analytes	ng/sample		ng/sample		ng/sample		ng/sample		ng/sample	
laphthalene -Methylnaphthalene	190 <12	M,R U		M,R,B		M,R,B		M,R,B		M,R,E
-Methylnaphthalene	<12 <12	. N. U. z. in a na la jiya l	43.3		85.7 42.5	R	29.7 21.8		<12 <12	U
cenaphthylene	<12	U	<12	U	<12	U	<12	U	<12	U
cenaphthene	<12	U	<12	U	87.1	R	<12	U	<12	U
uorene	<12				48.7	R	<12	U	<12	U
nenanthrene nthracene	<12 <12	U	76.9		516		59.5		<12	U
uoranthene	<12	U	<12 26.1	U	<12 111	U	<12 13.9	U	<12 <12	U
yrene	<12	Ű	32.2	R	83.2	R	12.8	R	<12	U
enzo(a)Anthracene	<12	140	<12	U	<12	U	<12	υ	<12	Ü
hrysene/Triphenylene	<12	Ü	<12	U	21.9		<12	U	<12	Ü
enzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	υ	<12	Ų
enzo(k/j)Fluoranthene enzo(e)Pyrene	<12 <12	U	<12 <12	U U	<12	U	<12	U	<12	U
enzo(a)Pyrene	<12	U	<12	U	<12 <12	U	<12 <12	υ υ	<12 <12	U
erylene	<12	Ü	<12	U	<12	U	<12	U	<12	U
ndeno(1,2,3-cd)Pyrene	<12	U	13.0	R	<12	U	<12	Ü	<12	U
ibenzo(a,h/a,c)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U
enzo(g,h,i)Perylene dditional Analytes	<12	:U	96.3		24.4	R	<12	U	<12	U
etralin -Chloronaphthalene	276 <12	U		M,R,B	and the second of the second o	M,R,B	496	В		M,R,E
phenyl	<12	U	<12 24.2	∖ U R	<12 559	U	<12 24.1	U R	<12 <12	U
Terphenyl	<12	Ŭ .	<12	Ü	56.5	М	<12	Ü	<12 <12	U
-Methylphenanthrene	<12	U	51.6	R	43.6	M,R	25.5	R	<12	U
-Methylphenanthrene	<12	U	<12	U	107	M,R	13.3	R	<12	U
-methylanthracene .10-dimethylanthracene	<12	U U	22.0	R	117	M	21.1	M	<12	U
n-terphenyl	<12 <12	Ü	<12 <12	U	26.7 33.8	M,R M,R	<12 <12	U U	<12 <12	U
-terphenyl	<12	U	<12	Ü	16.5	M,R	<12	U	<12	U
enzo(a)fluorene	<12	U	<12	υ	<12	U	<12	U	<12	U
enzo(b)fluorene	<12	Ü	<12	U	<12	U	<12	U	<12	U
,12-Dimethylbenzo(a)anthracene -Methylcholanthrene	<12	U	<12	U	<12	U	<12	U	<12	U
icene	<60 <60	U	<60 <60	U	<60 <60	U	<60	U	<60	U
ibenzo(a,e)pyrene	<60	Ŭ	<60	U	<60	U	<60 <60	U	<60 <60	U
oronene	<60	U	69.9		<60	Ü	<60	U	<60	U
ield Sampling Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
-Methylnaphthalene-D10	NS		92.4		88.3		94.7		89.4	
luorene D10 erphenyl D14(Surr.)	NS NS		102.5		110.2		100.9		77.9	
xtraction Standards	% Rec		83.7 % Rec		83.8 % Rec		81.3 % Rec		86.6 % Rec	
aphthalene D8	90.9		66.4		70 Rec 72.5		75.2		<b>% Rec</b> 79.9	
Methylnaphthalene-D10	78.8		56.4		72.5 69.0		62.1		79.9 66.4	
enaphthylene D8	81.8		70.1		79.5		87.3		81.5	
enanthrene D10 ithracene-D10	98.5		66.3		44.2		76.2		0.88	
uoranthene D10	76.9 104.2		65.0 71.5		52.8 50.1		81.4 88.1		81.8 93.2	
enz(a)Anthracene-D12	107.3		81.3		54.1		109.2		93.2 110.9	
rysene D12	100.7		66.1		45.5		85.0		90.4	
enzo(b)Fluoranthene-D12	100.2		79.0		102.1		101.4		97.0	
enzo(k)Fluoranthene-D12 enzo(a)Pyrene D12	87.0		65.8		79.6		85.8		84.7	
erylene D12	82.0 83.6		88.3 76.6		97.5 87.6	R	120.3 106.0		108.6	
ideno(1,2,3,cd)Pyrene-D12	94.5		70.0 77.7		113.3		119.8		90.9 91.4	
ibenz(a,h)Anthracene-D14	89.2		72.1	4334	110.3		110.6		85.8	
enzo(g,h,i)Perylene D12	84.2		65.7		94.0		94.9		78.2	

ALS Canada Ltd

M B

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NS

Indicates that a peak has been manually integrated.

Indicates that this compound was not spiked in

Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

		Samı	ole An	alysis Summar	v Rep	ort	Wednesday Construction		
Sample Name	20-22050-SVOC- (21 THRU 25) TEST#1 APC	20-22050-SVOC- (26 THRU 30) TEST#2 APC		20-22050-SVOC- (31 THRU 35) TEST#3 APC		20-22050-SVOC- (36 THRU 40) BLANK#2		Laboratory Control Sample	
ALS Sample ID	OUTLET #2 L2529311-5	OUTLET #2 L2529311-6		OUTLET #2 L2529311-7		L2529311-8		WG3444637-2	
Sample Size									
Sample units	sample	sample		sample		sample		n/a	
Moisture Content	n/a	п/а		n/a		n/a		n/a	
Matrix	Stack	Stack		Stack		Stack		QC	
Sampling Date Extraction Date	11-Nov-20 25-Nov-20	11-Nov-20 25-Nov-20		12-Nov-20 25-Nov-20		12-Nov-20 25-Nov-20		n/a	
EXCIDENT DATE	***************************************	ZJ-NOV-ZO	***************************************	23-1404-20	***************************************	ZJ-NOV-ZU	00000000000000000000000000000000000000	25~Nov-20	don't
Target Analytes	ng/sample	ng/sample		ng/sample		ng/sample		.%	
Naphthalene 2-Methylnaphthalene	290 M,R 39.1	,B 277 54.1	M,R,B R		M,R,B		M,R,B	113.9	
1-Methylnaphthalene	39.1 22.3 R		K	32.5 22.0	R	<12 <12	U	104.3 123	
Acenaphthylene	<12 U		U	<12	U	<12	U	93.6	
Acenaphthene	<12 U	44.7	R	<12	U	<12	U	90.8	
Fluorene	<12 U			<12	U	<12	U	83.6	
Phenanthrene	78.5	230		66.1		<12		90.4	
Anthracene Fluoranthene	<12 U 19,4	12,4 64.0	R	<12 27.2	U	<12 <12		94.1 85.9	
Pyrene	19.4 20.3 R			18.5	R	<12 <12		85.9 85.6	
Benzo(a)Anthracene	<12 U			<12	ΰ	<12		82.7	
Chrysene/Triphenylene	<12 U			<12	U	<12		88.3	
Benzo(b)Fluoranthene	<12 U			<12	U	<12		82.3	
Benzo(k/j)Fluoranthene	<12 U			<12	U	<12		82.2	
Benzo(e)Pyrene Benzo(a)Pyrene	<12 U <12 U			<12	U	<12		99.1	
Perviene	<12 U			<12 <12	U	<12 <12		77.3 82.9	
Indeno(1,2,3-cd)Pyrene	<12 U			<12	U	<12		76.9	
Dibenzo(a,h/a,c)Anthracene	<12 U	<12	. U	<12	U	<12		81.2	
Benzo(g,h,i)Perylene	61.1	47.5	R	19.9	R	<12	U	81.9	
Additional Analytes									
Tetralin	204 M,R	,B 278	M,R,B	288	м,в	129	M,R,B		
2-Chioronaphthalene	<12 U	<12	U	<12	U	<12	U		
Biphenyl	32.0 R			29.6		<12			
o-Terphenyl 1-Methylphenanthrene	<12 U 36.4 R			<12 21.1	U R	<12 <12			
9-Methylphenanthrene	13.1	42.2 67.4		14.5	R	<12			
2-methylanthracene	21.6	66.5		21.6	М	<12			
9,10-dimethylanthracene	<12 U			<12	U	<12			
m-terphenyl	<12 U			<12	U	<12			
p-terphenyl Benzo(a)fluorene	<12 U <12 U			<12	U	<12			
Benzo(a)nuorene Benzo(b)fluorene	<12 U			<12 <12	U	<12 <12	U U		
7,12-Dimethylbenzo(a)anthracene	<12 U			<12 <12	U	<12 <12	U		
3-Methylcholanthrene	<60 U			<60	U	<60	U		
Picene	<60 U			<60	U	<60	U		
Dibenzo(a,e)pyrene Coronene	<60 U <60 U			<60 <60	U	<60 <60	U U		
Field Sampling Standards	% Rec	% Rec		% Rec	~	% Rec		% Rec	
1-Methylnaphthalene-D10	84.1	80.8		90.4		94.5		NS NS	
Fluorene D10	91.3	119.3		96.9		75.5		NS	
Terphenyl D14(Surr.)	83	88.9		80.3		84.3		NS	
Extraction Standards	% Rec	% Rec		% Rec		% Rec		% Rec	
Naphthalene D8	72.5	84.8		77.2		82.4		87.7	
2-Methylnaphthalene-D10	64.7	69.8		68.4		68.9		76.5	
Acenaphthylene D8	68.9	85.7		81.0		91.3		85.2	
Phenanthrene D10	78.4	72.8		80.0		89.5		100.4	
inthracene-D10 iuoranthene D10	66.0 85.5	74.4 82.8		73.4 89.2		85.5 99.0		87.9 104.0	
Benz(a)Anthracene-D12	94.8	96.8		104.7		122.7		114.1	
Chrysene D12	79.5	77.1		82.7		98.2		106.7	
Benzo(b)Fluoranthene-D12	95.2	107.2		101.0		105.9		103.0	
Benzo(k)Fluoranthene-D12	81.0	86.7		86.3		88.5		91.9	
Benzo(a)Pyrene D12	91.0	101.0		102.6		118.3		110.9	
Perylene D12 Indeno(1,2,3,cd)Pyrene-D12	87.0 99.9	97.4 123.9		98.2 113.2		100.8 108.3		95.1 96.2	
Dibenz(a,h)Anthracene-D14	92.5	114.4		104.1		101.9		96.7	
Benzo(g,h,i)Perylene D12	81.5	98.9		88.9		91.9		89.0	

Indicates that this compound was not detected above the LOD. U

Indicates that a peak has been manually integrated.

M B Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. Indicates that this compound was not spiked in.

R NS

#### **ALS Life Sciences Laboratory Method Blank Analysis Report** Sample Name Method Blank (Media) Sampling Date 25-Nov-20 ALS Sample ID WG3444637-1 Extraction Date Analysis Method PAH by CARB 429 Analysis Type blank Sample Matrix QC Approved: Sample Size sample Andrew Reid Percent Moisture n/a -e-signature-Split Ratio Workgroup WG3444637 08-Dec-2020 Run Information Run 1 Filename 201207A07.D Run Date Final Volume 12/7/2020 18:59 mL Dilution Factor Analysis Units ng/sample MSD-5 Instrument HP5MS US0179454H Column Ret. Concentration **Target Analytes** Time ng/sample Flags Naphthalene 2.78 190 M R 2-Methylnaphthalene 3,40 <12 ···U 1-Methylnaphthalene 3.52 <12 U Acenaphthylene NotFnd <12 U Acenaphthene NotFnd <12 Fluorene NotFnd <12 U Phenanthrene 8.09 <12 υ Anthracene 8.21 <12 U Fluoranthene 11.56 <12 υ 12.22 <12 U Pyrene Benzo(a)Anthracene NotFnd <12 U Chrysene NotFnd <12 L) Benzo(b)Fluoranthene NotEnd <12 ·U Benzo(k)Fluoranthene NotFnd <12 ü 3000 Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 U Perylene NotFnd <12 U Indeno(1,2,3-cd)Pyrene NotFnd <12 Dibenzo(a,h)Anthracene NotFnd <12 U Benzo(g,h,i)Perylene NotFnd <12 Ų Additional Analytes Tetralin 2.66 276 2-Chloronaphthalene NotFnd <12 U Biphenyl 3.95 <12 o-Terphenyl NotFnd <12 U 1-Methylphenanthrene 9.68 <12 9-Methylphenanthrene NotFnd <12 2-methylanthracene NotFnd <12 9,10-dimethylanthracene NotFnd <12 U m-terphenyl NotFnd <12 U p-terphenyl NotFnd <12 œ. Benzo(a)fluorene NotFnd <12 u Benzo(b)fiuorene NotFnd <12 Ú 7,12-Dimethylbenzo(a)anthracene NotEnd <12 u 3-Methylcholanthrene NotFnd <60 U Picene NotFnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene NotFnd <60 **Extraction Standards** % Rec Limits Naphthalene D8 2.77 50-150 600 90.9 2-Methylnaphthalene-D10 600 50-150 3.37 78.8 Acenaphthylene D8 600 4.56 81.8 50-150 Phenanthrene D10 600 8.03 98.5 50-150 Anthracene-D10 600 8.16 76.9 50-150 Fluoranthene D10 600 11.51 104.2 50-150 Benz(a)Anthracene-D12 600 16.12 107.3 50-150 Chrysene D12 600 16.24 100.7 50-150 Benzo(b)Fluoranthene-D12 600 19.52 100.2 50-150 Benzo(k)Fluoranthene-D12 600 19.60 87.0 50-150 Benzo(a)Pyrene D12 600 20.42 82.0 50-150 Perylene D12 600 20.67 50-150 83.6 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 94.5 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 50-150 89.2 Benzo(g,h,i)Perylene D12 600 25.43 84.2 50-150 Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### **ALS Life Sciences** Sample Analysis Report 20-22050-SVOC-(1 THRU 5) TEST#1 APC OUTLET #1 Sample Name Sampling Date 11-Nov-20 ALS Sample ID Analysis Method L2529311-1 PAH by CARB 429 25-Nov-20 Analysis Type sample Sample Matrix Stack Approved: Sample Size Percent Moisture sample Andrew Reid n/a 6 -e-signature-08-Dec-2020 Split Ratio Workgroup WG3444637 Run Information Run 1 201207A11.D 12/7/2020 21:31 Filename Run Date Final Volume mL Dilution Factor Analysis Units ng/sample Instrument MSD-5 Column HP5MS US0179454H Ret. Concentration **Target Analytes** ng/sample Naphthalene 2.7B 207 M R B 2-Methylnaphthalene 3.40 43.3 1-Methylnaphthalene 3.51 22,3 Acenaphthylene 4.58 <12 u Acenaphthene 4.88 <12 U Fluorene 5.83 12.0 Phenanthrene 8.09 76.9 Anthracene 8.21 <12 ·U Fluoranthene 11.56 26.1 Pyrene 12.22 32.2 R Benzo(a)Anthracene 16.19 U <12 Chrysene 16.31 <12 U Benzo(b)Fluoranthene NotFnd <12 U Benzo(k)Fluoranthene NotFnd <12 U Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 .U Pervlene NotFod <12 U Indeno(1,2,3-cd)Pyrene 24.48 13.0 Dibenzo(a,h)Anthracene 24.70 ú <12 Benzo(g,h,i)Perylene 25.55 96.3 Additional Analytes Tetralin 2.71 188 M R B 2-Chloronaphthalene NotFnd <12 U Biphenyl 3.95 24.2 R o-Terphenyl 9.39 <12 Ū 1-Methylphenanthrene 9.68 51.6 R 9-Methylphenanthrene 9.80 <12 U 2-methylanthracene 9.86 22.0 R 9.10-dimethylanthracene NotFnd <12 Ù m-terphenyl 12,60 <12 U p-terphenyl 13.10 <12 υ Benzo(a)fluorene NotFnd <12 U Benzo(b)fluorene NotFnd <12 U 7,12-Dimethylbenzo(a)anthracene NotFnd <12 U 3-Methylcholanthrene NotFnd <60 U Picene NotFnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene 30.15 69.9 Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 92.4 Fluorene D10 600 5.78 102.5 Terphenyl D14(Surr.) 600 13.02 83.7 **Extraction Standards** % Rec Limits Naphthalene D8 600 2.77 66.4 50-150 2-Methylnaphthalene-D10 600 3.36 56.4 50-150 Acenaphthylene D8 600 4.56 70.1 50-150 Phenanthrene D10 600 8.03 66,3 50-150 Anthracene-D10 600 8.16 65.0 50-150 Fluoranthene D10 600 11.50 71.5 50-150 Benz(a)Anthracene-D12 600 16.12 81.3 50-150 Chrysene D12 600 16.23 66.1 50-150 Benzo(b)Fluoranthene-D12 600 19.52 79.0 50-150 Benzo(k)Fluoranthene-D12 600 19.60 65.8 50-150 Benzo(a)Pyrene D12 600 20.42 88.3 50-150 Perylene D12 600 20.67 76.6 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 77.7 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 72.1 50-150 Benzo(g,h,i)Perylene D12 600 25.42 65.7 50-150 Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL. В Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### **ALS Life Sciences** Sample Analysis Report 20-22050-SVOC-(6 THRU 10) TEST#2 APC OUTLET #1 Sampling Date 11-Nov-20 ALS Sample ID L2529311-2 PAH by CARB 429 Extraction Date 25-Nov-20 Analysis Method Analysis Type Sample Matrix sample Stack Sample Size Percent Moisture Andrew Reid n/a -e-signature-08-Dec-2020 Split Ratio Workgroup WG3444637 **Run Information** Run 1 Filename 201207A12.D Run Date Final Volume Dilution Factor 12/7/2020 22:09 mi Analysis Units Instrument ng/sample MSD-5 Column HP5MS US0179454H Ret. Concentration Target Analytes Time ng/sample Flags Naphthalene 2.78 524 M 2-Methylnaphthalene 3.40 85.7 1-Methylnaphthalene 3.51 42.5 Acenaphthylene 4.57 <12 'n Acenaphthene 4.88 87,1 R Fluorene 5.83 48.7 R Phenanthrene 8.09 516 Anthracene 8.21 U <12 Fluoranthene 11.56 111 Pyrene 12.22 83.2 Benzo(a)Anthracene 16.20 <12 U Chrysene 16.31 21.9 Benzo(b)Fluoranthene NotFnd <12 Ü Benzo(k)Fluoranthene NotFnd <12 ·U Benzo(e)Pyrene NotFnd <12 11 Benzo(a)Pyrene NotFnd <12 U Perylene NotFnd <12 ٠U Indeno(1,2,3-cd)Pyrene NotFnd <12 U Dibenzo(a,h)Anthracene 24.71 <12 ·U Benzo(g,h,i)Perylene 25.55 24.4 Additional Analytes Tetralin 2.71 355 M RВ 2-Chloronaphthalene NotFnd <12 Biphenyl 3.95 559 o-Terphenyl 9.39 56.5 M 1-Methylphenanthrene 9.68 43.6 M R 9-Methylphenanthrene 9.82 107 M R 2-methylanthracene 9.85 117 M 9,10-dimethylanthracene 12.48 26.7 M R m-terphenyl 12.60 33.8 M R p-terphenyl 13,10 16.5 M R Benzo(a)fluorene NotFnd <12 Benzo(b)fluorene NotFnd <12 U 7,12-Dimethylbenzo(a)anthracene NotFnd <12 Ü 3-Methylcholanthrene NotFnd <60 Ú. Picene NotFnd <60 ·u Dibenzo(a,e)pyrene NotFnd <60 u Coronene 30.14 <60 U Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 88.3 Fluorene D10 600 5.78 110.2 Terphenyl D14(Surr.) 13.02 83.8 **Extraction Standards** % Rec Limits Naphthalene D8 600 2.77 72.5 50-150 2-Methylnaphthalene-D10 600 3,36 69.0 50-150 Acenaphthylene D8 600 4.56 79.5 50-150 Phenanthrene D10 600 8.03 44.2 50-150 Anthracene-D10 600 8.16 52.8 50-150 Fluoranthene D10 600 11.50 50.1 50-150 Benz(a)Anthracene-D12 600 16.12 54.1 50-150 Chrysene D12 600 45.5 16.23 50-150 Benzo(b)Fluoranthene-D12 600 19.52 102.1 50-150 Вепzo(k)Fluoranthene-D12 600 19.60 79.6 50-150 Benzo(a)Pyrene D12 600 20,42 97.5 50-150 Perylene D12 600 20.67 87.6 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 113.3 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 110.3 50-150 Benzo(g,h,i)Perylene D12 600 25.42 94.0 50-150 Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL. M U Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. B R

#### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(11 THRU 15) TEST#3 APC OUTLET #1 Sampling Date 12-Nov-20 ALS Sample ID Analysis Method L2529311-3 PAH by CARB 429 Extraction Date 25-Nov-20 Analysis Type sample Sample Matrix Sample Size Stack Approved: Andrew Reid sample n/a 6 Percent Moisture --e-signature-08-Dec-2020 Split Ratio Workgroup WG3444637 Run Information Run 1 201207413 D Filename Run Date 12/7/2020 22:47 Final Volume mL Dilution Factor Analysis Units ng/sample Instrument Column HP5MS US0179454H Ret. Concentration **Target Analytes** Time Naphthalene 2.78 200 M R B 2-Methylnaphthalene 3.40 29.7 1-Methylnaphthalene 3.51 21.8 Acenaphthylene 4.58 <12 11 Acenaphthene 4.88 <12 U Fluorene 5.83 <12 U Phenanthrene 8.08 59.5 Anthracene 8.21 U <12 Fluoranthene 11.56 13.9 Pyrene 12.21 12.8 Benzo(a)Anthracene 16.23 <12 Chrysene 16.29 <12 U Benzo(b)Fluoranthene NotFnd <12 U Benzo(k)Fluoranthene NotFnd <12 U Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 U Pervlene NotEnd <12 U Indeno(1,2,3-cd)Pyrene 24.38 <12 U Dibenzo(a,h)Anthracene 24.70 <12 Ü Benzo(g,h,i)Perylene 25,54 <12 U Additional Analytes Tetralin 2.66 496 2-Chloronaphthalene NotFnd <12 Biphenyl 3.95 24.1 R o-Terphenyl 9.39 <12 U 1-Methylphenanthrene 9.68 25.5 R 9-Methylphenanthrene 9.81 13.3 R 2-methylanthracene 9.86 21.1 M 9.10-dimethylanthracene NotEnd 'nυ <12 m-terphenyl 12.60 <12 U p-terphenyl 13.10 <12 υ Benzo(a)fluorene NotFnd <12 U Benzo(b)fluorene NotFnd <12 U 7,12-Dimethylbenzo(a)anthracene NotFnd <12 3-Methylcholanthrene NotFnd <60 U Picene NotEnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene 30.15 <60 U Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.47 94.7 Fluorene D10 600 5.78 100.9 Terphenyl D14(Surr.) 600 13.02 81.3 Extraction Standards % Rec Limits Naphthalene D8 600 2.77 75.2 50-150 2-Methylnaphthalene-D10 600 3.36 62.1 50-150 Acenaphthylene D8 600 4.56 87.3 50-150 Phenanthrene D10 600 8.03 76.2 50-150 Anthracene-D10 600 8.16 81.4 50-150 Fluoranthene D10 600 11.50 88.1 50-150 Benz(a)Anthracene-D12 600 16.12 109.2 50-150 Chrysene D12 600 16.23 85.0 50-150 Benzo(b)Fluoranthene-D12 101.4 50-150 600 19.51 Benzo(k)Fluoranthene-D12 600 19.60 85.8 50-150 Benzo(a)Pyrene D12 600 20.41 120.3 50-150 Perylene D12 600 20,66 106.0 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 119.8 50-150 Dibenz(a,h)Anthracene-D14 600 24.54 110.6 50-150 Benzo(g,h,i)Perylene D12 600 25.42 94.9 50-150 Indicates that a peak has been manually integrated. M Indicates that this compound was not detected above the MDL. В Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### ALS Life Sciences Sample Analysis Report 20-22050-SVOC-(16 THRU 20) BLANK#1 Sampling Date 12-Nov-20 ALS Sample ID L2529311-4 Extraction Date 25-Nov-20 PAH by CARB 429 sample Analysis Method Analysis Type Sample Matrix Stack Approved: Sample Size Percent Moisture Andrew Reid n/a e-signature-Solit Ratio Workgroup WG3444637 08-Dec-2020 Run Information Run 1 Filename 201207A09.D Run Date 12/7/2020 20:15 Final Volume mL Dilution Factor ng/sample MSD-5 HP5MS US0179454H Analysis Units Instrument Column Concentration **Target Analytes** Time ng/sample Flags Naphthalene 2,78 164 M 2-Methylnaphthalene 3.40 <12 11 1-Methylnaphthalene 3.52 <12 U Acenaphthylene 4.57 <12 ិប Acenaphthene NotFnd <12 U Fluorene 5,82 <12 υ Phenanthrene 8.09 <12 U Anthracene 8.20 <12 ប Fluoranthene 11.56 <12 Pyrene 12.21 <12 U Benzo(a)Anthracene 16.23 <12 U Chrysene NotEnd <12 U Benzo(b)Fluoranthene NotEnd <12 Ω Benzo(k)Fluoranthene NotFnd <12 ·U Benzo(e)Pyrene NotFnd <12 IJ Benzo(a)Pyrene NotFnd <12 U Perylene NotFnd <12 υ Indeno(1,2,3-cd)Pyrene NotFnd <12 U Dibenzo(a,h)Anthracene <12 U Beπzo(g,h,i)Perylene 25.54 <12 Additional Analytes Tetralin 2.71 181 M R B 2-Chloronaphthalene NotFnd <12 U Biphenyl 3.93 <12 11 o-Terphenyl NotFnd <12 u 1-Methylphenanthrene 9.68 <12 ìu 9-Methylphenanthrene NotFnd U <12 2-methylanthracene NotFnd <12 ับ 9,10-dimethylanthracene NotFnd <12 U m-terphenyl NotFnd <12 U p-terphenyl NotFnd <12 Benzo(a)fluorene NotFnd <12 U Benzo(b)fluorene NotFnd <12 ប 7,12-Dimethylbenzo(a)anthracene NotEnd <12 U 3-Methylcholanthrene NotFnd <60 υ Рісепе NotFnd <60 υ NotFnd Dibenzo(a,e)pyrene <60 ·U Coronene NotFnd <60 U Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 89.4 600 5.78 77.9 Terphenyl D14(Surr.) 13.02 **Extraction Standards** % Rec Limits Nanhthalene D8 600 2.77 79.9 50-150 2-Methylnaphthalene-D10 600 3.37 66.4 50-150 Acenaphthylene D8 600 4.56 81.5 50-150 Phenanthrene D10 600 8.03 88.0 50-150 Anthracene-D10 600 8.16 81.8 50-150 Fluoranthene D10 600 11.50 93.2 50-150 Benz(a)Anthracene-D12 600 110.9 16.12 50-150 Chrysene D12 600 16.23 90.4 50-150 Benzo(b)Fluoranthene-D12 19.52 97.0 600 50-150 Benzo(k)Fluoranthene-D12 600 19.60 84.7 50-150 Benzo(a)Pyrene D12 600 20.42 108.6 50-150 Perviene D12 600 20.66 90.9 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 91.4 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 85.8 50-150 Benzo(g,h,i)Perylene D12 78.2 600 25.43 50-150 Indicates that a peak has been manually integrated. M Indicates that this compound was not detected above the MDL Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. В

#### **ALS Life Sciences** Laboratory Method Blank Analysis Report 20-22050-SVOC-(21 THRU 25) TEST#1 APC OUTLET #2 L2529311-5 PAH by CARB 429 Sample Name ALS Sample ID Sampling Date 11-Nov-20 25-Nov-20 Extraction Date Analysis Method Analysis Type Sample Matrix Blank Stack Approved Sample Size Percent Moisture Split Ratio samole Andrew Reid -e-signature WG3444637 Workgroup 08-Dec-2020 Run Information Run 1 Filename 201207A14.D 12/7/2020 23:25 Run Date Final Volume mL Dilution Factor Analysis Units ng/sample Instrument Column MSD-5 HP5MS US0179454H Concentration **Target Analytes** Time ng/sample Naphthalene 2.78 290 M R B 2-Methylnaphthalene 3,40 39.1 1-Methylnaphthalene 3.51 22.3 Acenaphthylene 4.57 <12 ិប Acenaphthene <12 U Fluorene 5.83 <12 U Phenanthrene 8.09 78.5 Anthracene 8.20 <12 U Fluoranthene 11.56 19.4 Pyrene 12.21 20.3 Benzo(a)Anthracene 16.23 <12 U Chrysene 16.31 <12 U Benzo(b)Fluoranthene NotFnd <12 Ü Benzo(k)Fluoranthene NotFnd <12 JU Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 Perylene NotFnd <12 Ü Indeno(1,2,3-cd)Pyrene 24.48 <12 Ü Dibenzo(a,h)Anthracene 24.70 <12 ·U Benzo(g,h,i)Perylene 25.55 61.1 Additional Analytes Tetralin 2.71 204 M R B Ü 2-Chloronaphthalene NotFnd <12 Biphenyl 3.94 32.0 o-Terphenyl 9.38 <12 U 1-Methylphenanthrene 9.68 36.4 9-Methylphenanthrene 9.80 13.1 2-methylanthracene 9.86 21.6 9,10-dimethylanthracene NotFnd <12 U m-terphenyl 12.60 <12 U p-terphenyl 13.04 <12 Ü Benzo(a)fluorene NotFnd <12 'n Benzo(b)fluorene NotFnd <12 ÷υ 7,12-Dimethylbenzo(a)anthracene NotFnd <12 :U 3-Methylcholanthrene NotFnd <60 U Picene NotFnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene 30.14 <60 Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 84.1 Fluorene D10 600 5.78 91.3 Terphenyl D14(Surr.) 600 13.02 83 Extraction Standards % Rec Limits Naphthalene D8 600 2.77 72.5 50-150 2-Methylnaphthalene-D10 600 3.36 64.7 50-150 Acenaphthylene D8 600 4.56 68.9 50-150 Phenanthrene D10 600 8.03 78.4 50-150 Anthracene-D10 600 8.16 66.0 50-150 Fluoranthene D10 600 11.50 85.5 50-150 Benz(a)Anthracene-D12 600 16.12 94.8 50-150 Chrysene D12 600 16.23 79.5 50-150 Benzo(b)Fluoranthene-D12 600 19.51 95.2 50-150 Benzo(k)Fluoranthene-D12 600 19.60 81.0 50-150 Benzo(a)Pyrene D12 600 20.41 91.0 50-150 Perviene D12 600 20.66 87.0 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 99.9 50-150 Dibenz(a,h)Anthracene-D14 600 24.54 92,5 50-150 Benzo(g,h,i)Perylene D12 600 25,42 81.5 50-150 M Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL Indicates that this compound was detected in the method blank at greater than 10% of the sample value. B Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### **ALS Life Sciences** Sample Analysis Report Sample Name ALS Sample ID 20-22050-SVOC-(26 THRU 30) TEST#2 APC OUTLET #2 Sampling Date 11-Nov-20 L2529311-6 PAH by CARB 429 Extraction Date 25-Nov-20 Analysis Method Analysis Type sample Stack Sample Matrix Approved: Andrew Reid Sample Size Percent Moisture 1 n/a -e-signature-Split Ratio Workgroup WG3444637 08-Dec-2020 Run Information Run 1 Filename 201207A15.D 12/8/2020 0:03 1 mL Run Date Final Volume Dilution Factor ng/sample MSD-5 HP5MS US0179454H Analysis Units Instrument Column Concentration Target Analytes Time ng/sample Flags Naphthalene 2.78 277 M R B 2-Methylnaphthalene 3.40 54.1 1-Methylnaphthalene 3.51 25.4 Acenaphthylene 4.57 <12 ិប Acenaphthene 4.88 44.7 5.83 Fluorene 26.5 Phenanthrene 8.09 230 Anthracene 8.21 12.4 Fluoranthene 11.56 64.0 Pyrene 12.21 66.2 Benzo(a)Anthracene 16.21 <12 Ü Chrysene 16.31 12.1 R Benzo(b)Fluoranthene NotFnd <12 Ď Benzo(k)Fluoranthene NotFnd <12 · U Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 U Perylene NotFnd <12 υ Indeno(1,2,3-cd)Pyrene 24.48 <12 Ų Dibenzo(a,h)Anthracene 24.70 <12 U Benzo(g,h,i)Perylene 25.55 47.5 Additional Analytes Tetralin 2.71 278 M R B 2-Chloronaphthalene NotFnd <12 U Biphenyl 3.95 57.4 o-Terphenyl 9.39 <12 U 1-Methylphenanthrene 9.68 42.2 R 9-Methylphenanthrene 9.82 67.4 M R 2-methylanthracene 9.85 66.5 M 9,10-dimethylanthracene 12.46 21.1 R m-terphenyl 12.60 25.0 p-terphenyl 13.10 <12 U Benzo(a)fluorene NotFnd <12 U Benzo(b)fluorene NotFnd <12 U 7,12-Dimethylbenzo(a)anthracene NotEnd <12 U 3-Methylcholanthrene NotEnd <60 ់ប Picene NotFnd <60 Ü Dibenzo(a,e)pyrene NotFnd <60 ·υ Согопеле 30.14 <60 U Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 3.48 80.8 Fluorene D10 600 5.78 119.3 Terphenyl D14(Surr.) 88.9 **Extraction Standards** % Rec Limits Naphthalene D8 600 2.77 84.8 50-150 2-Methylnaphthalene-D10 600 3.36 69.8 50-150 Acenaphthylene D8 600 4.56 85.7 50-150 Phenanthrene D10 600 8.03 72.8 50-150 Anthracene-D10 600 8.16 74.4 50-150 Fluoranthene D10 600 11.50 82.8 50-150 Benz(a)Anthracene-D12 600 16.12 96.8 50-150 Chrysene D12 600 16.23 77.1 50-150 Benzo(b)Fluoranthene-D12 19.52 107.2 600 50-150 Benzo(k)Fluoranthene-D12 600 19,60 86.7 50-150 Benzo(a)Pyrene D12 600 20.42 101.0 50-150 Perviene D12 600 20.66 97.4 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 123.9 50-150 Dibenz(a.h)Anthracene-D14 600 24.55 114.4 50-150 Benzo(g,h,i)Perylene D12 600 25.42 98.9 50-150 M Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion. B R

#### **ALS Life Sciences** Sample Analysis Report Sample Name 20-22050-SVOC-(31 THRU 35) TEST#3 APC OUTLET #2 Sampling Date 12-Nov-20 ALS Sample ID Analysis Method L2529311-7 PAH by CARB 429 Extraction Date 25-Nov-20 Analysis Type Sample Matrix sample Stack Approved: Andrew Reid Sample Size sample Percent Moisture n/a -e-signature-Split Ratio Workgroup WG3444637 08-Dec-2020 Run Information Run 1 Filename 201207A16.D Run Date 12/8/2020 0:41 Final Volume Dilution Factor ng/sample MSD-5 HP5MS US0179454H Analysis Units Instrument Column Ret. Time Target Analytes Flags ng/sample Naphthalene 2.78 224 M R B 2-Methylnaphthalene 3.40 32.5 1-Methylnaphthalene 3.51 22.0 Acenaphthylene 4.57 ្យ <12 Acenaphthene 4.88 <12 U Fluorene 5.83 U <12 Phenanthrene 8.09 66.1 Anthracene 8.20 <12 Ų Fluoranthene 11,56 27.2 Pyrene 12.21 18.5 Benzo(a)Anthracene 16.19 <12 U Chrysene 16.31 <12 U Benzo(b)Fluoranthene NotFnd <12 Ū Benzo(k)Fluoranthene NotFnd <12 U Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 Perylene NotFnd <12 U Indeno(1,2,3-cd)Pyrene 24,46 <12 Dibenzo(a,h)Anthracene 24.71 <12 U Benzo(g,h,i)Perylene 25.54 19.9 Additional Analytes Tetralin 2.66 288 M В 2-Chloronaphthalene NotFnd <12 : 0 Biphenyl 3.93 29.6 o-Terphenyl 9.39 <12 U 1-Methylphenanthrene 9.68 21.1 9-Methylphenanthrene 9.81 14.5 2-methylanthracene 9.86 21.6 M 9,10-dimethylanthracene NotFnd <12 U m-terphenyl 12.60 <12 p-terphenyl 13,10 <12 U Benzo(a)fluorene NotFnd <12 ·Ù Benzo(b)fluorene NotFnd <12 ·U 7,12-Dimethylbenzo(a)anthracene NotFnd <12 .U 3-Methylcholanthrene NotFnd <60 U NotFnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene 30.14 <60 Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 90.4 Fluorene D10 600 5.78 96.9 Terphenyl D14(Surr.) 600 13.02 80.3 Extraction Standards % Rec Limits Naphthalene D8 600 2.77 77.2 50-150 2-Methylnaphthalene-D10 600 3.36 68.4 50-150 Acenaphthylene D8 600 4.56 50-150 81.0 Phenanthrene D10 600 8.03 80.0 50-150 Anthracene-D10 600 8.15 73.4 50-150 Fluoranthene D10 600 11.50 89.2 50-150 Benz(a)Anthracene-D12 600 16.12 104.7 50-150 Chrysene D12 600 16.23 82.7 50-150 Benzo(b)Fluoranthene-D12 600 19.52 101.0 50-150 Benzo(k)Fluoranthene-D12 600 19.60 86.3 50-150 Benzo(a)Pyrene D12 600 20.41 102.6 50-150 Perviene D12 600 20.66 98.2 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 113.2 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 104.1 50-150 Benzo(g,h,i)Perylene D12 600 25.42 88.9 50-150 Indicates that a peak has been manually integrated U Indicates that this compound was not detected above the MDL В Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### **ALS Life Sciences** Sample Analysis Report Sample Name ALS Sample ID Analysis Method 20-22050-SVOC-(36 THRU 40) BLANK#2 Sampling Date 12-Nov-20 L2529311-8 PAH by CARB 429 Extraction Date 25-Nov-20 Analysis Type Sample Matrix sample Stack Approved: Andrew Reid -e-signature-Sample Size sample Percent Moisture Split Ratio n/a Workgroup WG3444637 08-Dec-2020 Run Information Run 1 201207A10.D Run Date 12/7/2020 20:53 Final Volume Dilution Factor ng/sample MSD-5 HP5MS US0179454H Analysis Units Instrument Column Concentration Target Analytes Time Flags ng/sample Naphthalene 2.78 172 M RB 2-Methylnaphthalene 3.40 IJ <12 1-Methylnaphthalene 3.52 <12 U Acenaphthylene 4.58 <12 ·U Acenaphthene NotFnd <12 U Fluorene NotFnd <12 U Phenanthrene 8.09 <12 U Anthracene 8.20 <12 U Fluoranthene 11,56 <12 U Pyrene 12.21 <12 U Benzo(a)Anthracene NotFnd <12 U Chrysene NotFnd <12 U Benzo(b)Fluoranthene NotFnd <12 U Benzo(k)Fluoranthene NotFnd <12 U Benzo(e)Pyrene NotFnd <12 U Benzo(a)Pyrene NotFnd <12 Perylene NotFnd <12 U Indeno(1,2,3-cd)Pyrene NotFnd <12 U Dibenzo(a,h)Anthracene 24.71 <12 ·U Benzo(g,h,i)Perylene 25.53 <12 U Additional Analytes Tetralin 2.71 129 M R B 2-Chloronaphthalene NotFnd <12 ·U Biphenyl 3.95 <12 Ù o-Terphenyl NotFnd <12 Ü 1-Methylphenanthrene 9.68 <12 U 9-Methylphenanthrene NotFnd <12 U 2-methylanthracene NotFnd <12 9,10-dimethylanthracene NotFnd <12 U m-terphenyl 12.60 <12 U p-terphenyl 13.10 <12 Ū Benzo(a)fluorene NotEnd <12 'n Benzo(b)fluorene NotFnd <12 Ù 7,12-Dimethylbenzo(a)anthracene NotFnd <12 u 3-Methylcholanthrene NotFnd <60 U NotFnd <60 U Dibenzo(a,e)pyrene NotFnd <60 U Coronene NotFnd <60 Field Sampling Standards ng spiked % Rec 1-Methylnaphthalene-D10 600 3.48 94.5 Fluorene D10 600 5,78 75.5 Terphenyi D14(Surr.) 600 13.02 84.3 Extraction Standards % Rec Limits Naphthalene D8 500 2.77 82.4 50-150 2-Methylnaphthalene-D10 600 3.37 68.9 50-150 Acenaphthylene D8 600 4.56 50-150 91.3 Phenanthrene D10 600 8.03 89.5 50-150 Anthracene-D10 600 8.16 B5.5 50-150 Fluoranthene D10 600 11.50 99.0 50-150 Benz(a)Anthracene-D12 600 16.12 122.7 50-150 Chrysene D12 600 16.23 98.2 50-150 Benzo(b)Fluoranthene-D12 600 19.52 105.9 50-150 Benzo(k)Fluoranthene-D12 600 19,60 88.5 50-150 Benzo(a)Pyrene D12 600 20.42 118.3 50-150 Perviene D12 20.66 600 100.8 50-150 Indeno(1,2,3,cd)Pyrene-D12 600 24.38 108.3 50-150 Dibenz(a,h)Anthracene-D14 600 24.55 101.9 50-150 Benzo(g,h,i)Perylene D12 600 25.42 91.9 50-150 M Indicates that a peak has been manually integrated Indicates that this compound was not detected above the MDL B Indicates that this compound was detected in the method blank at greater than 10% of the sample value. Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

#### **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method

Split Ratio

Laboratory Control Sample WG3444637-2 PAH by CARB 429

Analysis Type Sample Matrix LCS Sample Size Percent Moisture

QC 1 n/a n/a 6

Sampling Date Extraction Date

Workgroup

n/a 25-Nov-20

WG3444637

Approved: Andrew Reid --e-signature--08-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument

Run 1 201207A05.D 12/7/2020 17:43 mL

Column HP5MS US0179454H

		Ret.		
Target Analytes	ng spiked	Time %	Flags	Limits
Naphthalene (	600	2.79	113.9 M R	50-150
2-Methylnaphthalene	600	3.40	104.3	50-150
1-Methylnaphthalene	600	3.52	123	50-150
Acenaphthylene	600	4.58	93.6	50-150
Acenaphthene	600	4.88	90.8	50-150
Fluorene	600	5.83	83.6	50-150
Phenanthrene	600	8.09	90.4	50-150
Anthracene	600	8.21	94.1	50-150
Fluoranthene	600	11.56	85.9	50-150
Pyrene	600	12.22	85.6	50-150
Benzo(a)Anthracene	600	16.19	82.7	50-150
Chrysene	600	16.32	88.3	50-150
Benzo(b)Fluoranthene	600	19.58	82.3	50-150
Benzo(k)Fluoranthene	600	19.66	82.2	50-150
Benzo(e)Pyrene	600	20.34	99.1	50-150
Benzo(a)Pyrene	600	20.48	77.3	50-150
Perylene	600	20.73	82.9	50-150 50-150
ndeno(1,2,3-cd)Pyrene	600	24.48	76.9	50-150
Dibenzo(a,h)Anthracene	600	24.68	81.2	50-150
Benzo(g,h,i)Perylene	600	25.55	81.9	50-150
activa(g)(i)()) Fol yielle	300		01.5	20-130
extraction Standards			% Rec	Limits
laphthalene D8	600	2.77	87.7	30-150
2-Methylnaphthalene-D10	600	3.37	76.5	30-150
Acenaphthylene D8	600	4.56	85.2	30-150
Phenanthrene D10	600	8.03	100.4	50-150
Anthracene-D10	600	8.16	87.9	50-150
Fluoranthene D10	600	11.51	104.0	50-150
Benz(a)Anthracene-D12	600	16.12	114.1	50-150
	600	16.12	114.1	
Chrysene D12				50-150
Benzo(b)Fluoranthene-D12	600	19.52	103.0	50-150
Benzo(k)Fluoranthene-D12	600	19.60	91.9	50-150
Benzo(a)Pyrene D12	600	20.42	110.9	30-150
Perylene D12	600	20.67	95.1	50-150
Indeno(1,2,3,cd)Pyrene-D12		24.38	96.2	50-150
Dibenz(a,h)Anthracene-D14	600	24.55	96.7	50-150
Benzo(g,h,i)Perylene D12	600	25.43	89.0	50-150

Indicates that a peak has been manually integrated.

R

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.



#### **APPENDIX 16**

Acid Gas Recovery Data Sheets (8 pages)

Client: Covanta DYEC	
Project No.: 22050	
Date: Nov9, 2720	
Test No.:	
Test Location: UNIT	
Filter is used but not	
recovered as sample	
	t. On the transfer of the composition of the company of the property of the company of the company of the company
Impingers 1, 2, 3	Impinger 4
	Вонности на положения на принципання на принципан
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt: 577. 8	Initial Wt: 947.0
Initial Wt: 678-1	Final Wt: 96/-6
Final Wt: 783.5	4 Gain: 14-6
Gain: 105.4	
Colour: lean	
Impinger #2 0.1 N H <sub>2</sub> SO4	
Empty Wt: 543.0	Box ID:
Initial Wt: 652-8	
Final Wt: 693.6	
Gain: 40.8	
Colour: Jaan	
Impinger #3 EMPTY	CWTR = 1+2+3: /4/.2
Empty Wt: 620. 7	
Final Wt: 625 7	WCBDA= 4: 14.6
Gain: 5.0	
Colour: lean	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A- /
Empty Wt: 28/. /	
With Imp. 1,2,3 Soln: 639.4	
After Rinse: 744.5	
Total TS3: 463.4	
	•
Train Loaded By:	
Train Recovered By:	- Walter State Continue and Con

1

2

Client: Covanta DYEC	
Project No.: 22050	SON (INC.) (INC.
Date: 1/059, 20	
Test No.: 2	
Test Location: UNIT 1	
Filter is used but not	
recovered as sample	
Impingers 1, 2, 3	Impinger 4
	Becommen promonence control of control
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt: 670.3	Initial Wt: 942-6
Initial Wt: 772-1	Final Wt: 957-5
Final Wt: 881-0	4 Gain: 14-9
Gain: 108-9	***************************************
Colour: lean	
Impinger #2 0.1 N H <sub>2</sub> SO4	:
Empty Wt: 6523	Box ID: 15
Initial Wt: 754.7	
Final Wt: 802. Z	
Gain: 47. 5	
Colour: Lean	
Impinger #3 EMPTY	CWTR = 1+2+3: 163.4
Empty Wt: 635-6	
Final Wt: 64Z-6	WCBDA= 4: / 4.9
Gain: 7.0	
Colour: clean	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A- 2
Empty Wt: 280.8	
With Imp. 1,2,3 Soln: 650. ▽	
After Rinse: 744-6	
Total TS3: 463-8	
Train Loaded By:	
Train Recovered By:	

1

2

Client : Covanta DYEC	
Project No.: 22050	<del>and and a second and a second as a second</del>
Date: 1/0/9 20	
Test No.:	
Test Location: 1/1/1771	and the state of t
	in the control of the
Filter is used but not	
recovered as sample	
Impingers 1, 2, 3	Impinger 4
Total despondence of the second secon	
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt: 572.8	Initial Wt: 9/9. D
Initial Wt: 677.4	Final Wt: 93/-4
Final Wt: 83/.4	4 Gain: / Z · Y
Gain: 154 0	· ·
Colour:	
Impinger #2 0.1 N H <sub>2</sub> SO4	
Empty Wt: \$543.0	Box ID:
Initial Wt: 645.2	
Final Wt: 680,7	
Gain: 35.0	
Colour: Lean	
Impinger #3 EMPTY	CWTR = 1+2+3: 195
Empty Wt: 620. 7	
Final Wt: 627.0	WCBDA= 4: /2.4
Gain: 6-3	
Colour: lean	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A- 3
Empty Wt: 280.0	
With Imp. 1,2,3 Soln: 677-/	
After Rinse: 790.7	
Total TS3: 5/0.7	
Train Loaded By:	
Train Pacayarad Ry	See 2

1

2

Client : Covanta DYEC	
Project No.: 22050	
Date: NOV 10, 20	
Test No.:	
Test Location: UNIT 2	
Filter is used but not	
recovered as sample	
Impingers 1, 2, 3	Impinger 4
Impinger #1 0.1 N H₂SO4	Impinger #4 Silica Gel
Empty Wt: 577-8	Initial Wt: 931.4
Initial Wt: 675-1	Final Wt: 946~0
Final Wt: 800.0	4 Gain: 14. 6
Gain: 1249	
Colour: clean	
Impinger #2 0.1 N H₂SO4	
Empty Wt: 5 43.0	Box ID:
Initial Wt: 646-0	
Final Wt: 690.7	
Gain: 44.7	
Colour: lean	
Impinger #3 EMPTY	CWTR = 1+2+3: 176.8
Empty Wt: 620.7	
Final Wt: 627.9	WCBDA= 4: 14.6
Gain: 7. Z	
Colour: Ikan	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A-
Empty Wt: 281. 4	
With Imp. 1,2,3 Soln: 659 - 2	
After Rinse: 761.8	
Total TS3: 480-4	
Train Loaded By:	
Train Recovered By:	<del></del>

1

2

Client : Covanta DYEC	
Project No.: 22050	<del></del>
Date: 10/1/0,20	
Test No.:	
Test Location: UV1772	
Filter is used but not	
recovered as sample	
	e valence and the comment of the com
Impingers 1, 2, 3	Impinger 4
	processing and the second of t
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt: 670-3	Initial Wt: 398-8
Initial Wt: 772-5	Final Wt: 910-5
Final Wt: 9/4-7	4 Gain: (//)
Gain: 142-2	
Colour:	
Impinger #2 0.1 N H₂SO4	
Empty Wt: 652-3	Box ID:
Initial Wt: 761-5	
Final Wt: 79/-7	
Gain: 30-2	
Colour: Lean	
	Come di
Impinger #3 EMPTY	CWTR = 1+2+3: / 78.4
Empty Wt: 635.6	V
Final Wt: 641-6	WCBDA= 4: //-
Gain: 6.0	
Colour: clean	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A-
Empty Wt: 280-8	
With Imp. 1,2,3 Soln: 670.6	
After Rinse: 791-2	
Total TS3: 5/0-4	
Train Loaded By:	
Train Recovered By:	
LINILIZECOACIEM DA	

1

2

Client : Covanta DYEC	
Project No.: 22050	<del></del>
Date: 1/0/10,20	
Test No.:	•
Test Location: UNIT 2	· · · · · · · · · · · · · · · · · · ·
Filter is used but not	
recovered as sample	
	and the state of t
Impingers 1, 2, 3	Impinger 4
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt: 572-6	Initial Wt: 946-0
Initial Wt: 675.5	Final Wt: 957-8
Final Wt: 804-7	4 Gain: //- 8
Gain: /2 ?. Z	
Colour: Clean	
Impinger #2 0.1 N H₂SO4	
Empty Wt: 543,0	Box ID:
Initial Wt: 6444	
Final Wt: 668-7	
Gain: 2 4. 3	
Colour:	
Impinger #3 EMPTY	CWTR = 1+2+3: 157.4
Empty Wt: 6197	
Final Wt: 623.6	WCBDA= 4: //- 8
Gain: 3.9	
Colour:	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A-
Empty Wt: 2 80.7	
With Imp. 1,2,3 Soln: 635.7	
After Rinse: 779-6	
Total TS3: 498.3	
n de Norden en	
Train Loaded By:	
Train Recovered By:	

1

2

Client: Covanta DYEC	
Project No.: 22050	
Date: NOV 10, 20	
Test No.: Pank	
Test Location:	
	1400 Maria - 1400
Filter is used but not	
recovered as sample	
Impingers 1, 2, 3	Impinger 4
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt:	Initial Wt:
Initial Wt:	Final Wt:
Final Wt:	4 Gain:
Gain:	- Comm
Colour:	
Impinger #2 0.1 N H <sub>2</sub> SO4	
Empty Wt:	Box ID:
Initial Wt:	
Final Wt:	
Gain:	
Colour:	
Impinger #3 EMPTY	CWTR = 1+2+3:
Empty Wt:	VIII
Final Wt:	WCBDA= 4:
Gain:	
Colour:	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A- BLANK 1
Empty Wt: 281.5	
With Imp. 1,2,3 Soln: 488-7	
After Rinse: 587 - 1	
Total TS3: 300-6	
Train Loaded By:	

Client: Covanta DYEC	
Project No.: 22050	
Date: Nov 10, 2P	:
Test No.: Pan A	
Test Location: DLMM	
Filter is used but not	
recovered as sample	
Impingers 1, 2, 3	Impinger 4
Impinger #1 0.1 N H <sub>2</sub> SO4	Impinger #4 Silica Gel
Empty Wt:	Initial Wt:
Initial Wt:	Final Wt:
Final Wt:	4 Gain:
Gain:	L
Colour:	
Impinger #2 0.1 N H₂SO4	
Empty Wt:	Box ID:
Initial Wt:	
Final Wt:	
Gain:	
Colour:	
Andrews and the second of the	
Impinger #3 EMPTY	CWTR = 1+2+3:
Empty Wt:	ed source control of
Final Wt:	WCBDA= 4:
Gain:	
Colour:	
CONTAINER TS3 WEIGHTS	SAMPLE ID: 20-22050-M26A- BIANK
Empty Wt: 281.5	
With Imp. 1,2,3 Soln: 485.6	
After Rinse: 587-7	
Total TS3: 306.2	
Train Loaded By:	
Train Recovered By: 8 7	de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la



## **APPENDIX 17**

VOST Analytical Report (4 pages)



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: ORT100
ALS Project ID: Lynne Wrona
ALS WO#: L2529317

Date of Report 27-Nov-20
Date of Sample Receipt 13-Nov-20

00 Client Name: Wrona Client Address:

Client Name: ORTECH Environmental
Client Address: 804 Southdown Road
Mississauga, ON L5J 2Y4
Canada

Client Contact: Chris Belore
Client Project ID: 22050 Covanta

COMMENTS:

VOCs via SW846 Method 5041A/8260C

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod, Ph.D. Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

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			Α	LS	Environmen	tal						
			Sample	e An	alysis Summarı	/ Re	port	CHIMCHTOIN				***************************************
Sample Name	20-22050-VOST- (1A,1B) TEST#1 APC OUTLET #1		20-22050-VOST (2A,2B) TEST#2 APC OUTLET #1		20-22050-VOST (3A,3B) TEST#3 APC OUTLET #1		20-22050-VOST (4A,4B) TEST#4 APC OUTLET #1		20-22050-VOST (5A,5B) FIELD BLANK APC OUTLET #1		20-22050-VOST (7A,7B) TEST#1 APC OUTLET #2	
ALS Sample ID	L2529317-1		L2529317-2		L2529317-3		L2529317-4		L2529317-5		L2529317-6	
Sample units	sample		sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST		VOST	
Sampling Date	11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20	
Extraction Date	23-Nov-20		23-Nov-20	grafi.	23-Nov-20		23-Nov-20		23-Nov-20		24-Nov-20	
Target Analytes	ug/sample		ug/sample		ug/sample		ug/sample		ug/sample		ug/sample	
Dichlorodifluoromethane	0.025		0.024		< 0.02	U	0.029		<0.02	U	<0.02	U
Vinyl Chloride	<0.02	Ü	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	· U
Bromomethane	< 0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	Ū
Trichlorofluoromethane	0.068		0.065		0.073		0.079		<0.02	U	0.053	JA.
1,1-Dichloroethene	< 0.01	U	<0.01	U	< 0.01	U	< 0.01	U	< 0.01	U	< 0.01	U
Acetone	1.25		1.20		1.34		1.46		0.146		1.36	M
Methylene Chloride	1.12		1.08		1,21		1.31		0.113		0.704	
trans,1,2-Dichloroethene	0.027		0.026		0.029		0.031		<0.01	U	0.016	
2-Butanone	1.17		1.12		1.26		1.36		<0.01	U	1.15	
Chloroform 1,1,1-Trichloroethane	0.066		0.063		0.071		0.077		<0.01	U	0.094	
Carbon Tetrachloride	< 0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Benzene	0.162 0.3		0.155		0.174		0.189		<0.01	U	0.031	
1,2-Dichloroethane	0.049	1	0.287 0.047		0.322		0.35		<0.05	U	0.114	
Trichloroethene	< 0.01	U	<0.01	U	0.053 <0.01	U	0.057 <0.01	U	< 0.01	U	0.017	
1,2-Dichloropropane	< 0.01	υ	<0.01	U	<0.01 <0.01	U	<0.01 <0.01	U	<0.01 <0.01	U	<0.01	U
Bromodichloromethane	0.05	Ü	0.048	Ü	0.054	ŭ	0.058	U	<0.01 <0.01	U	<0.01 0.017	U
Toluene	1.63		1.56		1.75		1.90		<0.01 <0.05	U	0.804	
1,1,2-Trichloroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.03	U	<0.02	U
Tetrachloroethene	<0.01	U	< 0.01	Ū	< 0.01	Ŭ	< 0.01	Ŭ	< 0.01	Ü	0.01	٠
Chlorodibromomethane	< 0.01	U	< 0.01	U	< 0.01	U	< 0.01	U	< 0.01	Ü	<0.01	U
Ethylene Dibromide	< 0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	Ü	<0.02	U
Ethylbenzene	0.421		0.404		0.453		0.492		< 0.01	Ū	0.196	Ŭ
M&P-Xylene	1.39		1.34		1.50		1,63		< 0.03	U	2.49	
0-Xylene	0.621		0.596		0.668		0.725		< 0.01	U	0.812	
Styrene	0.229		0.22		0.247		0.268		<0.02	U	0.112	
Bromoform	< 0.01	U	<0.01	U	<0.01	U	<0.01	U	< 0.01	U	<0.01	U
Isopropylbenzene	0.061		0.059		0.066		0.072		<0.02	U	0.033	
1,3,5-Trimethylbenzene	0.436		0.418		0.469		0.509		<0.02	U	0.243	
1,3-Butadiene Trichlorotrifluoroethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Field Standard	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
	% Rec		% Rec		% Rec		% Rec		% Rec		% Rec	
d10-Ethylbenzene(SPK)	64		61		65		64		83		119	
Surrogate Standards	% Rec		% Rec		% Rec		% Rec		% Rec		% Rec	
d4-1,2-Dichloroethane(SURR) d8-Toluene(SURR)	110		106		113		110		102		94	
4-Bromofluorobenzene(SURR)	74 107		71		75		74		102		118	
Internal Standards	107 % Rec		102		109		107		116		128	
Bromochloromethane	% Rec 82		% Rec 75		% Rec		% Rec		% Rec		% Rec	
1,4-Difluorobenzene	82 101		75 91		90		66		77.		82	
d5-Chlorobenzene	101		91 97		110		81		114		144	
	100	<u>, 940</u>	an ion diamet.		118		86		100		89	

Indicates that this compound was not detected above the RL. Indicates that a peak has been manually integrated.

			A	LS	Environmen	tal				
			Sample	e An	alysis Summary	/ Re	port			
Sample Name	20-22050-VOST (8A,8B) TEST#2 APC OUTLET #2		20-22050-VOST- (9A,9B) TEST#3 APC OUTLET #2		20-22050-VOST (10A,10B) TEST#4 APC OUTLET #2		20-22050-VOST (11A,11B) FIELD BLANK APC OUTLET #2		20-22050-VOST (12A,12B) TRIP BLANK	
ALS Sample ID	L2529317-7		L2529317-8		L2529317-9		L2529317-10		L2529317-11	
Sample units	sample		sample		sample		sample		sample	
Matrix	VOST		VOST		VOST		VOST		VOST	
Sampling Date	11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20		11-Nov-20	
Extraction Date	24-Nov-20		24-Nov-20		24-Nov-20	4,475	24-Nov-20		23-Nov-20	
Farget Analytes	ug/sample		ug/sample		ug/sample		ug/sample		ug/sample	
Dichlorodifluoromethane	<0.02	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Vinyl Chloride	<0.02	U	< 0.02	U	<0.02	U	<0.02	Ū	<0.02	Ü
Bromomethane	<0.09	U	<0.09	U	<0.09	U	<0.09	U	<0.09	Ū
Trichlorofluoromethane	0.065		0.057		0.049		<0.02	U	<0.02	U
1,1-Dichloroethene	< 0.01	u, U	< 0.01	U	< 0.01	U	<0.01	U	<0.01	U
Acetone	1.67	М	1,47	М	1.27	M	0.105		0.128	
Methylene Chloride	0.867		0.76		0.661		<0.1	U	<0.1	U
trans,1,2-Dichloroethene	0.02		0.017		0.015		<0.01	U	< 0.01	U
2-Butanone	1.41		1.24		1.08		< 0.01	U	< 0.01	U
Chloroform	0.116		0.102		0.089		< 0.01	U	< 0.01	U
1,1,1-Trichloroethane	<0.01	U	< 0.01	U	< 0.01	U	< 0.01	U	< 0.01	U
Carbon Tetrachloride	0.038		0.034		0.029		<0.01	U	< 0.01	U
Benzene	0.141		0.123		0.107		<0.05	U	<0.05	U
,2-Dichloroethane	0.021		0.018		0.016		< 0.01	U	<0.01	U
richloroethene	<0.01	U	<0.01	U	<0.01	U	< 0.01	U	< 0.01	U
,2-Dichloropropane Fromodichloromethane	< 0.01	U	< 0.01	U	<0.01	U	<0.01	U	< 0.01	U
roluene	0.022		0.019		0.016		<0.01	U	< 0.01	U
l,1,2-Trichloroethane	0.991 <0.02	U	0.868		0.755		<0.05	U	<0.05	U
Tetrachloroethene	<0.02 0.013	U	<0.02	U	<0.02	U	<0.02	U	<0.02	U
Chlorodibromomethane	0.013 <0.01	U	0.011 <0.01	U	<0.01	U	<0.01	U	< 0.01	U
Ethylene Dibromide	<0.01 <0.02	U	<0.01 <0.02	U	<0.01 <0.02	U	<0.01	U	< 0.01	U
Ethylbenzene	0.241	J	<0.02 0.212	U	<0.02 0.184	U	<0.02	U	<0.02	U
M&P-Xylene	3,07		2.69		2.34		<0.01 <0.03	U	<0.01	U
O-Xylene	1.00		0.877		0.763		<0.03 <0.01	U	<0.03 <0.01	U
Styrene	0.138		0.121		0.105		<0.01 <0.02	U	<0.01 <0.02	U
Bromoform	< 0.01	U	< 0.01	U	<0.01	U	< 0.01	U	<0.02 <0.01	U
Isopropylbenzene	0.041		0.036		0.031		<0.01	U	<0.01	U
1,3,5-Trimethylbenzene	0.299		0.262		0.228		<0.02	U	<0.02	U
1,3-Butadiene	<0.02	U	< 0.02	U	< 0.02	U	<0.02	U	<0.02	U
Frichlorotrifluoroethane	<0.02	U	<0.02	Ū	<0.02	Ü	<0.02	U	<0.02 <0.02	Ü
Field Standard	% Rec		% Rec		% Rec		% Rec		% Rec	
110-Ethylbenzene(SPK)	98		97		103		69		80	
Surrogate Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
14-1,2-Dichloroethane(SURR)	77		76		81		84		98	
d8-Toluene(SURR)	97		96		102		85		99	
4-Bromofluorobenzene(SURR)	106		104		111		96		112	
Internal Standards	% Rec		% Rec		% Rec		% Rec		% Rec	
Bromochloromethane	97		76		87		82		79	
I,4-Difluorobenzene	136		133		62		61		118	
15-Chlorobenzene	84		82		95		54		103	

Indicates that this compound was not detected above the RL. Indicates that a peak has been manually integrated.

		A	LS	Environmenta		
	4405 0000 0000 0000 0000 0000 0000 0000	Sample	An:	alysis Summary R	eport	
Sample Name	Method Blank (Nov 23)	Method Blank (Nov 24)		Laboratory Control Sample (Nov 23)	Laboratory Control Sample (Nov 24)	
ALS Sample ID	WG3449722-1	WG3449722-3		WG3449722-2	WG3449722-4	
Sample units	sample	sample		n/a	n/a	
Matrix	QC	QC		QC	QC	
Sampling Date	n/a	n/a		n/a	n/a	
Extraction Date	23-Nov-20	24-Nov-20	MCMartinian Succession	23-Nov-20	24-Nov-20	
Target Analytes	ug/sample	ug/sample		% Rec	% Rec	
Dichlorodifluoromethane	<0.02 U	<0.02	U	97.4	91.6	lah bada bada kabupaten bada a bada a b
Vinyl Chloride	<0.02 U	<0.02	U	104.5	99.2	
Bromomethane	<0.09 U	<0.09	U	97.1	95.7	
Trichlorofluoromethane	<0.02 U	<0.02	U	120.8	105.9	
1,1-Dichloroethene	<0.01 U	<0.01	U	99.7	90.2	
Acetone	<0.1 U		U	118.4	118.5	
Methylene Chloride	<0.1 U	<0.1	. U	110.4	108.8	
trans,1,2-Dichloroethene	<0.01 U		U	89.2	105.1	
2-Butanone	<0.01 U		U	82.2	99.6	
Chloroform	<0.01 U		U	91.6	100.1	
1,1,1-Trichloroethane	<0.01 U		U	86.3	99.2	
Carbon Tetrachloride	<0.01 U		U	91.1	110.1	
Benzene	<0.05 U		U	112.8	100.7	
1,2-Dichloroethane	<0.01 U		U	80.9	80.9	
Trichloroethene	<0.01 U		U	116.9	111.3	
1,2-Dichloropropane	<0.01 U	1 4 4 4 4 4 5 5 5 5 5 7 C	U	109	111.3	
Bromodichloromethane	<0.01 U		Ü	98.2	105.6	
Toluene	<0.05 U		Ü	84,9	103.7	
1,1,2-Trichloroethane	<0.02 U	<ul><li>・ さいましょう A 16 利利を示し、</li></ul>	U	88	103.7	
Tetrachloroethene	<0.01 U		U	81.4	111.4	
Chlorodibromomethane	<0.01 U		Ü	82.6	111.9	
Ethylene Dibromide	<0.02 U		U	90.4		
Ethylbenzene	<0.01 U	化基金银 医电影 化二十二烷 医阿萨克克氏病	U	90.4 102	113.6	
M&P-Xylene	<0.03 U		U	108.3	96.1	
O-Xylene	<0.01 U		U	105.4	90.4	
Styrene	<0.01 U		U		89.1	
Bromoform	<0.01 U		U	106.3	92.8	
Isopropylbenzene	<0.01 U	<0.01 <0.02	11年7月年	103.6	105.8	
1,3,5-Trimethylbenzene	<0.02 U		U	100.7	86.5	
1,3-Butadiene	<0.02 U	<0.02	U	107.9	97.1	
Trichlorotrifluoroethane	<0.02 U	<0.02 <0.02	U U			
Field Standard	% Rec	% Rec		% Rec	% Rec	
d10-Ethylbenzene(SPK)	87	72		80	88	
Surrogate Standards	% Rec	% Rec		% Rec	% Rec	
d4-1,2-Dichloroethane(SURR)	104	86		100	98	
d8-Toluene(SURR)	101	84		65	106	
4-Bromofluorobenzene(SURR)	125	104		133	96	
Internal Standards	% Rec	% Rec		% Rec	% Rec	
Bromochloromethane	92	80		94	106	
1,4-Difluorobenzene	141	119		99	151	
d5-Chlorobenzene	140	114		126	140	

U Indicates that this compound was not detected above the RL.



## **APPENDIX 18**

Aldehydes Recovery Data Sheet (1 page)

# ORTECH Consulting Inc. Recovery & Sample Log NCASI Method ISS/FP-A105.01

Client: Covanata DYEC Job/Report Number: 22050

Received By: Chris Belore

How Received: Train Recovery Job Assigned To: ALS Quote / PO #: 22050 - J2729

					launanne proposition and proposition of the second		The state of the s		
T est	183	ORTECH	Date	8	Empty Weight	Initial Weight	Final Weight	Weight of	Weight of
Number	Location	Sample	Sampled	of BHA	BHA Sample	Sample Bottle	of BHA	Sample Bottle	Sample Bottle
		A		Sample Bottle	Bottle	+ BHA	Sample Bottle	вна & н20	BHA & H2O & Hexane
		20-22050-			(g)	(g)	(g)	(g)	(g)
	APC Outlet #1	ALD-1		ALD-1	110,2	(53.0	O T	(76.0	87.8
2	APC Outlet #1	ALD-2		ALD-2	0.0)	(53. (	1.88.1	174.8	
C	APC Outlet #1	ALD-3		ALD-3	10g.e	55.	- 33	1760.1	(92.5)
Blank	APC Outlet #1	Blank 1		ALD-4	1/0.0	0.75	でが	175.5	N.O.
	APC Outlet #2	ALD-5		ALD-5	9.601	10.00 10.00	が 10 10	173.4	183.0
2	APC Outlet #2	ALD-6		ALD-6	1.00.2	- 55	157.0	172.0	193.0
3	APC Outlet #2	ALD-7		ALD-7	1,00/	ろろう	0000	0,27	620
Blank 2	APC Outlet #2	Blank 2		ALD-8	6.601	155.5	10 Kg	120-	N 180
				ACD-01	4072	1531			
	Field BHA&Spike		na	na	na	na	na	na	na
	BHA Blank		na	na	na	na	กล	na	113
				040-10	40.2	1.006:	The second secon		
			Aldohanda Am			1887			
fulaly ce eaci	Analyze each sample 101 Acetaluchyuc, i ut maluchyuc, 2		ialuviny uv, avi	2)-	0.0)	+55	and the second s		
Relinquished by:						Date:	A CONTRACTOR OF THE CONTRACTOR		
Relinquished to:						Date:			



#### **APPENDIX 19**

Aldehydes Analytical Report (14 pages)



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID:

ALS WO#: L2529296 Revision 1

Date of Report Revision Date of Sample Receipt 13-Nov-20

10-Jan-22

Client Name: Client Address:

**ORTECH Environmental** 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Client Project ID: Chris Belore 22050 Covanta

COMMENTS:

Aldehydes as benzyloxime derivatives by SIM GC/MS

REVISED REPORT: Revised to provide data in the correct units

Certified by:

Ron McLeod, PhD

Laboratory Manager and Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

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		ALS	ALS Life Sciences			
		Sample An	Sample Analysis Summary Report			
Sample Name	Method Blank	20-22050-ALD-1 TEST#1 APC OUTLET #1 (ALD- 1)	20-22050-ALD-2 TEST#2 APC OUTLET #1 (ALD- 2)	20-22050-ALD-3 TEST#3 APC OUTLET #1 (ALD- 3)	20-22050-ALD- BLANK1 APC OUTLET #1 (ALD- 4)	20-22050-ALD-5 TEST#1 APC OUTLET #2 (ALD- 5)
ALS Sample ID	WG3444795-1	L2529296-1	12529296-2	L2529296-3	12529296-4	L2529296-5
Sample Size	-	-	-	-	-	-
Sample units	Sample	Train	Train	Train	Train	Train
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	OC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	11-Nov-20	11-Nov-20	11-Nov-20	11-Nov-20	11-Nov-20
Extraction Date	26-Nov-20	26-Nov-20	26-Nov-20	26-Nov-20	26-Nov-20	26-Nov-20
Target Analytes	ug/sample	ng/sample	ug/sample	ug/sample	ug/sample	ug/sample
Formaldehyde	0.69	2,22	1.69	1.85	1.27	2.36
Acetaidehyde	<0.1 U	2.02	1.63	1.78	1.09	2.12
Propionaldehyde	<0.1 U	0.91	0.73	6.0	0.91	1.08
Acrolein	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U
ם	Indicates that this compound was not detected above the LOD.	vas not detected above the Li	эр.			

		ALS	ALS Life Sciences			
		Sample An	Sample Analysis Summary Report	Ļ		
Sample Name	20-22050-ALD-6 TEST#2 APC OUTLET #2 (ALD-6)	20-22050-ALD-7 TEST#3 APC OUTLET #2 (ALD- 7)	20-22050-ALD- BLANK2 APC OUTLET #2 (ALD- 8)	Laboratory Control Sample (Sug)	Laboratory Control Sample (2.5ug)	
ALS Sample ID	L2529296-6	L2529296-7	L2529296-8	WG3444795-2	WG3444795-4	
Sample Size	•	-	-	-	~	
Sample units	Train	Train	Train	n/a	n/a	
Moisture Content	n/a	n/a	n/a	n/a	n/a	
Matrix	Stack	Stack	Stack	ည <del>ွှ</del>	S S	
Sampling Date	11-Nov-20	11-Nov-20	11-Nov-20	n/a	n/a	
Extraction Date	26-Nov-20	26-Nov-20	26-Nov-20	26-Nov-20	26-Nov-20	
Target Analytes	ug/sample	ug/sample	ug/sample	% Rec	% Rec	
Formaldehyde	1.22	1.66	0.98	75	102	
Acetaidehyde	1.83	2.17	1.44	119	144	
Propionaldehyde	0.85	1.11	0.79	75	104	
Acrolein	<0.1 U	<0.1 U	<0.1 U	99	25	

## Laboratory Method Blank Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

**Method Blank** WG3444795-1 SIM GC/MS blank QC 1 sa

Sampling Date Extraction Date

n/a 26-Nov-20

Split Ratio

sample

n/a 5

Approved: Andrew Reid --e-signature--04-Dec-2020

# **Run Information**

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Acetaldehyde

Acrolein

Propionaldehyde

Run 1 20120207.D 12/3/2020 9:45 1 mL ug/sample MSD-2 Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample		Limits
Formaldehyde	9.51	0.69		
Acetaldehyde (B)	14.71	< 0.1	U	
Acetaldehyde (A)	15.05	< 0.1	U	
Propionaldehyde (A)	NotFnd	< 0.1	U	
Propionaldehyde (B)	NotFnd	< 0.1	U	
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		0.69		

Indicates that this compound was not detected above the MDL.

< 0.1

< 0.1

< 0.1

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

20-22050-ALD-1 TEST#1 APC OUTLET #1 (ALD-1)

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Sample Matrix Sample Size Percent Moisture

20-22050-A L2529296-1 SIM GC/MS sample Stack 1

Split Ratio

n/a 5

Train

Approved: Andrew Reid --e-signature--04-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column Run 1

20120210.D 12/3/2020 11:46 1 mL 1

ug/sample MSD-2 Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample		Limits
Formaldehyde	9.58	2.22		
Acetaldehyde (B)	14.76	0.91		
Acetaldehyde (A)	15.10	1.11		
Propionaldehyde (A)	18.94	0.42		
Propionaldehyde (B)	19.51	0.49		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		2.22		
Acetaldehyde		2.02		
Propionaldehyde		0.91		
Acrolein		<∩ 1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

20-22050-ALD-2 TEST#2 APC OUTLET #1 (ALD-2)

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Split Ratio

L2529296-2 SIM GC/MS

sample Stack 1 Train

n/a 5

Approved: *Andrew Reid* --e-signature--04-Dec-2020

**Run Information** Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120211.D 12/3/2020 12:26 1 mL ug/sample MSD-2 Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample		Limits
Formaldehyde	9.55	1.69		
Acetaldehyde (B)	14.72	0.69		
Acetaldehyde (A)	15.06	0.94		
Propionałdehyde (A)	18.91	0.32		
Propionaldehyde (B)	19,49	0.41		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		1.69		
Acetaldehyde		1.63		
Propionaldehyde		0.73		
Acrolein		<0.1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

20-22050-ALD-3 TEST#3 APC OUTLET #1 (ALD-3)

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Split Ratio

L2529296-3 SIM GC/MS sample

Stack 1

Train

n/a 5

Approved: Andrew Reid --e-signature--04-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120212.D 12/3/2020 13:06 1 mL 1 ug/sample MSD-2 Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample		Limits
Formaldehyde	9.55	1.85		
Acetaldehyde (B)	14.72	0.74		
Acetaldehyde (A)	15.07	1.04		
Propionaldehyde (A)	18.92	0.34		
Propionaldehyde (B)	19.50	0.56		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		1.85		
Acetaldehyde		1.78		
Propionaldehyde		0.9		
Acrolein		< 0.1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type **20-22050-ALD-BLANK1 APC OUTLET #1 (ALD-4)** L2529296-4 SIM GC/MS

Sampling Date Extraction Date 11-Nov-20 26-Nov-20

Analysis Type
Sample Matrix
Sample Size

SIM GC/MS sample Stack

Stack 1 Train

Percent Moisture n/a Split Ratio 5 Train

Approved: *Andrew Reid* --e-signature--

04-Dec-2020

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column Run 1 20120208.D 12/3/2020 10:25 1 mL 1 ug/sample MSD-2 Rtx-200 1610862

	Ret.	Concentrati	on	
Target Analytes	Time	ug/sample	Flags	Limits
Formaldehyde	9.58	1.27	М	
Acetaldehyde (B)	14.77	0.47	M	
Acetaldehyde (A)	15.12	0.62	М	
Propionaldehyde (A)	18.95	0.34		
Propionaldehyde (B)	19.52	0.57		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		1.27		
Acetaldehyde		1.09		
Propionaldehyde		0.91		
Acrolein		<0.1		

М

Indicates that a peak has been manually integrated.

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

20-22050-ALD-5 TEST#1 APC OUTLET #2 (ALD-5)

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

L2529296-5 SIM GC/MS sample Stack

n/a Split Ratio 5

Train

Approved: Andrew Reid --e-signature--04-Dec-2020

Run Information

Filename Run Date Final Volume **Dilution Factor** Analysis Units Instrument Column

Run 1 20120213.D 12/3/2020 13:46 1 mL

ug/sample MSD-2 Rtx-200 1610862

Target Analytes		Concentration ug/sample		Limits
Formaldehyde	9,56	2.36		
Acetaldehyde (B)	14.76	0.91		
Acetaldehyde (A)	15.10	1.21		
Propionaldehyde (A)	18.93	0.44		
Propionaldehyde (B)	19.51	0.64		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		2.36		
Acetaldehyde		2.12		
Propionaldehyde		1.08		
Acrolein		< 0.1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

20-22050-ALD-6 TEST#2 APC OUTLET #2 (ALD-6)

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Sample Matrix
Sample Size
Percent Moisture

Split Ratio

L2529296-6 SIM GC/MS sample

Stack 1 Train

n/a 5

Approved: Andrew Reid --e-signature--04-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120214.D 12/3/2020 14:27 1 mL

ug/sample MSD-2 Rtx-200 1610862

Target Analytes		Concentration		Limits
Formaldehyde	9.55	1.22		
Acetaldehyde (B)	14.72	0.76		
Acetaldehyde (A)	15.07			
Propionaldehyde (A)	18.91	0.35		
Propionaldehyde (B)	19.49	0.5		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		1.22		
Acetaldehyde		1.83		
Propionaldehyde		0.85		
Acrolein		< 0.1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method **20-22050-ALD-7 TEST#3 APC OUTLET #2 (ALD-7)** L2529296-7 SIM GC/MS

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Analysis Type
Sample Matrix
Sample Size
Percent Moisture

sample Stack 1

Train

n/a Split Ratio 5

Approved: Andrew Reid

--e-signature--

04-Dec-2020

**Run Information** 

Run 1 Filename 20120215.D 12/3/2020 15:07 Run Date Final Volume Dilution Factor Analysis Units mL ug/sample MSD-2 Rtx-200 1610862 Instrument Column

U

	Ret.	Concentration	on	
Target Analytes	Time	ug/sample	Flags	Limits
Formaldehyde	9.55	1.66		
Acetaldehyde (B)	14.73	0.93		
Acetaldehyde (A)	15.08	1.24		
Propionaldehyde (A)	18.92	0.46		
Propionaldehyde (B)	19.50	0.65		
Acrolein (A)	NotFnd	<0.1	U	
Acrolein (B)	NotFnd	<0.1	U	
Total Aldehydes		ug/sample		
Formaldehyde		1.66		
Acetaldehyde		2.17		
Propionaldehyde		1.11		
Acrolein		<0.1		

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method

Percent Moisture

Split Ratio

**20-22050-ALD-BLANK2 APC OUTLET #2 (ALD-8)** L2529296-8 SIM GC/MS

Sampling Date Extraction Date

11-Nov-20 26-Nov-20

Analysis Type Sample Matrix Sample Size

sample Stack 1

Train

n/a

Approved: Andrew Reid --e-signature--04-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120209.D 12/3/2020 11:05 mL ug/sample MSD-2 Rtx-200 1610862

Target Analytes	Ret. Time	Concentration ug/sample Flags Limits
Formaldehyde	9.57	0.98 M
Acetaldehyde (B)	14.75	0.63
Acetaldehyde (A)	15.10	0.81
Propionaldehyde (A)	18.94	0.32
Propionaldehyde (B)	19.51	0.47
Acrolein (A)	NotFnd	<0.1 U
Acrolein (B)	NotFnd	<0.1 U
Total Aldehydes		ug/sample
Formaldehyde		0.98
Acetaldehyde		1.44
Propionaldehyde		0.79
Acrolein		<0.1

Indicates that a peak has been manually integrated. Indicates that this compound was not detected above the MDL.

#### **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix Sample Size Percent Moisture

Split Ratio

Laboratory Control Sample WG3444795-2 SIM GC/MS LCS QC 1 n/a

Sampling Date Extraction Date

n/a 26-Nov-20

n/a 5

Approved: Andrew Reid --e-signature--04-Dec-2020

**Run Information** 

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20120204.D 12/3/2020 7:45 1 mL ug/sample MSD-2 Rtx-200 1610862

Target Analytes	ug spiked	Ret. Time	% Rec	Flags	Limits
Formaldehyde	5	9.54	75		
Acetaldehyde (B)	5	14.73	51		
Acetaldehyde (A)	5	15.07	68		
Propionaldehyde (A)	5	18.90	32		
Propionaldehyde (B)	5	19.47	43		
Acrolein (A)	5	19.26	34		
Acrolein (B)	5	20.37	32		
Total Aldehydes					
Formaldehyde			75		70-130
Acetaldehyde			119		70-130
Propionaldehyde			75		70-130
Acrolein			66		70-130

## **Laboratory Control Sample Analysis Report**

Sample Name ALS Sample ID Analysis Method

Laboratory Control Sample WG3444795-4 SIM GC/MS

Analysis Type Sample Matrix Sample Size LCS QC 1 n/a n/a 5 Percent Moisture Split Ratio

Sampling Date Extraction Date

n/a 26-Nov-20

Approved: Andrew Reid --e-signature--04-Dec-2020

#### **Run Information**

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1

20120203.D 12/3/2020 7:04 1 mL 1 ug/sample MSD-2 Rtx-200 1610862

Target Analytes	ug spiked	Ret.	% Rec	Elage	Limits
-	ug spikcu	111116	70 REC	riays	Limits
Formaldehyde	2.5	9.59	102		
Acetaldehyde (B)	2.5	14.77	63		
Acetaldehyde (A)	2.5	15.11	81	М	
Propionaldehyde (A)	2.5	18.93	43		
Propionaldehyde (B)	2.5	19.50	61		
Acrolein (A)	2.5	19.30	13		
Acrolein (B)	2.5	20.40	12		
Total Aldehydes					
Formaldehyde			102		70-130
Acetaldehyde			144		70-130
Propionaldehyde			104		70-130
Acrolein			25		70-130

Indicates that a peak has been manually integrated.



#### **APPENDIX 20**

SVOC and VOST Proof Data (15 pages)



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

# **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ALS Project ID: ORT100

ALS WO#: L2514397

Date of Report 30-Oct-20

Date of Sample Receipt 8-Oct-20

Client Name:

: ORTECH Environmental

Client Address: 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore
Client Project ID: 22050 Covanta

COMMENTS:

CB by LRGC/MS - Isotope dilution

Certified by:

Ron McLeod, Ph.D. Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

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nple Analysis Su GLASSWARE	mmary Report
PROOF	
L2514397-57	
sample	
电二氯化物 化二氯化物 医二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	
28-Oct-20	
ng/sample	TO SECURE THE THE SECURE THE SECU
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<10	
%Rec	
93	
114	
125	
131	
108	
	1 sample n/a Media Prep n/a 28-Oct-20 ng/sample <10 <10 <10 <10 <10 <10 <10 <10 <10 <10



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

## **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

> ALS Project ID: **ORT100**

ALS WO#: L2514397

Date of Report 2-Nov-20

Date of Sample Receipt 8-Oct-20

Client Name: **ORTECH** 

Client Address:

804 Southdown Road

MIssissauga, ON L5J 2Y4

Canada

Chris Belore **Client Contact:** 

Client Project ID: 22050 Covanta

COMMENTS:

Chlorophenols as acetate derivatives by SIM GC/MS

Certified by:

Ron McLeod, PhD

Laboratory Manager and Technical Director

			ALS Environm	enta
	S	ample	⊇ Analysis Sumr	nar
Sample Name	Method Blank		GLASSWARE PROOF	
ALS Sample ID	WG3433983-1		L2514397-57	
Sample Size			1	
Sample units	sample		sample	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	28-Oct-20		28-Oct-20	
Target Analytes	ng/sample		ng/sample	
			그 그 사람들이 가게 되었다.	
2-Chlorophenol	<50	U	<50	
3-Chlorophenol	<50	U	<50	U
4-Chlorophenol	<b>&lt;</b> 50	U	<50	
2,6-Dichlorophenol	<50	U	<50	
2,4/2,5-Dichlorophenol	<50	U	<50	U
3,5-Dichlorophenol	<50	Ų	<50	U
2,3-Dichlorophenol	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	L
2,4,6-Trichlorophenol	<50	U	<50	L
2,3,6-Trichlorophenol	<50	U	<50	L
2,3,5-Trichlorophenol	<50	U	<50	ι
2,4,5-Trichlorophenol	<50	U	<50	L
2,3,4-Trichlorophenol	<50	U	<50	ι
3,4,5-Trichlorophenol	<50	U	<50	ι
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U
Extraction Standards	% Rec		% Rec	
13C6-4-Chlorophenol (ES)	130		120	
13C6-2,4-Dichlorophenol (ES)	128		109	
13C6-2,4,5-Trichlorophenol (ES)	78		73	
13C6-2,3,4,5-Tetrachlorophenol (ES)	72		68	
13C6-Pentachlorophenol (ES)	57		60	

U Indicates that this compound was not detected above the LOR.



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

#### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

> **ORT100** ALS Project ID:

ALS WO#: L2514397

Date of Report 11-Nov-20

Date of Sample Receipt 8-Oct-20

Client Name:

**ORTECH Environmental** Client Address: 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

**Client Contact:** Chris Belore 22050 Covanta Client Project ID:

COMMENTS:

PCDD/F by EPA M23

Certified by:

Ron McLeod, PhD

Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

ALS Life Sciences							
Sample Analysis summary Report							
Sample Name	GLASSWARE PROOF						
ALS Sample ID	L2514397-57						
Sample Size							
Sample size units	Proof						
Percent Moisture	n/a						
Sample Matrix	Media Prep						
Sampling Date							
Extraction Date	n/a 28-Oct-20						
	WATER TO THE THE THE THE THE THE THE THE THE THE						
Farget Analytes	pg						
2,3,7,8-TCDD	<2.3						
1,2,3,7,8-PeCDD	<2.2						
1,2,3,4,7,8-HxCDD	<4,9						
1,2,3,6,7,8-HxCDD	<4.3						
1,2,3,7,8,9-HxCDD	<4.7						
1,2,3,4,6,7,8-HpCDD	<11						
OCDD	284						
2,3,7,8-TCDF	<2.4						
1,2,3,7,8-PeCDF	<1.5						
2,3,4,7,8-PeCDF	<1.4						
1,2,3,4,7,8-HxCDF	<1.9						
1,2,3,6,7,8-HxCDF	<1.8						
2,3,4,6,7,8-HxCDF	<2.0						
1,2,3,7,8,9-HxCDF	<2.3						
1,2,3,4,6,7,8-HpCDF	<35						
1,2,3,4,7,8,9-HpCDF	<45						
OCDF	<25						
Extraction Standards							
13C12-2,3,7,8-TCDD	74	물건을 걸릴 때문로 말을 보고 있다는 말을 살 수 있다. 그 것은					
13C12-1,2,3,7,8-PeCDD	61	근로 하는 하는 그들은 그를 하는 것으로 하는 것을 하는 것이다.					
13C12-1,2,3,6,7,8-HxCDD	79						
13C12-1,2,3,4,6,7,8-HpCDD	55						
13C12-OCDD	42						
13C12-2,3,7,8-TCDF	77						
13C12-1,2,3,7,8-PeCDF	65						
13C12-1,2,3,6,7,8-HxCDF	84						
13C12-1,2,3,4,6,7,8-HpCDF	63						
Homologue Group Totals	pg						
Total-TCDD	<2.3						
Total-PeCDD	<2.2						
Total-HxCDD	<4.9						
Total-HpCDD	17.9						
Total-TCDF	9.50						
Total-PeCDF	<1.5						
Total-HxCDF	<2.3						
Total-HpCDF	<45						
Toxic Equivalency - (WHO 2005)							
Lower Bound PCDD/F TEQ (WHO 2005)	0.0852						
Mid Point PCDD/F TEQ (WHO 2005)	4.30						
Upper Bound PCDD/F TEQ (WHO 2005)	8.40						

ALS Life Sciences						
	Quality Control Summary Report					
Sample Name	Method Blank					
ALS Sample ID	WG3433983-1					
Sample Size						
Sample size units	Proof					
Percent Moisture	n/a					
Sample Matrix						
Sampling Date	n/a					
Extraction Date	28-Oct-20					
Target Analytes	pg					
2,3,7,8-TCDD	4.1					
1,2,3,7,8-PeCDD	, en la la la 1977 de la casa de la casa de la calacteria de la calacteria de la calacteria de la calacteria d La la					
1,2,3,4,7,8-HxCDD	<9.9					
1,2,3,6,7,8-HxCDD	8.7.					
1,2,3,7,8,9-HxCDD						
1,2,3,4,6,7,8-HpCDD	$p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$ , $p_{0}$					
1,2,3,4,6,7,6-прСDD ОCDD	]					
2,3,7,8-TCDF						
1,2,3,7,8-PeCDF	oder de de grego <b>t fil</b> e de la gregot en de la proposition de modern de proposition de la despressión de producti Del la gregot en de <b>&lt; 2.8</b> després de la gregot en després de la gregot de la gregot de la gregot de la gregot de					
2,3,4,7,8-PeCDF						
1,2,3,4,7,8-HxCDF						
1,2,3,6,7,8-HxCDF						
2,3,4,6,7,8-HxCDF	###### <b>5:9</b> ####################################					
1,2,3,7,8,9-HxCDF	요즘 : [1] : [1] [2] : [2					
1,2,3,4,6,7,8-HpCDF	'보고 보고 <b>&lt;6.7</b> 살고 그리는 사람은 사람은 사람이 되었다.					
1,2,3,4,7,8,9-HpCDF OCDF	<u> </u>					
Extraction Standards						
13C12-2,3,7,8-TCDD	- 1986					
13C12-1,2,3,7,8-PeCDD						
13C12-1,2,3,6,7,8-HxCDD						
13C12-1,2,3,4,6,7,8-HpCDD	사용 :					
13C12-0CDD	# 15					
13C12-2,3,7,8-TCDF						
13C12-1,2,3,7,8-PeCDF	59					
13C12-1,2,3,6,7,8-HxCDF	66					
13C12-1,2,3,4,6,7,8-HpCDF	59					
Homologue Group Totals	ρg					
Total-TCDD	<4.1					
Total-PeCDD						
Total-HxCDD						
Total-HpCDD						
Total-TCDF	<b>&lt;2.3</b>					
Total-PeCDF	<2.8					
Total-HxCDF	5.7					
Total-HpCDF	3.8 <					
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)						
Mid Point PCDD/F TEQ (WHO 2005)	Electric 6.77					
Upper Bound PCDD/F TEQ (WHO 2005)	4 4 5 5 6 <b>13.5</b> 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6					



1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6 Phone: 905-331-3111, FAX: 905-331-4567

#### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona

ORT100

ALS WO#: L2514397

Date of Report 20-Nov-20

Date of Sample Receipt 8-Oct-20

ALS Project ID:

Client Name: ORTECH Environmental

Client Address: 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

Client Contact: Chris Belore

Client Project ID: 22050 Covanta

COMMENTS:

PAH by CARB method 429 (LR option)- Isotope dilution

Low levels of fluorene and tetralin were detected in the proof. The ion abundance ratios were outside the control limits and the peaks detected are likely due to interferences.

The glassware is approved for the collection of samples for PAH analysis.

Certified by:

Steve Kennedy Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.

MATERIAL PROPERTY OF THE PROPE			WOOTOMONANCE STREET, S	Sciences	
Sample Name	Method Blank		GLASSWARE PROOF	Summary Report	
ALS Sample ID	WG3433983-1		L2514397-57		
Sample Size	1		1		
Sample units	Sample		Sample		
Moisture Content	n/a		n/a		
Matrix	QC		Media Prep		
Sampling Date Extraction Date	n/a		n/a		
Extraction Date	28-Oct-20	-	28-Oct-20	***************************************	
Target Analytes	ng		ng		
Naphthalene	<10	U	<10	Ú	
2-Methylnaphthalene	<10	U	<10	U	
1-Methylnaphthalene Acenaphthylene	<10 <10	U	<10 <10	U	
Acenaphthene	<10	U	<10	Ŭ	
Fluorene	30.4	R	33.3	R	
Phenanthrene	<10	U	<10	Ü	
Anthracene Fluoranthene	10.5 <10	U	<10	u de la companya de l	
Pyrene	<10 <10	U	<10 <10	U U	
Benzo(a)Anthracene	<10	Ŭ	<10	Ŭ	
Chrysene	<10	U	<10	U	
Benzo(b)Fluoranthene	<10	U	<10	U	
Benzo(k)Fluoranthene Benzo(e)Pyrene	<10 <10	U U	<10 <10	U U	
Benzo(a)Pyrene	<10 <10	U	<10 <10	Ü	
Perylene	<10	υ	<10	Ú	
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U	
Dibenzo(a,h)Anthracene	<10	U	<10	U	
Benzo(g,h,i)Perylene	<10	U	<10	eu Nachara	
Additional Analytes					
Tetralin Quinoline			58.5	R	
2-Chloronaphthalene			<10 <10	U	
Biphenyl			<10	Ü	
o-Terphenyl			<10	U	
1-Methylphenanthrene			<10	U	
9-Methylphenanthrene 2-methylanthracene			<10 <10	U	
9,10-dimethylanthracene			<10 <10	U	
m-terphenyl			<10	Ü	
p-terphenyl			<10	U	
Benzo(a)fluorene			<10	Ů.	
Benzo(b)fluorene Benzo(b)anthracene			<10	U U	
Benzo(j)fluoranthene			<10 <10	Ü	
7,12-Dimethylbenzo(a)anthracene			<10 <10	Ü	
3-Methylcholanthrene			<50	U	
Dibenz(a,j)acridine			<50	Ü	
7H-Dibenzo(c,g)carbazole Picene			<50		
Dibenzo(a,e)pyrene			<50 <50	U	
dibenzo(a,i)pyrene			<50	Ü	
Coronene			<50	U	
Extraction Standards	% Rec		% Rec		
Naphthalene D8	39.9	R	39.4	R	
2-Methylnaphthalene-D10	64.5		61.9		
Acenaphthylene D8 Phenanthrene D10	57.2		57.2		
Anthracene-D10	60.6 32.5		57.8 32.2		
Fluoranthene D10	59.8		60.1		
Benz(a)Anthracene-D12	53.7		57.3		
Chrysene D12	59.4		58.7		
Benzo(b)Fluoranthene-D12 Benzo(k)Fluoranthene-D12	74.9 76.7		78.7 80.7		
Benzo(a)Pyrene D12	76.7 77		80.7 83.3		
Perylene D12	71.1		77.7		
Indeno(1,2,3,cd)Pyrene-D12	67.4		74.4		
Dibenz(a,h)Anthracene-D14	68.6		73.9		
Benzo(g,h,i)Perylene D12	77.7		79.7		

U Indicates that this compound was not detected above the LOD.

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.



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#### **Certificate of Analysis**

ALS Project Contact: Lynne Wrona ALS Project ID:

**ORT100** 

ALS WO#: L2514397 Date of Report 10-Nov-20

Date of Sample Receipt 8-Oct-20

Client Name: Client Address:

**ORTECH Environmental** 804 Southdown Road

Mississauga, ON L5J 2Y4

Canada

**Client Contact:** Chris Belore Client Project ID: 22050 Covanta

COMMENTS:

PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values,

consistent with USEPA CLP SOW CBC1.2

Certified by:

Ron McLeod, PhD

Director, Air Toxics & Special Chemistries, Life Sciences

Results in this certificate relate only to the samples as submitted to the laboratory.

Sample Analysis Summary Report								
	ALS Life Sciences  Sample Analysis Summary Report							
GLASSWARE PROOF								
L2514397-57								
Sample								
그런 사고 그리고 있는 그리고 하는 사람이를 가장 주목을 가고 된 것이 하지 않는 사람이 되었다. 그리고 있는 사람이 되었다.								
소리 내가 되는 사람들은 그리고 얼마를 통해 생각 생각하는 것이 되는 것이 되었다. 그리고 있는 것은 점점이 하고 있다.								
28-Oct-20								
Þď								
	등로 발생 회사이 되면 어떻게 되는 밤살 날날							
化环氯化物 医皮肤 医二氯甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基								
\$1.4								
% Rec								
78								
그리고 그리고 있는 사람들은 그리고 하는 가장 하는 가장 하는 것이 되었다. 그리고 있는 것이 없는 것이 없는 것이 없는 것이다.								
51								
	1 Sample n/a Nedia Prep n/a 28-Oct-20  Pg <2.4 <2.4 <1.4 10.5 <1.3 3.64 <1.4 <1.1 <1.1 <1.1 <1.4 <1.1 <1.4 <1.1							

	ALS Life Sciences						
Quality Control Summary Report							
Sample Name	Method Blank						
ALS Sample ID	WG3433983-1						
Sample Size	1						
Sample size units	Sample						
Percent Moisture	n/a						
Sample Matrix	QC .						
Sampling Date	n/a						
Extraction Date	28-Oct-20						
Target Analytes	PG						
PCB-081	[프리카 마스크 프로ON - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -						
PCB-077	3.6						
PCB-123	Since $i$ is the state of $i$ is $i$ in the second state $i$ is the state of $i$ is stated in $i$ .						
PCB-118							
PCB-114							
PCB-105	발생들하는 항상 호상 시간 등 등 하는 하는 말을 받았다.						
PCB-126							
PCB-167	경기 : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1] : [1]						
PCB-156/157							
PCB-169							
PCB-189							
Extraction Standards	% Rec						
13C12-PCB-081	62						
13C12-PCB-077	E C						
13C12-PCB-123							
13C12-PCB-118	61						
13C12-PCB-114	60						
13C12-PCB-105	62						
13C12-PCB-126	65						
13C12-PCB-167	64						
13C12-PCB-156/157	66						
13C12-PCB-169	73						
13C12-PCB-189	69						
oxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ	0.00						
Mid Point PCB TEQ	0.0924						
Upper Bound PCB TEQ	0.185						



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## **Certificate of Analysis**

ALS Project Contact: Lynne Wrona ALS Project ID: ORT100

ALS WO#: L2514397 Date of Report 29-Oct-20

Date of Sample Receipt 8-Oct-20

Client Name:

**ORTECH Environmental** Client Address: 804 Southdown Road Mississauga, ON L5J 2Y4

CANADA

Client Contact: Chris Belore Client Project ID: 22050 COVANTA

COMMENTS:

VOCs via SW846 Method 5041A/8260C

Ketone data by VOST analyses are estimated values only

Certified by:

Ron McLeod, Ph.D. Technical Director

Results in this certificate relate only to the samples as submitted to the laboratory.

#### **ALS Environmental**

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type

Method Blank WG3434617-1 VOCs by 5041A/8260C sample QC

Sampling Date Extraction Date

n/a 29-Oct-20

Approved: Andrew Reid --e-signature--29-Oct-2020

Sample Matrix Split Ratio

1

Workgroup

WG3434617

Run Information

Filename Run Date Final Volume Dilution Factor Analysis Units Instrument Column

Run 1 20102905.D 10/29/2020 7:22 1 mL

ug/sample

MSD-3 Rxi-624Sil MS 1360231

Target Analytes	Rel Tin		oncentration ug/sample	Flags
Dichlorodifluoromethane		1.33	<0.02	U
Vinyl Chloride		2.12	<0.02	U
Bromomethane		2.42	<0.09	U
Trichlorofluoromethane		2.84	<0.02	U
1,1-Dichloroethene		3.47	< 0.01	U
Acetone		3.51	<0.1	U
Methylene Chloride		4.48	<0.1	U
trans,1,2-Dichloroethene		4.63	<0.01	U
2-Butanone		6.14	< 0.01	U
Chloroform		6.70	< 0.01	U
1,1,1-Trichloroethane		7.36	<0.01	U
Carbon Tetrachloride		7.49	< 0.01	U
Benzene		7.99	<0.05	U
1,2-Dichloroethane		8.11	< 0.01	U
Trichloroethene		9.18	<0.01	U
1,2-Dichloropropane		9.36	<0.01	U
Bromodichloromethane		0.12	<0.01	U
Toluene		1.29	<0.05	U
1,1,2-Trichloroethane		2.03	<0.02	U
Tetrachloroethene		1.97	< 0.01	U
Chlorodibromomethane		2.36	<0.01	U
Ethylene Dibromide		2.59	<0.02	U
Ethylbenzene		3.17	<0.01	U
M&P-Xylene		3.31	<0.03	U
D-Xylene		3.73	<0.01	U
Styrene		3.77	<0.02	U
Bromoform		3.97	<0.01	U
Isopropylbenzene		4.12	<0.02	U
1,3,5-Trimethylbenzene		4.90	<0.02	U
Trichlorotrifluoroethane	Not		<0.02	U
1,3-Butadiene	Not	Fnd	<0.02	U
Field Standard	ug spike		% Rec	
d10-Ethylbenzene(SPK)	0.2 1	3.09	83.7	
Surrogate Standards			% Rec	
d4-1,2-Dichloroethane(SURR)	0.25	7.97	103.3	
d8-Toluene(SURR)	0.25 1	1.20	91.8	
4-Bromofluorobenzene(SURR)	0.25 1	4.30	73.5	
Internal Standards			% Rec	
Bromochloromethane	1	6.89	96.3	
1,4-Difluorobenzene		8.81	90.2	
d5-Chlorobenzene	1 1	3.02	86.8	

Indicates that this compound was not detected above the RL.

#### **ALS Environmental**

#### Sample Analysis Report

Sample Name ALS Sample ID Analysis Method Analysis Type Sample Matrix

VOST PROOF L2514397-71 VOCs by 5041A/8260C

Run 1

Ret.

Concentration

sample Media Prep

Sampling Date Extraction Date

n/a 29-Oct-20

Approved: Andrew Reid --e-signature--29-Oct-2020

Split Ratio

Workgroup

WG3434617

Filename Run Date Final Volume

**Run Information** 

20102906.D 10/29/2020 7:56 mL Dilution Factor ug/sample MSD-3 Analysis Units Instrument Column Rxi-624Sil MS 1360231

Target Analytes	Tim	e ug/sample	Flags
Dichlorodifluoromethane	NotF	nd <0.02	U
Vinyl Chloride	NotF	nd <0.02	U
Bromomethane		.39 <0.09	U
Trichlorofluoromethane	NotF	nd <0.02	U
1,1-Dichloroethene		.42 <0.01	U
Acetone		.48 <0.1	U
Methylene Chloride		.14 <0.1	U
trans,1,2-Dichloroethene	2	.64 <0.01	U
2-Butanone	•	.56 <0.01	U
Chloroform	7	.30 <0.01	U
1,1,1-Trichloroethane		.36 <0.01	U
Carbon Tetrachloride	NotF	nd <0.01	U
Benzene	7	.93 <0.05	U
1,2-Dichloroethane	NotF		U
Trichloroethene	NotF		U
1,2-Dichloropropane	Note		U
Bromodichloromethane	NotF		U
Toluene		.25 <0.05	U
1,1,2-Trichloroethane	NotF		U
Tetrachloroethene	NotF		U
Chlorodibromomethane	NotF		U
Ethylene Dibromide	NotF		U
Ethylbenzene	NotF		U
M&P-Xylene	NotF		U
O-Xylene	NotF		U
Styrene	NotF		U
Bromoform	NotF		U
Isopropylbenzene	NotF		U
1,3,5-Trimethylbenzene	Note		U
Trichlorotrifluoroethane 1,3-Butadiene	Note		U
1,3-butaulene	NotF	nd <0.02	U
Field Standard	ug spiked	% Rec	
d10-Ethylbenzene(SPK)	0.2 13	.06 86.0	
Surrogate Standards		% Rec	
d4-1,2-Dichloroethane(SURR)	0.25	.92 110.6	
d8-Toluene(SURR)		.16 91.2	
4-Bromofluorobenzene(SURR)		.27 79.6	
Internal Standards		% Rec	
Bromochloromethane	1 6	.84 88.7	
1,4-Difluorobenzene		.77 87.7	
d5-Chlorobenzene		.99 93.4	

Indicates that this compound was not detected above the RL.



#### **APPENDIX 21**

ORTECH Equipment Calibration Data (29 pages)

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - Quench Inlet	Test 1

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.45 B1	0.995		
High	89.4 A2	89.38 B2	0.993 C		
Mid	51.6 A4	51.3 в4		51.3 d4	-0.1 E4
Low	30.51 аз	30.88 вз		30.3 D3	1.7 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
	Response (F)	Response (G)	(G-F)/span*100
Zero	0	0.1	-0.1
Mid	30.88	30.3	0.6

Criteria 3%

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10	AND	15
Average	10		15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - Quench Inlet	Test 2

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0	A1 0.45 E	0.995		
High	89.4	A2 89.38 E	0.995 32 C		
Mid	51.6	A4 51.3 E	34	51.3 d4	-0.1 E4
Low	30.51	аз <b>30.88</b> г	33	30.3 p3	1.7 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
	Response (F)	Response (G)	(G-F)/span*100
Zero	0.1	0.55	-0.45
Mid	30.3	30.3	0.0

Criteria 3%

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10	14000	15
Average	10		15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - Quench Inlet	Test 3

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.45 ва	0.995		
High	89.4 A2	89.38 в2	0.995 c		
Mid	51.6 A4	51.3 ва		51.3 D4	-0.1 E4
Low	30.51 аз	30.88 вз		30,3 D3	1.7 ы

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
	Response (F)	Response (G)	(G-F)/span*100
Zero	0.55	0.5	0.05
Mid	30.33	30.3	0.0

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - Quench Inlet	Test 1

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.07 в1	0.998		
High	89.4 A2	89.28 в2	0.998 c		and with the
Mid	51.6 A4	51.13 в4		51.5 D4	-0.7 е4
Low	30.51 аз	30.13 вз		30.4 рз	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
000000000000000000000000000000000000000	Response (F)	Response (G)	(G-F)/span*100
Zero	0.07	0.45	-0.38
Mid	30.13	30.8	-0.6

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - Quench Inlet	Test 2

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.07 в1	0.998		
High	89.4 A2	89.28 в2	0.338 C		
Mid	51.6 да	51.13 в4		51.5 D4	-0.7 E4
Low	30.51 аз	30.13 вз		30.4 дз	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.45	0.47	-0.02
Mid	30.8	30.8	0.1

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - Quench Inlet	Test 3

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	O A1	0.07 в1	0.998		
High	89.4 A2	89.28 в2	0.998 C		
Mid	51.6 A4	51.13 в4	350	51.5 D4	-0.7 e4
Low	30.51 A3	30.13 вз		30.4 дз	-1.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.47	0.2	0.27
Mid	30.75	30.8	0.0

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - APC Outlet	Test 1

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0	A1 0 B:	1.007		
High	89.4	A2 90 B3			
Mid	51.6	A4 50.6 вд	170.94	51.9 D4	-2.6 E4
Low	30.51	аз 29.8 в <u>з</u>		30.7 D3	-3.0 es

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.5	-0.5
Mid	29.8	31.0	-1.2

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	45.

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - APC Outlet	Test 2

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0	A1 O B1	1.007		
High	89.4	a2 90 в2			
Mid	51.6	A4 50.6 в4		51.9 D4	-2.6 E4
Low	30.51	аз 29.8 вз		30.7 дз	-3.0 ез

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
	Response (F)	Response (G)	(G-F)/span*100
Zero	0.5	0.6	-0.1
Mid	31	31.0	0.0

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 1 - APC Outlet	Test 3

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	<b>0</b> 81	1.007		Street Section 1
High	89.4 A2	90 B2			
Mid	51.6 A4	50.6 в4		51.9 D4	-2.6 E4
Low	30.51 A3	29.8 вз	Control Medical Control Control	30.7 дз	-3.0 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.6	0.3	0.3
Mid	31	30.0	1.0

Criteria 3%

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10	Al-Gilla Access	15
Run 2	10		15
Run 3	10		15
Average	10		15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - APC Outlet	Test 1

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	О в1	1.007		
High	89.4 A2	90 в2	HE BEET IN NEW TOTAL NEW T		
Mid	51.6 да	50.3 ва		51.9 D4	-3.2 <sub>E4</sub>
Low	30.51 аз	30 вз		30.7 дз	-2.3 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30	30.0	0.0

Criteria 3%

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	10		15
Run 2	10		15
Run 3	10	The state of the s	15
Average	10		15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - APC Outlet	Test 2

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	О в1	1.007		
High	89.4 A2	90 в2	1.007 c		
Mid	51.6 A4	50.3 в4	1965 (ALES) (2) 1967 (ALES) (2)	51.9 D4	-3.2 E4
Low	30.51 A3	30 вз		30.7 вз	-2.3 вз

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	O	0	0
Mid	30	30.0	0.0

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Project Number: 22050	Date: November 9, 2020
Company: COVANTA	Operator: J. Grollman
Location: DYEC	Analyzer ID VIG
Test Location: Unit 2 - APC Outlet	Test 3

THC Full Scale Setting	100
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.

Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	O 81	1.007		
High	89.4 A2	90 в2	T.007		
Mid	51.6 A4	50.3 в4		51.9 D4	-3.2 e4
Low	30.51 аз	30 вз		30.7 вз	-2.3 ы

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value. Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial	System Final	Calibration Drift
	Response (F)	Response (G)	(G-F)/span*100
Zero	0	0.7	-0.7
Mid	30	30.0	0.0

Criteria 3%

	Zero Response Time (seconds)	Upscale Response Time (seconds)
Run 1	10	15
Run 2	10	15
Run 3	10	15
Average	10	15

Date	February 4, 2020
Probe/Pitot ID	S8
Mil Number	B03769
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Ing/
Calibrated By	Dan Tugton
Signature	764   III
Reviewed/Accepted By	6/1/
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	Pstd
Cp = Cpstd *	
	De

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H₂O Pstd	Velocity Head S-Type Pitot in. H₂O Ps	S-Type Pitot Coefficient Cp <sub>s</sub>	Deviation From The Mean
With Nozzle	7.53	0.137	0.190	0.849	0.0023
(0.25")	9.32	0.210	0.290	0.851	0.0004
	11.68	0.330	0.450	0.856	0.0049
	13.94	0.470	0.650	0.850	0.0011
	15.75	0.600	0.830	0.850	0,0012
			Mean	0.851	0.0020

Without Nozzle	7.33	0.130	0.180	0.849	0.0003
	9.32	0.210	0.290	0.851	0.0014
	11.14	0.300	0.420	0.845	0.0044
	13.79	0.460	0.630	0.854	0.0050
	15.88	0.610	0.850	0.847	0.0024
			Mean	0.849	0.0027

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

#### Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99 ±0.01.

	***************************************
Date	February 4, 2020
Probe/Pitot ID	SP4
MII Number	B04011
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012
Cp standard	0.99948

Calibration Facility	ORTECH Consulting Inc////
Calibrated By	Dan Turfon
Signature	
Reviewed/Accepted By	Jay 13
	//

	Pstd
Cp = Cpstd *	
	Dc l

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H <sub>2</sub> O	Velocity Head S-Type Pitot in. H <sub>2</sub> O	S-Type Pitot Coefficient	Deviation From The Mean
		Pstd	Ps	Cp <sub>s</sub>	
With Nozzle	7.53	0.137	0.190	0.849	0.0011
(0.25")	9.65	0.225	0.310	0.851	0.0039
	11.50	0.320	0.450	0.843	0.0048
	13.79	0.460	0.640	0.847	0.0003
	15.62	0.590	0.820	0.848	0.0002
			Mean	0.848	0.0020

Without Nozzle	7.47	0.135	0.190	0.842	0.0053
	9.32	0.210	0.295	0.843	0.0045
	11,32	0.310	0.430	0.849	0.0009
	14.09	0.480	0.660	0.852	0.0046
	16.08	0.625	0.860	0.852	0.0043
마리 글로 보고 있는 것이 되었다. 그는 그들은 말을 보고 있는 것이다.			Mean	0.848	0.0039

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

#### Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99  $\pm$ 0.01.

Date	February 4, 2020
Probe/Pitot ID	S7A
Mil Number	COE20112
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Consulting Inc			
Calibrated By	Dan Tuyton			
Signature	900/1/11			
Reviewed/Accepted By	Hay 13			

	Pstd
Cp = Cpstd *	

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot In. H <sub>2</sub> O Pstd	Velocity Head S-Type Pitot in. H₂O PS	S-Type Pitot Coefficient Cp <sub>s</sub>	Deviation From The Mean
With Nozzle	7.33	0.130	0.180	0.849	0.0003
(0.25")	9.32	0.210	0.290	0.851	0.0014
	11.14	0.300	0.420	0.845	0.0044
	13.79	0.460	0.630	0.854	0.0050
	15.88	0.610	0.850	0.847	0.0024
			Mean	0.849	0.0027

	Without Nozzle	7.33	0.130	0.180	0.849	0.0023
		9.32	0.210	0.295	0.843	0.0038
		11.32	0.310	0.430	0.849	0.0016
-		14.38	0.500	0.700	0.845	0.0024
L		16.39	0.650	0.900	0.849	0.0023
				Mean	0.847	0.0025

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

#### Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99 ±0.01.

Date	February 5, 2020
Probe/Pitot ID	PM 10 2.5
MII Number	COE 20132
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Ca	libration Facility	ORTECH Consulting Inc.	Î	1
Ca	ilibrated By	Dan Turdon //		
Si	gnature		71	
Re	eviewed/Accepted By	les H		$\overline{}$

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	Pstd	
Cp = Cpstd *		
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		1 4 F 1 F 2 F 1			
Nozzle Size Inches	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot	Velocity Head S-Type Pitot	S-Type Pitot Coefficient	Deviation From The
		in. H <sub>2</sub> O	in. H₂O		Mean
		Pstd	Ps	Cp <sub>s</sub>	
Androper of the energy and a configuration And a management of the configuration of the configuration					
NA	7.33	0.130	0.180	0.849	0.0014
	9.09	0.200	0.280	0.845	0.0033
	11.50	0.320	0.440	0.852	0.0044
	13.49	0.440	0.620	0.842	0.0060
	15.69	0.595	0.820	0.851	0.0034
			Mean	0.848	0.0037

Note: Pitots must always be used in the orientation that they are calibrated in.

#### Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99 ±0.01.

# ORTECH

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 2
Date	November 3, 2020
Barometric Pressure	29.50
System Leak Check	NDL Lpm @ 22 "Hg

ft3 cm\* 1.332 litres per cm/28.3168 litres per ft3

Tdgm °F+460	Tstd °F+460
Vstd ft <sup>3</sup>	Vdgm ft <sup>3</sup>
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DGM	A1017
Gasometer	A01463
Barometer	COE20028
Calibrated By	J Gholiman
Signature	
Reviewed and Accepted By	

Flow	Rate	per lone lone lone lone lone	9.0	9.0	9.0	
Time		TABLE.	2.1	27	25	telement error scharterschilderen tyrnere
DGM	Calibration	Factor	1.005	1.027	1.028	and the second s
DGM	Outlet	ပို	27.0	26.0	26.0	STATE STATES OF STREET, STATES OF STATES OF STREET, STATES OF STREET, STATES OF STATES O
DCM	Pressure	in. H,0	1.2	1.2	1.2	deriver's article of the control of
DGM Average	Temperature	၁,	27.0	26.5	26.5	معاورة والمتافية والمتارات والمتاريخ والمتاريخ والمتاريخ والمتاركة والمتاركة والمتاركة والمتاركة والمتاركة والمتاركة
DGM	Volume	ĮĮ.	0.448	0.568	0.525	and an open property of the state of the sta
DGM Reading		Initial Final	.920 135.600	91.980 108.050	1.0	a Constituent and an annual contract of the co
Gasometer	Temperature	°C In	21.0   122	21.0	21.0	manufactural photos and the second se
Gasometer	Volume		0.442	0.574	0.532	netritera de la constanta de l
ding		cım	9.40	12.20	11.30	distribution of the second sec
Gasometer Reading	сш	Final	50.50	41.60	59.90	and animal department of the second second second
Gasi		Initial	59.90	53.80	71.20	And the second s

Acceptance Criteria:

DGMCF AVERAGE

0.5 Lpm

Individual values of DGM calibration factor must be within  $\pm$  1.5% of the average value. If not the calibration must be repeated. Also, the DGMCF average value must be 1.00  $\pm$  0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

# ORTECH Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	A10117
Date	November 3, 2020
Calibrated By	1. Grollman
Signature	
Reviewed and Accepted By	D#010=

Fluke Calibrator Output	Tredicator I	Display Value	Percent Difference
(COE 20024) (°C)	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	101		-1.0
125	125		0.0
150	151		-0.7
200	200		0.0
300	301		-0.3
400	400		0.0
500	501		-0.2
600	602	The state of the s	-0.3

% Difference = (micromite - after adjustment reading)x 100 micromite

#### Acceptance Criteria:

Trendicator display must read within  $\pm 1.5\%$  of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

# ORTECH

# Dry Gas Meter Calibration Data

Calibration Procedure	03-3004
Meter Number	Vost 5
Date	November 2, 2020
Barometric Pressure	29.41
System Leak Check	NDL ipm @ 22 "Hg

ft3= cm\* 1.332 litres per cm/28.3168 litres per ft3

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	(Pbar in.
. VO I	-
460	
4	-01

DGW	COE 20018
Gasometer	A01463
Barometer	COM 20028
Calibrated By	f. Grollman
Signature	
Reviewed and Accepted By	

# Acceptance Criteria:

Individual values of DGM calibration factor must be within  $\pm$  1.5% of the average value. If not the calibration must be repeated. Also, the DGMCF average value must be  $1.00 \pm 0.05$ , otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

1.010

0.5Lpm

DGMCF AVERAGE

# ORTECH Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Jenco 765
MII	COE 200/18
Date	November 2, 2020
Calibrated By	. Grollman
Signature	
Reviewed and Accepted By	1 10:010=

Fluke Calibrator Output	Tredicator I	Pisplay Value	Percent Difference
(COE 20024) (°C)	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10	And a second supplies to the second s	0.0
20	20		0.0
50	50		0.0
75	75	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	0.0
100	100		0.0
125	125	d the control of the	0.0
150	150	A STATE OF THE PARTY OF THE PAR	0.0
200	200		0.0
300	300		0.0
400	400	A STATE OF COURSE HELD STATE OF THE STATE OF	0.0
500	500		0.0
600	600	***************************************	0.0

% Difference = (micromite - after adjustment reading)x 100 micromite

#### Acceptance Criteria:

Trendicator display must read within  $\pm 1.5\%$  of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH

# Dry Gas Meter Calibration Using Calibrated Critical Orifice

	Meter Number Teal Meter MII Number COE 2 Orifice Set ID COE2	Team 1 COE 20094 COE 20999
--	--	----------------------------

Calibration Conditions	tions	
Barometric Pressure	28.29	in Hg
Theoretical Critical Vacuum	13.4	in Hg
System Leak Check	<0.001 dm	<0.001 cfm @ 26" Hg
Calibration Date	October 30, 2020	30, 2020
Calibration Technician	J. Gro	J. Grollman
Reviewed and Accepted By	NAZO.	SEN ACCEP

Fact	Factors/Conversions	Suc
Std Temp	528	N <sub>o</sub>
Std Press	29.92	in Hg
$K_1$	17.647	oR/in Hg

Gritical Orifical Outlines         Aug. DGM Temp         Serial Coefficient Amb Temp         Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Amb Temp         Actual Actual Amb Temp         Actual Amb					Ŭ	Calibration Data					
Volume         Avg. DGM Temp         Serial         Coefficient         Amb Temp         Amb Temp           Final         Initial         Final         Number         Initial         Final           (V <sub>mf</sub> )         (t <sub>ml</sub> )         (t <sub>ml</sub> )         K'         (t <sub>amb</sub> )         (t <sub>amb</sub> )           cubic feet         °F         °F         °F         °F         °F           772.910         67.5         70.5         UR-40         0.2352         69.8         70.7           778.048         69.5         69.5         UR-48         0.3308         70.7         70.7           789.200         69.5         69.5         UR-55         0.4520         70.7         70.7           802.969         69.5         UR-63         0.5874         70.7         70.7           818.777         70.5         UR-73         0.8107         70.7         70.7				Metering					Critical Orifice		
Initial         Final         Initial         Final         Number         Initial         Final           (Vml)         (Vml)         (tml)         (tml)         (tml)         (taml)         (taml)         (taml)           cubic feet         cubic feet         cubic feet         °F         °F         °F         °F         °F           768.945         772.910         67.5         70.5         UR-40         0.2352         69.8         70.7           778.048         789.200         69.5         69.5         UR-55         0.4520         70.7         70.7           789.200         802.969         69.5         UR-63         0.5874         70.7         70.7           802.969         818.777         70.5         UR-73         0.8107         70.7         70.7	- 111	DGM Orifice	Volume	Volume	Avg. DGM Temp	Avg. DGM Temp	Serial	Coefficient	Amb Temp	Amb Temp	Actual
(Vmil)         (Vmil)         (tmil)         (tmil)<		ᆼ	Initial	Final	Initial	Final	Number		Initial	Final	Vacuum
cubic feet         cubic feet         °F		(P <sub>m</sub> )	(V <sub>mi</sub> )	(V <sub>mf</sub> )	(t <sub>ml</sub> )	(f <sub>m</sub> )		K	(t <sub>amb</sub> )	(t <sub>smb</sub> )	
768.945         772.910         67.5         70.5         UR-40         0.2352         69.8         70.7           772.910         778.048         69.5         UR-48         0.3308         70.7         70.7           778.048         789.200         69.5         69.5         UR-55         0.4520         70.7         70.7           802.969         818.777         70.5         70.5         UR-73         0.8107         70.7         70.7		in H <sub>2</sub> O	cubic feet	cubic feet	Ľ,	Ľ,			<b>4</b> <sub>0</sub>	J <sub>o</sub>	in Hg
772.910         778.048         69.5         UR-48         0.3308         70.7         70.7           778.048         789.200         69.5         69.5         UR-55         0.4520         70.7         70.7           802.969         818.777         70.5         70.5         UR-73         0.8107         70.7         70.7		0.26	768.945	772.910	67.5	70.5	UR-40	0.2352	69.8	70.7	24.0
778.048         789.200         69.5         69.5         UR-55         0.4520         70.7         70.7           802.369         802.969         69.5         0.5874         70.7         70.7		0.59	772.910	778.048	69.5	69.5	UR-48	0.3308	70.7	70.7	23.5
789.200         802.969         69.5         69.5         UR-63         0.5874         70.7         70.7           802.969         818.777         70.5         UR-73         0.8107         70.7         70.7		1.20	778.048	789.200	89.5	25.55	UR-55	0.4520	7.0.7	7.0.7	22.0
802.969 818.777 70.5 0.5 UR-73 0.8107 70.7 70.7		2.00	789.200	802.969	69.5	10.00	UR-63	0.5874	70.7	70.7	20.0
	. 7	3.80	802.969	818.777	70.5	70.5	UR-73	0.8107	70.7	70.7	16.0

***************************************	Standard	Standardized Data			Dry 6	Dry Gas Meter		
				Calibrati	Calibration Factor	Flowrate	DH @	
Dry Ga	Dry Gas Meter	Critical	Critical Orifice	Value	Variation	Std & Corr	0.75 SCFM	Variation
(V <sub>m(std)</sub> )	(Q <sub>m(std)</sub> )	(Vcr <sub>(std)</sub> )	(Q <sub>cr(std)</sub> )	(λ)	80	(Qm(std)(corr))	1	(Фрифа)
subic feet	cfm	cubic feet	ctm			ctm	in H20	
3.744	0.288	3.756	0.289	1.003	0.004	0.289	1.752	-0.277
4.852	0.404	4.875	0.406	1.005	0.005	0.406	2.011	-0.018
10.547	0.555	10.546	0.555	1.000	0.001	0.555	2.191	0.162
13.049	0.725	12.984	0.721	0.995	-0.004	0.721	2.162	0.133
15.023	1.002	14.933	966.0	0.994	-0.005	0.996	2.157	0.128
			DGMCF	0.999			2.029	DH@ Average
							The state of the s	

Individual values of DGM calibration factor (Y) must be within  $\pm$  1.5% of the average value. If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00  $\pm$  0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

### ORTECH Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20094
Date	October 1, 2020
Calibrated By	J. Grollman
Reviewed and Accepted By	CHRIC PELOTE

Fluke Calibrator Output	Tredicator D	isplay Value	Percent Difference
(COE 20024) (°F)	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	A,	0.0
70	70		0.0
100	100		0.0
200	202		-1.0
250	251		-0.4
300	303		-1.0
400	401		-0.3
500	500		0.0
600	601		-0.2
700	700		0.0
800	801		-0.1
900	901		-0.1
1000	1001		-0.1
1100	1102		-0.2
1200	1201		-0.1
1250	1250		0.0

% Difference = <u>(calibrator - after adjustment reading)</u>x 100 calibrator

### **Acceptance Criteria:**

'Trendicator display must read within  $\pm$  1.5%, and  $\pm$  3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

### ORTECH Manometer Calibration Data

Date	October 1, 2020	Calibrated By	J. Grollman
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	CHPIS RELORS
Calibrated Against	Dual 3		
MII Number	COE 20008		
Calibration Procedure	03 - J010		

### Front Leg

Manometer Scale		ter Reading H₂O	Reference Manometer Reading	Percent Difference
"H₂0	Before Adjustment	After Adjustment	"H₂O	%
	0.930	40	0.930	0.0
0-1.0	0.560		0.561	0.2
	0.152		0.156	2.6
	9.20		9.20	0.0
1.0-10.0	5.39		5.36	-0.6
	1.92		1.91	-0.5

Percent Difference = (Ref. M<u>anometer - Instrument Reading</u>) x 100 Ref. Manometer

### **Acceptance Criteria:**

The manometer being calibrated must be within  $\pm$  5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 " $H_2O$  on the 0 to 1 inch scale, and 0.05 " $H_2O$  on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH

# Dry Gas Meter Calibration Using Calibrated Critical Orifice

Meter Console Information  Meter Number Team 2  Meter MII Number COE 2005  Orifice Set ID COE 2099  Barometer ID COE 2005		
	Meter Console Inforu	nation
	Meter Number	Team 2
	Meter Mil Number	COE 20092
	Orifice Set ID	COE20999
	Barometer ID	COE 20028

Calibration Conditions	ions	
Barometric Pressure	29,68	in Hg
Theoretical Critical Vacuum	14.0	in Hg
System Leak Check	<0.001 cfm @ 25" Hg	@ 25" Hg
Calibration Date	November 4, 2020	r 4, 2020
Calibration Technician	Thomas Timar	Timar
Reviewed and Accepted By	ななどと	STEE MESSIF

Fact	Factors/Conversions	ons
Std Temp	528	°R
Std Press	29.92	in Hg
$K_1$	17.647	oR/in Hg

Run Time         Metering Console         Critical Orifice           Run Time         Volume         Avg. DGM Temp         Avg. DGM Temp         Serial         Coefficient         Amb Temp         Amb Temp         Actual           (Q)         (Pm)         (Vmil)         (Vmil) <td< th=""><th></th><th></th><th></th><th></th><th><u> </u></th><th>Calibration Data</th><th></th><th></th><th></th><th></th><th></th></td<>					<u> </u>	Calibration Data					
DGM Orifice         Volume         Volume         Avg. DGM Temp         Avg. DGM Temp         Serial         Coefficient         Amb Temp         Amb Temp           DH         Initial         Final         Initial         Final         Initial         Final         Final <th>Run Time</th> <th></th> <th></th> <th>Metering</th> <th>Console</th> <th></th> <th></th> <th></th> <th>Critical Orifice</th> <th>-</th> <th></th>	Run Time			Metering	Console				Critical Orifice	-	
DH         Initial         Final         Number         Initial         Final         Final         Number         Initial         Final         Final         Initial         Final         Initial         Final         Initial         Final         Initial         Final         Itamble         Itamble <t< th=""><th></th><th>DGM Orifice</th><th></th><th>Volume</th><th>Avg. DGM Temp</th><th>Avg. DGM Temp</th><th>Serial</th><th>Coefficient</th><th>1.00</th><th></th><th>Actual</th></t<>		DGM Orifice		Volume	Avg. DGM Temp	Avg. DGM Temp	Serial	Coefficient	1.00		Actual
(Pm)         (Vml)         (Vml)         (tml)	Elapsed	Н	Initial	Final	Initial	Final	Number		it.	Final	Vacuum
in H <sub>2</sub> O         cubic feet         °F	(a)	(P <sub>m</sub> )	(V <sub>mi</sub> )	(V <sub>mf</sub> )	(t <sub>m1</sub> )	(t <sub>m1</sub> )		Ά.	(t <sub>amb</sub> )	(t <sub>amb</sub> )	
0.28         326.300         331.570         69.0         70.5         UR-40         0.2352         69.8         69.8           0.59         332.200         336.560         70.5         70.5         UR-48         0.3308         69.8         69.8           1.20         337.500         343.430         70.5         71.0         UR-55         0.4520         69.8         69.8           1.90         344.850         352.540         70.5         70.5         UR-63         0.5874         69.8         69.8           3.70         353.500         372.430         70.5         70.5         UR-73         0.8107         69.8         69.8	min	in H <sub>2</sub> O	cubic feet	cubic feet	<b>4</b> 0	i do			30	10	in Hg
0.59         332.200         336.560         70.5         70.5         UR-48         0.3308         69.8         69.8         69.8           1.20         337.500         343.430         70.5         71.0         UR-55         0.4520         69.8         69.8           1.90         344.850         352.540         70.5         70.5         UR-53         0.5874         69.8         69.8	17.0	0.28	326.300	331.570	0.69	70.5	UR-40	0.2352	69.8	8.69	21.0
1.20         337.500         343.430         70.5         71.0         UR-55         0.4520         69.8         69.8           1.90         344.850         352.540         70.5         70.5         UR-63         0.5874         69.8         69.8           3.70         353.500         372.430         70.5         70.5         UR-73         0.8107         69.8         69.8	10.0	0.59	332.200	336.560	70.5	70.5	UR-48	0.3308	8.69	8.69	20.5
1.90         344.850         352.540         70.5         UR-63         0.5874         69.8         69.8           3.70         353.500         372.430         70.5         70.5         UR-73         0.8107         69.8         69.8	10.0	1.20	337,500	343,430	70.5	71.0	UR-55	0.4520	8.69	8.69	19:0
3.70 353.500 372.430 70.5 70.5 UR-73 0.8107 69.8 69.8	10.0	1.90	344.850	352.540	70.5	70.5	UR-63	0.5874	8.69	8.69	18.0
	18.0	3.70	353.500	372.430	70.5	70.5	UR-73	0.8107	8.69	8.69	16.5

	Standardized Data	ized Data			Dry (	Dry Gas Meter		
				Calibrati	Calibration Factor	Flowrate	DH@	
Dry Gas M	is Meter	Critical	Critical Orifice	Value	Variation	Std & Corr	0.75 SCFM	Variation
$(V_{m(std)})$	(Q <sub>m(std)</sub> )	(Vcr <sub>(std)</sub> )	(Q <sub>cr(std)</sub> )	ω	(AQ)	(Qm(std)(corr))	(DH@)	(Фрифа)
cubic feet	cfm	cubic feet	cfm			cfm	in H20	
5.214	0.307	5.156	0.303	0.989	-0.004	0.303	1.712	-0.134
4.311	0.431	4.266	0.427	0.989	-0.003	0.427	1.824	-0.023
5.869	0.587	5.828	0.583	0.993	100.0	0.583	1.987	0.140
7.628	0.763	7.574	0.757	0.993	0.001	0.757	1.863	0.016
18.861	1.048	18.817	1.045	866.0	0.005	1.045	1.905	0.058
			DGMCF	0.992			1.847	DH@ Average

Individual values of DGM calibration factor (Y) must be within  $\pm$  1.5% of the average value. If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00  $\pm$  0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

### ORTECH Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP118
MII	COE 20092
Date	November 4, 2020
Calibrated By	Thomas Timar
Reviewed and Accepted By	CHUS PRUPE

Fluke Calibrator Output	Tredicator D	isplay Value	Percent Difference
(COE 20024) (°F)	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA.	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	501		-0.2
600	601		-0.2
700	700		0.0
800	801		-0.1
900	901		-0.1
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1251	van de V	-0.1

% Difference = (calibrator - after adjustment reading)x 100 calibrator

### Acceptance Criteria:

'Trendicator display must read within  $\pm$  1.5%, and  $\pm$  3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

### ORTECH Manometer Calibration Data

Date	November 4, 2020	Calibrated By	Thomas Timar
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	CHRS BEWIE
Calibrated Against	Hand held		
MII Number	B02679		
Calibration Procedure	03 - J010		

### Front Leg

Manometer Scale		ter Reading H₂O	Reference Manometer Reading	Percent Difference
"H <sub>2</sub> 0	Before Adjustment	After Adjustment	"H <sub>2</sub> O	%
	0.290	AIN	0.290	0.0
0-1.0	0.500		0.510	2.0
	0.870		0.880	1.1
	2.90		2.90	0.0
1.0-10.0	5.75		5.82	1.2
	9.90	(	9.94	0.4

Percent Difference = (Ref. M<u>anometer - Instrument Reading</u>) x 100 Ref. Manometer

### Acceptance Criteria:

The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H<sub>2</sub>O on the 0 to 1 inch scale, and 0.05 "H<sub>2</sub>O on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)

### ORTECH

# Dry Gas Meter Calibration Using Calibrated Critical Orifice

nation	Team 4	COE 20090	COE20999	COE 20028
Meter Console Information	Meter Number	Meter Mil Number	Orifice Set ID	Barometer ID

Calibration Conditions	ions	4. 经背景
Barometric Pressure	29.44	in Hg
Theoretical Critical Vacuum	13.9	in Hg
System Leak Check	<.001 @ 28"	78"
Calibration Date	November 4, 2020	1, 2020
Calibration Technician	Thomas Timar	imar
Reviewed and Accepted By	とはなどとなると	はいい

Fact	Factors/Conversions	ons
Std Temp	528	8
Std Press	29.92	in Hg
K1	17.647	oR/in Hg

		Actual	Vacuum		in Hg	25.0	23.0	22.0	20.5	17.5
		Amb Temp	Ti n a i	(t <sub>amb</sub> )	30	70.7	7.07	70.7	7.0.7	70.7
	Critical Orifice	Amb Temp	Initial	(t <sub>amb</sub> )	Ľ.	70.7	70.7	70.7	70.7	70.7
-		Coefficient		Κ'	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.2352	0.3308	0.4520	0.5874	0.8107
		Serial	Number			UR-40	UR-48	UR-55	UR-63	UR-73
Calibration Data		Avg. DGM Temp	Final	(t <sub>mf</sub> )	LL o	5.79	67.5	5.69	70.0	70.5
0	Console	Avg. DGM Temp	Initial	(t <sub>mi</sub> )	Ľ.	57.5	67.5	0.69	70.0	70.0
	Metering Console	Volume	Final	(V <sub>mf</sub> )	cubic feet	804.510	809.320	815.900	825.020	837.730
		Volume	Initial	(V <sub>mi</sub> )	cubic feet	801.200	805.050	810.050	816.650	826.200
		DGM Orifice Volume	Н	(P <sub>m</sub> )	in H <sub>2</sub> 0	0.31	0.61	1.20	2.00	3.70
	Run Time		Elapsed	ਰ	min	11.0	10.0	0.01	11.0	11.0

Dry Gas Meter         Calibration Factor         Flowrate         DH @           (V <sub>m[std]</sub> )         (Q <sub>m[std]</sub> )         (Vcr <sub>[std]</sub> )         (Q <sub>cr[std]</sub> )         (V)         (DH @         DH @           cubic feet         cfm         (Varietil)         (Vcr <sub>[std]</sub> )         (Q <sub>cr[std]</sub> )         (Y)         (DY)         (DH @)         (DH @)           3.263         0.297         3.306         0.301         1.013         0.009         0.301         1.930         -0.037           4.212         0.421         4.227         0.423         1.004         -0.001         0.423         1.920         -0.047           5.760         0.576         5.776         0.578         1.003         -0.001         0.578         1.920         -0.047           8.246         0.750         8.257         0.751         1.001         -0.003         0.751         1.996         0.029           11.401         1.036         1.036         1.036         1.036         1.939         -0.028		Standard	Standardized Data			Dry 6	Dry Gas Meter		
as Meter         Critical Orifice         Value         Variation         Std & Corr         0.75 SCFM           (Q <sub>m(std)</sub> )         (Vcr <sub>(std)</sub> )         (Q <sub>c(std)</sub> )         (Y)         (DY)         (Q <sub>m(std)</sub> )         (DH@)           cfm         cubic feet         cfm         cfm         in H2O           0.297         3.306         0.301         1.013         0.009         0.301         1.930           0.421         4.227         0.423         1.004         -0.001         0.423         1.920           0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         1.036         1.036         1.036         1.939           1.036         1.036         1.036         1.957					Calibrati	on Factor	Flowrate	@ на	
(Qm(std))         (Vor(std))         (Qcr(std))         (Y)         (DY)         (DH@)         (DH@)           cfm         cubic feet         cfm         cfm         in H2O           0.297         3.306         0.301         1.013         0.009         0.301         1.930           0.421         4.227         0.423         1.004         -0.001         0.423         1.920           0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         1.036         1.036         1.036         1.939           1.036         1.036         1.036         1.936	Dry Ga	s Meter	Critical	Orifice	Value	Variation	Std & Corr		Variation
offm         cubic feet         cfm         cn H2O           0.297         3.306         0.301         1.013         0.009         0.301         1.930           0.421         4.227         0.423         1.004         -0.001         0.423         1.920           0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         1.036         1.036         1.036         1.939           DGMCF         1.004         -0.005         1.036         1.939	$(V_{m(std)})$	(Q <sub>m(std)</sub> )	(Vcr <sub>(std)</sub> )	(Q <sub>cr(std)</sub> )	(λ)	(λα)	(Qm(std)(corr))		(Фрнф)
0.297         3.306         0.301         1.013         0.009         0.301         1.930           0.421         4.227         0.423         1.004         -0.001         0.423         1.920           0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         11.396         1.036         1.036         1.939           DGMCF         1.004         -0.005         1.036         1.939	cubic feet	ctm	cubic feet	ctm			ctm		
0.421         4.227         0.423         1.004         -0.001         0.423         1.920           0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         11.396         1.036         1.000         -0.005         1.036         1.939           DGMCF         1.004         1.004         1.936         1.967	3.263	0.297	3.306	0.301	1.013	0.009	0.301	1.930	-0.037
0.576         5.776         0.578         1.003         -0.001         0.578         2.023           0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         1.036         1.000         -0.005         1.036         1.939           DGMCF         1.004         1.004         1.967	4.212	0.421	4.227	0.423	1.004	-0.001	0.423	1.920	-0.047
0.750         8.257         0.751         1.001         -0.003         0.751         1.996           1.036         11.396         1.036         1.000         -0.005         1.036         1.939           DGMCF         1.004         1.004         1.967	5.760	0.576	5.776	0.578	1.003	-0.001	0.578	2.023	0.056
1.036 11.396 1.036 1.000 -0.005 1.036 1.939 DGMCF 1.004 1.957	8.246	0.750	8.257	0.751	1.001	-0.003	0.751	1.996	0.029
1.967	11.401	1.036	11.396	1.036	1.000	-0.005	1.036	1.939	-0.028
				DGMCF	1.004			1.967	DH@ Average

Individual values of DGM calibration factor (Y) must be within  $\pm$  1.5% of the average value. If not the calibration must be repeated. Also, the DGMCF average value (Y) must be 1.00  $\pm$  0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

### ORTECH Trendicator Calibration

100	Calibration Procedure	03 - 1005
	Trendicator Type	Omega DP118
	MII	COE 20090
	Date	November 4, 2020
	Calibrated By	Thomas Timar
	Reviewed and Accepted By	CHRIS BELORE

Fluke Calibrator Output	Tredicator D	isplay Value	Percent Difference
(COE 20024) (°F)	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	AU	0.0
70	70		0.0
100	99		1.0
200	200		0.0
250	251		-0.4
300	301		-0.3
400	399		0.3
500	498		0.4
600	599		0.2
700	700	CHARLES HARRED	0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1249		0.1

% Difference = (calibrator - after adjustment reading)x 100 calibrator

### Acceptance Criteria:

Trendicator display must read within  $\pm$  1.5%, and  $\pm$  3 degrees F of the standard value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use.

(Ontario Source Testing Code, June 2010, Part C: Method ON-2, 7.5 Appendix 2E)

### ORTECH Manometer Calibration Data

Date	November 4, 2020	Calibrated By	Thomas Timar
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	CHRE BELOTTE
Calibrated Against	Omega		
MII Number	B02679		
Calibration Procedure	03 - J010		

### Front Leg

Manometer Scale		ter Reading H₂O	Reference Manometer Reading	Percent Difference
"H <sub>2</sub> 0	Before Adjustment	After Adjustment	"H₂O	<b>%</b>
	0.270	NA	0.270	0.0
0-1.0	0.610		0.610	0.0
	0.910		0.910	0.0
	2.60		2.65	1.9
1.0-10.0	6.00		6.00	0.0
	9.30		9.35	0.5

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

### Acceptance Criteria:

The manometer being calibrated must be within  $\pm$  5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H<sub>2</sub>O on the 0 to 1 inch scale, and 0.05 "H<sub>2</sub>O on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)



### **APPENDIX 22**

Particulate and Metals Test Emission Calculations (24 pages)

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location:

APC Outlet No. 1

Test No.: Date:

November 9, 2020

1 - Particulate & Metals

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.521 m <sup>3</sup>
AVGERGE ISOKINETICITY	97.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH THE SERVICE OF	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.6 %
AVERAGE GAS VELOCITY	17.35 m/s
BAROMETRIC PRESSURE (Station)	101.558 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.334 Kpa
OXYGEN CONCENTRATION	8.74 %
CARBON DIOXIDE CONCENTRATION	10.73 %
CARBON MONOXIDE CONCENTRATION	12.4 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.63 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	15.44 Rm³/s
DRY ADJ GAS FLOWRATE	18.96 Rm³/s
WET REF GAS FLOWRATE	18.09 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	14.4 mg
	-FILTER	0.1 mg
	-TOTAL	14.5 mg
DRY REF GAS VOLUME SAMPLED		3.521 m <sup>3</sup>
PARTICULATE CONC ACTUAL		2.480 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		4.118 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		3.353 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		3.516 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.063574 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Covanta DYEC 1 - Particulate & Metals November 9, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 1

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11	
_	
	JB
	JB
TOTAL LOCALIONS	Operator:

Pitot Factor	0.851	Filter (mg)	0.1		Combustion Gases	
DGMCF	0.999	Probe (mg)	14.4		02% 8.74	
Barometric Pressure	29.99 "Hg	CWTR (g)	424.8		CO2% 10.73	
Static Pressure	-8.930 "H <sub>2</sub> 0	WCBDA (g)	18.9		COppm 12.4	
Nozzle	0.2513 inches				- Commission construction and constructi	
Stack Diameter	4.500 ft	Leak Check Volume		0.4 ਜਿੰ	Measured H20	
Length	0.000 ft	Reading Interval		2.5 minutes	14.6 %	
Width	0.000 ft	Number of Ports		2		
		Number of points / Port		12		

	ty Isokinetic	%		96.5						97.3						6.86			95.6						96.1						97.8		
Leak	Check Velocity	Volume m/s	18:13	18.12	18.33	18.71	18.58	18.49	18.60	18.60	18.37	18.14	18.25	17.90	17.28	17.03	16.90	16.90	16.24	16.25	16.78	16.78	16.90	16.90	16.90	17,03	17.03	17.16	17.15	16.89	16.89	17.12	· · · · · · · · · · · · · · · · · · ·
	Vacuum	W Hg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	М	"H20	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.75	1.6	1.5	1.5	1.5	1.45	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.55	1.55	1.55	1.5	1.5	1.55	
	DGM In	u. o	89	89	89	89	89	89	89	89	89	89	89	89	89	69	69	70	70	70	69	69	69	70	70	70	70	70	71	70	71	71	
ratures	DGM Out	L o	69	69	69	69	69	69	69	69	69	70	70	70	71	70	70	72	72	72	72	72	73	73	73	74	73	73	74	73	74	75	
Temperatures	Imp. Out	o 0	51	50	50	52	53	56	58	59	9	62	63	59	58	58	58	59	57	56	55	55	54	54	53	53	53	53	52	52	52	52	
	Stack	ц.	285	284	282	284	283	285	285	285	285	286	285	286	287	287	287	287	287	288	288	288	287	287	287	287	287	287	286	286	286	284	
	dδ	,H2O	0.75	0.75	0.77	0.8	0.79	0.78	0.79	0.79	0.77	0.75	0.76	0.73	0.68	99.0	0.65	0.65	9.0	9:0	0.64	0.64	0.65	0.65	0.65	0.66	99.0	0.67	0.67	0.65	0.65	0.67	我们是我们的 有数的 经现代
	DGM	Reading	615.10	616.85	618.67	620.42	622.18	623.98	625.74	627.55	629.31	631.09	632.87	634.67	636.43	638.14	639.78	641,43	643.05	644.67	646.26	647.91	649.54	651.18	652.81	654.45	656.08	657.77	659,44	661.12	662.78	664.43	
		Time	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	20	52.5	55	57.5	09	62.5	65	67.5	70	72.5	
	i i i i i i i i i i i i i i i i i i i	Point	Т			2			က			4			2			9			7			8			6			10			

Covanta DYEC

1 - Particulate & Metals
November 9, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 1 Operator: JB

0.051	Cilhor (mon)	, 0		Combinetion Good
1C0		1.0		Compusition dases
0.999	Probe (mg)	14.4		02% 8.74
99 "Hg	CWTR(g)	424.8		CO2% 10.73
-8.930 "H <sub>2</sub> 0	WCBDA (g)	18.9		COppm 12.4
13 inches				
4.500 ft	Leak Check Volume		0.4 ft²	Measured H20
0.000 ft	Reading Interval		2.5 minutes	14.6 %
00 ft	Number of Ports		2	
	Number of points / Port		12	

	Isokinetic	%	97.4	97.4	92.6	97.5	97.4	8.96		97.9	100.0	99.9	97.9	97.9	98.4	93.1	104.7	98.6	98.7	8.66	9.66	97.8	98.1	97.4	96.9	97.8	9.96	1.66	97.4	97.4	97.3	7.96	96.1
	Velocity	m/s	16.77	16.76	16.62	16.62	16.63		18.13	18.15	18.27	18.16	18.16	18.16	18.16	17.54	17.91	17.28	17.28	17.28	16.90	16.92	16.91	16.92	16.52	16.52	17.43	17.31	17.32	17.45	17.45	17.43	17.81
Leak	Check	Volume						0.4																									
	Vacuum	"Hg	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	М	"H20	1.5	1.5	1.5	1.5	1.5		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.8	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.7	1.6	1.6	1.6	1.6	1.6	1.8
	DGM In	iL o	71	71	71	72	72		71	73	73	73	73	73	72	72	73	73	73	74	74	73	73	73	74	74	74	74	74	74	74	74	74
itures	DGM Out	ഥ	75	75	75	75	75		75	75	75	75	75	75	75	75	75	75	75	76	76	75	75	75	76	76	76	77	77	77	77	77	77
Temperatures	Imp. Out	<u></u>	52	52	52	52	52		52	51	51	51	51	51	52	52	52	52	53	52	52	52	53	53	54	54	53	51	50	50	50	50	50
	Stack	ዳ	276	275	274	274	275		285	287	287	288	288	288	288	287	287	287	287	287	287	289	288	289	288	288	289	289	290	290	290	289	289
	ΔP	"H20	0.65	0.65	0.64	0.64	0.64		0.75	0.75	0.76	0.75	0.75	0.75	0.75	0.7	0.73	0.68	0.68	0.68	0.65	0.65	0.65	0.65	0.62	0.62	69:0	0.68	0.68	69:0	69:0	69.0	0.72
	DGM	Reading	92.799	669.43	671.07	672.73	674.39	676.04	676.44	678.23	90.089	681.90	683.69	685.48	687.28	688.98	690.83	692.61	694.33	696.07	697.81	699.48	701.15	702.81	704.46	706.09	707.70	709,44	711.14	712.84	714.55	716.25	717.94
		Time	77.5	80	82.5	85	87.5	06	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	50	52.5	55	57.5	09
-3.		Point			12				H			2			က			4			2			9			7			<b>∞</b>			6

Covanta DYEC
1 - Particulate & Metals
November 9, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 1 Operator: JB

		g) CO2% 10.73 COppm 12.4		eak Check Volume 0.4 ft	Reading Interval 2.5 minutes	Number of Ports	
0.851 Filter (mg)	0.999 Probe (	29.99 "Hg CWTR (g) -8.930 "H <sub>2</sub> O WCBDA (g)	0.2513 inches			0.000 ft Numbe	
		Sarometric Pressure Static Pressure					

					Temper	ratures				Leak		
		DGM	ΔP	Stack	Imp. Out	DGM Out	DGM In	М	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H20	<b>5</b> 0	3° 3° 3°	3 <sub>0</sub>	J.	"H20	"Hg	Volume	m/s	%
	62.5	719.72	0.71	289	51	77	74	1.75	3.0		17.69	99.1
	65	721.48	0.71	289	51	77	75	1.75	3.0		17.69	98.7
10	67.5	723.25	0.72	289	51	77	75	1.75	3.0		17.81	99.2
	70	725.00	0.72	289	51	77	75	1.75	3.0		17.81	97.4
	72.5	726.76	0.72	287	50	77	75	1.75	3.0		17.79	97.9
11	75	728.51	0.63	285	49	77	75	1.5	3.0		16.61	97.2
	77.5	730.17	0.62	285	49	77	75	1.4	3.0		16.48	98.4
	80	731.76	0.61	285	50	77	75	1.4	3.0		16.35	95.0
12	82.5	733.34	0.61	284	50	77	75	1.4	3.0		16.34	95.2
	85	734.93	0.6	281	50	77	75	1.4	3.0		16.17	95.7
	87.5	736.52	0.6	284	50	77	75	1.4	3.0		16.20	96.3
	06	738.14										98.3

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location: Test No.: APC Outlet No. 1

Date:

November 9, 2020

2 - Particulate & Metals

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.600 m <sup>3</sup>
AVGERGE ISOKINETICITY	98.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.92 m/s
BAROMETRIC PRESSURE (Station)	101.287 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.063 Kpa
OXYGEN CONCENTRATION	8.75 %
CARBON DIOXIDE CONCENTRATION	10.67 %
CARBON MONOXIDE CONCENTRATION	10.2 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE			26.48 m <sup>3</sup> /s
DRY REF GAS FLOWRATE			15.65 Rm³/s
DRY ADJ GAS FLOWRATE			19.21 Rm³/s
WET REF GAS FLOWRATE			18.59 Rm <sup>3</sup> /s

### **PARTICULATE EMISSION DATA**

PARTICULATE COLLECTED	-PROBE	17.7 mg
	-FILTER	0.3 mg
	-TOTAL	18 mg
DRY REF GAS VOLUME SAMPLED		3.600 m <sup>3</sup>
PARTICULATE CONC ACTUAL		2.955 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		5.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		4.074 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		4.212 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.078259 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Covanta DYEC Test No.: Plant: Date:

2 - Particulate & Metals November 9, 2020

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 1

Operator:

Combustion Gases

O2% 8.75

CO2% 10.67

COppm 10.2 0.3 17.7 473.1 22.2 CWTR (g) WCBDA (g) Probe (mg) Filter (mg)

Number of points / Port Number of Ports Reading Interval

0.000 ft 0.000 ft 4.500 ft

2.5 minutes 2 11

Measured H20 15.8 %

0.4 代。

Leak Check Volume

29.91 "Hg -8.930 "H<sub>2</sub>O 0.2513 inches

**Barometric Pressure** 

Pitot Factor

DGMCF

Static Pressure

Stack Diameter

Nozzle

Length Width

0.851

	Isokinetic	%		7.96	101.4	101.6	101.8	98.8	98.2	96.8	95.8	96.8	2.66	97.9	97.8	8,00	8.60	9.66	6.66	99.3	6.66	98.0	97.8	97.8	6.96	97.5	97.5	98.1	98.5	99.2	97.9	98.4	98.2
	Velocity	s/m	19.96	19.87	19.89	19.88	20.00	19.99	19.77	19.65	19.65	18.96	18.61	18.61	17.63	17.63	17.74	16.98	16.98	16.98	17.36	17.49	17.49	17.62	17.62	17.62	17.62	17.74	17.74	17.87	17.87	17.84	15.88
Leak	Check	Volume																															
	Vacuum	"Hg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3,0	3.0	3.0	3.0	3.0
	늄	"H20	2.2	2.2	2.2	2.2	2.1	2.1	2	2	2	1.9	1.8	1.8	1.7	1.7	1.7	1.55	1.55	1.55	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.4
	DGM In	o T	77	77	76	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	76	76	76	77	77	77	77	77	76	76	77	77	77
atures	DGM Out	<b>1</b> 0	78	77	77	75	75	75	75	75	75	75	75	76	76	76	76	76	76	76	78	78	78	79	79	79	79	79	79	79	79	80	80
Temperatures	Imp. Out	<b>a</b> _0	72	57	53	50	49	48	48	48	49	47	47	48	48	48	46	46	46	46	44	44	44	44	44	44	44	44	44	44	44	43	43
	Stack	3 <sub>0</sub>	287	288	290	289	290	289	289	289	289	289	289	289	289	289	288	288	288	288	288	288	288	288	288	288	288	288	288	288	288	286	286
	ΔP	"H20	6.0	0.89	0.89	0.89	6:0	6.0	0.88	0.87	0.87	0.81	0.78	0.78	7.0	0.7	0.71	0.65	0.65	0.65	0.68	0.69	69:0	7.0	0.7	0.7	7.0	0.71	0.71	0.72	0.72	0.72	0.57
	DGM	Reading	738.54	740.47	742.48	744.49	746.50	748.46	750.41	752.31	754.18	756.07	757.94	759.75	761.56	763.31	765.06	766.82	768.51	770.19	771.88	773.58	775.29	777.00	778.71	780.43	782.15	783.88	785.63	787.39	789.14	790.90	792.66
-		Time	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	- 20	52.5	55	57.5	09	62.5	92	67.5	70	72.5	75
		Point	1			2			e E			4			2			9			7			∞			6			10			11

Plant: Test No.: Date:

Covanta DYEC
2 - Particulate & Metals
November 9, 2020

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 1
Operator: JB

,es	5	<u> </u>	2			The second secon		
Combustion Gas	02% 8.75	CO2% 10.6	COppm 10.	Leinenvieren manmanken monten mit sterne mit	Measured H20	15.8 %		
					0.4 ft²	2.5 minutes	2	1)
0.3	17.7	473.1	22.2					
Filter (mg)	Probe (mg)	CWTR (g)	WCBDA (g)		Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
0.851	0.999	29.91 "Hg	-8.930 "H <sub>2</sub> O	0.2513 inches	4.500 ft	0.000 代	0.000 ft	
Pitot Factor	DGMCF	Barometric Pressure	Static Pressure	Nozzle	Stack Diameter	Length	width	

					Temperatures	atures			Andrews Commission Com	Leak		
		DGM	ďΣ	Stack	Imp. Out	DGM Out	DGM In	Ħ	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H2O	10	<b>1</b> 0	J <sub>O</sub>	°F.	"H20	"Hg	Volume	m/s	%
	77.5	794.26	0.57	286	43	80	77	1,4	3.0		15.88	100.2
	80	795.87	0.58	284	46	80	77	1.4	3.0		15,99	100.9
12	82.5	797.48	0.57	284	46	80	77	1.4	3.0		15.86	6.66
	85	799.05	0.57	284	46	81	78	1,4	3.0		15.86	98.2
	87.5	800.63	0.58	284	46	81	78	1.4	3.0		15.99	98.7
	06	802.21								0.4		97.8
1. H	0	802.61	0.86	286	63	81	79	1.9	3,0		19.50	
	2.5	804.46	0.86	286	51	80	78	1.9	3.0		19.50	94.2
	5	806.33	6.0	286	46	80	79	2.1	3.0		19.95	95.4
2	7.5	808.29	0.84	287	44	80	78	1.8	3.0		19.29	27.7
	10	810.17	0.84	287	44	79	78	1.8	3.0		19.29	97.1
	12.5	811.98	0.82	287	43	80	78	1.8	3.0		19.06	93.6
m	15	813.78	0.82	287	44	80	78	1.9	3.0		19.06	94.1
	17.5	815.65	0.82	287	44	80	78	1.9	3.0		19.06	97.8
	20	817.49	0.87	287	44	80	78	2.1	3.0		19.63	96.2
4	22.5	819.44	0.81	287	44	80	78	1.9	3.0		18.94	0.66
	25	821.31	0.81	287	44	80	78	1.9	3.0		18.94	98.4
	27.5	823.19	0.81	287	44	80	78	1.9	3.0		18.94	98.9
5	30	825.07	0.75	287	44	80	79	1.8	3.0		18.22	98.9
	32.5	826.88	0.75	288	44	80	79	1.8	3.0		18.24	98.8
	35	828.68	0.75	289	45	81	79	1.8	3.0		18.25	98.4
9	37.5	830.48	0.64	289	45	81	79	1.5	3.0		16.86	98.3
	40	832.14	0.64	289	46	81	79	1.5	3.0		16.86	98.1
	42.5	833.79	0.64	289	47	81	79	1.5	3.0		16.86	97.5
7	45	835.43	7.0	289	47	81	79	1.7	3.0		17.63	96.9
	47.5	837.19	0.72	289	47	81	79	1.7	3.0		17.88	99.5
	20	838.95	0.72	290	46	81	79	1.7	3.0		17.89	98.1
8	52.5	840.71	0.74	290	46	81	79	1.75	3.0		18.14	98.2
	55	842.51	0.73	290	46	81	79	1.75	3.0		18.02	0.66
	57.5	844.31	0.73	290	46	81	79	1.75	3.0		18.02	7.66
6	09	846.11	0.73	290	45	81	79	1.75	3.0		18.02	7.66

Test No.: Plant:

Covanta DYEC 2 - Particulate & Metals November 9, 2020 Date:

Barometric Pressure Static Pressure

Pitot Factor DGMCF Stack Diameter

Nozzle

Length

Width

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 1

8 Operator:

Combustion Gases COppm 02% CO2% 2.5 minutes 0.4 ft² 12 2 17.7 473.1 22.2 Number of points / Port Leak Check Volume Number of Ports Reading Interval Filter (mg) Probe (mg) CWTR (g) WCBDA (g) 29.91 "Hg -8.930 "H<sub>2</sub>O 0.2513 inches 0.000 ft 0.000 ft 4.500 ft 0.851

Measured H2O 15.8 %

10.67 8.75

	Isokinetic	%	98.1	98.1	2.66	266	99.5	9.66	0.66	98.3	97.1	97.3	99.2	96.9
	Velocity	m/s	18.02	18.02	17.51	17.50	17.38	15.77	15.77	15.77	15.63	15.63	15.48	
Leak	Check	Volume												
	Vacuum	# Hg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	ч	"H20	1.75	1.75	1.7	1.7	1.7	1.35	1.35	1.35	1.35	1.35	1.3	
	DGM In	ь С	79	79	79	80	80	80	80	80	80	80	80	
atures	DGM Out	느	81	81	81	82	82	82	82	82	82	82	82	
Temper	ack Imp. Out DGM	ŭ.	45	45	46	46	46	46	46	46	46	46	47	
	Stack	<u>ц.</u> °	290	290	290	289	289	289	289	289	289	289	289	
	ФΔ	"H20	0.73	0.73	69:0	69:0	0.68	0.56	0.56	0.56	0.55	0.55	0.54	
	DGM	Reading	847.88	849.65	851.44	853.19	854.94	826.68	858.25	859.81	861.35	862.88	864.44	865.95
		Time	62.5	65	67.5	70	72.5	75	77.5	80	82.5	85	87.5	06
		Point			10			11			12			

Plant:

Covanta DYEC

Plant Location:

Courtice, ON

**Test Location:** 

APC Outlet No. 1

Test No.: Date:

November 10, 2020

3 - Particulate & Metals

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	3.969 m <sup>3</sup>
AVGERGE ISOKINETICITY	101.2 %
STACK DIAMETER	1.37 m
<b>LENGTH</b>	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.52 m/s
BAROMETRIC PRESSURE (Station)	100.373 Kpa
STATIC PRESSURE	-2.331 Kpa
ABSOLUTE GAS PRESSURE	98.042 Kpa
OXYGEN CONCENTRATION	8.39 %
CARBON DIOXIDE CONCENTRATION	10.79 %
CARBON MONOXIDE CONCENTRATION	11.7 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.89 m³/s
DRY REF GAS FLOWRATE	15.06 Rm³/s
DRY ADJ GAS FLOWRATE	19.03 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	18.06 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.6 mg
	-FILTER	0.2 mg
	-TOTAL	1.8 mg
DRY REF GAS VOLUME SAMPLED		3.969 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.264 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.454 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.359 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.378 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.006830 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant: Test No.: Date:

Covanta DYEC
3 - Particulate & Metals
November 10, 2020

Plant Location: Courtice, ON

APC Outlet No. 1	
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	0.848	Filter (mg)	0.2		Combustion Gases
	1.004	Probe (mg)	1.6		02% 8.39
Barometric Pressure Static Pressure	29.64 "Hg -9.360 "H <sub>2</sub> O	CWTR (g) WCBDA (g)	556.1 24.6		CO2% 10.79 COppm 11.7
	0.2651 inches				
	4.500 ft	Leak Check Volume		0.32 ft <sup>°</sup>	Measured H20
	0.000 ft	Reading Interval		2.5 minutes	% 9.91
	0.000 ft	Number of Ports		2	
		Number of points / Port		12	

	Isokinetic	%		103.7	103.3	102.6	103.6	102.7	102.3	101.9	101,2	101.0	100.0	100.6	100.6	100.5	100.5	100.0	100.5	101.3	100.7	101.2	0.66	0.66	101.2	102.0	103.8	100.5	104.0	100.4	100.8	101.5	101.5
	Velocity	m/s	17.79	17.79	17.79	17.67	17.88	17.76	17.89	17.64	17.39	17.64	17.38	17.36	17.38	17.36	16.98	16.98	17.11	17.11	16.58	16.31	16.04	16.03	16.70	16.58	17.87	17.36	17.38	17.76	18.00	18.00	18.37
Leak	Check	Volume																															
	Vacuum	8H.	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	₩	"H20	2.15	2.15	2.15	2.15	2.2	2.2	2.2	2.1	2.05	2.1	2.05	2.05	2.05	2.05	2	2	2.05	2.05	1.9	1.7	1.7	1.8	2	2	2.2	2.1	2.05	2.1	2.2	2.2	2.3
	DGM In	₽,	77	77	79	81	84	85	87	88	68	06	91	91	92	92	93	93	93	93	93	93	93	93	93	94	93	92	93	92	92	92	92
atures	DGM Out	드	78	77	77	77	77	77	78	78	78	78	79	79	79	79	79	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Temperatures	Imp. Out	<b>4</b> 0	77	64	61	09	58	57	55	54	54	53	53	53	53	53	53	53	53	53	53	53	53	53	53	54	54	53	53	53	53	53	53
	Stack	n L	287	. 287	287	287	284	284	285	285	285	285	284	283	284	283	283	283	283	283	283	283	283	282	282	283	283	283	284	284	284	284	284
	ФΦ	"H20	0.71	0.71	0.71	0.7	0.72	0.71	0.72	0.7	0.68	7.0	0.68	0.68	0.68	0.68	0.65	0.65	99.0	99.0	0.62	9.0	0.58	0.58	0.63	0.62	0.72	0.68	0.68	0.71	0.73	0.73	0.76
	DGM	Reading	13.52	15.54	17.55	19.55	21.56	23.59	25.60	27.62	29.60	31.55	33.51	35.46	37.41	39.36	41.31	43.21	45.12	47.06	48.99	50.87	52.68	54.46	56.28	58.19	60.12	62.13	64.15	66.10	68.10	70.14	72.18
		Time	0	2.5	2	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	50	52.5	55	57.5	09	62.5	92	67.5	70	72.5	75
		Point	<b>H</b>			2			m			4			2			9			7			<b>∞</b>			6			10			11

Plant: Test No.: Date:

Covanta DYEC
3 - Particulate & Metals
November 10, 2020

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Pitot Factor	0.848	Filter (mg)	0.2		Combustion Gases
DGMCF	1.004	Probe (mg)	1.6		02% 8.39
Barometric Pressure	29.64 "Hg	CWTR (g)	556.1		CO2% 10.79
Static Pressure	-9.360 "H <sub>2</sub> 0	WCBDA (g)	24.6		COppm 11.7
Nozzie	0.2651 inches				
tack Diameter	4.500 ft	Leak Check Volume		0.32 ft³	Measured H20
ength	0.000 ft	Reading Interval		2.5 minutes	16.6 %
Nidth	0.000 ft	Number of Ports		7	
		Number of points / Port			

					Temperatures	atures	Annual and the second			Leak		
		DGM	ΔP	Stack	Imp. Out	DGM Out	DGM In	PΗ	Vacuum		Velocity	Isokinetic
Point	Time	Reading	"H20	٥٦	3 <sub>0</sub>	<b>3</b> 0	್ರಿ	"H2O	"Hg	Volume	m/s	%
	77.5	74.27	0.75	284	53	80	92	2.3	6.0		18.25	101.9
	80	76.35	0.75	284	53	80	92	2.2	6.0		18.25	102.1
12	82.5	78.41	0.72	284	53	80	92	2.2	6.0		17.88	101.1
	85	80,44	0.72	284	54	80	92	2.2	6.0		17.88	101.7
	87.5	82.44	0.72	284	54	79	91	2.2	6.0		17.88	100.2
	06	84.50								0.32		103.3
T	0	84.82	0.77	285	63	78	82	2.2	6.0		18.50	
	2.5	98'98	0.8	286	58	78	84	2.3	6.0		18.87	100.0
	2	88.95	8.0	286	55	78	98	2.35	6.0		18.87	100.4
7	7.5	91.05	0.78	283	54	78	87	2.35	6.0		18.60	100.7
	10	93.15	0.78	283	55	78	88	2.35	6.0		18.60	101.7
	12.5	95.26	0.78	283	55	77	89	2.35	6.0		18.60	102.0
ന	15	97.36	0.75	284	55	77	68	2.2	6.0		18.25	101.6
	17.5	99.42	0.78	285	56	77	06	2.35	6.0		18.62	101.6
	20	101.52	0.78	285	56	77	06	2.35	6.0		18.62	101.6
4	22.5	103.63	0.72	286	55	77	06	2.15	6.0		17.90	102.1
	25	105.66	0.72	286	54	77	06	2.1	6.0		17.90	102.2
	27.5	107.63	0.72	286	53	77	06	2.1	6.0		17.90	2.66
5	30	109.62	99.0	286	53	77	68	2	6.0		17.14	100.2
	32.5	111.54	0.68	286	52	77	68	2.05	6.0		17.40	101.1
	35	113.48	0.68	286	52	77	89	2.05	6.0		17.40	100.6
9	37.5	115.43	7.0	286	52	77	68	2.1	6.0		17.65	101.1
	40	117.39	7.0	286	52	77	68	2.1	6.0		17.65	100.2
	42.5	119.37	0.7	287	52	77	68	2.1	6.0		17.67	101.2
7	45	121.35	99'0	287	51	76	68	1.9	6.0		17.15	101.3
	47.5	123.24	0.64	287	51	76	89	1.9	6.0		16.89	9.66
	50	125.11	0.64	287	51	76	68	1.9	6.0		16.89	100.1
<b>∞</b>	52.5	126.99	0.64	287	51	76	68	1.95	6.0		16.89	100.6
	55	128.89	0.64	287	51	76	68	1.95	6.0		16.89	101.7
	57.5	130.79	0.64	287	51	76	68	1.95	6.0		16.89	101.7
ō	09	132.68	0.66	287	51	76	89	1.9	6.0		17.15	101.2

Plant: Test No.: Date:

Covanta DYEC
3 - Particulate & Metals
November 10, 2020

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Combustion Gases	8.39	CO2% 10.79	COppm 11.7		Measured M20	16.6 %		
					0.32 ft "	2.5 minutes	2	12
0.2	1.6	556.1	24.6					
Filter (mg)	Probe (mg)	CWTR (g)	WCBDA (g)		Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
0.848	1.004	29.64 "Hg	-9.360 "H <sub>2</sub> 0	0.2651 inches	4.500 ft	0.000 ft	0.000 代	
Pitot Factor	DGMCF	Barometric Pressure	Static Pressure	Nozzle	Stack Diameter	Length	Width	

	Isokinetic	%	99.1	100.8	101.3	101.3	100.6	100.1	100.8	100.3	100.8	101.8	100.7	101.3
		s/w		17.14	17.14	17.12	17.13	17.40	17.40	17.40	17.14	16.88	16.88	
Leak	Check	Volume												
	Vacuum	"Hg	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
	НΦ	"H20	2	2	7	7	2	2.05	2.05	2.05	2	1.95	1.95	
	DGM In	٥F	88	88	88	88	88	88	88	88	88	88	88	
atures	DGM Out	- J	76	76	76	76	76	76	76	76	76	76	75	
Temperatures	Imp. Out	<b>3</b>	51	51	51	51	51	51	52	53	53	54	55	
	Stack	물0	287	286	286	284	285	286	286	286	286	286	286	
	dδ	"H2O	0.66	0.66	0.66	0.66	0.66	0.68	0.68	0.68	99.0	0.64	0.64	
	DGM	Reading	134.56	136.47	138.39	140.31	142.22	144.12	146.06	147.99	149.93	151.86	153.74	155.63
		Time	62.5	65	67.5	70	72.5	75	77.5	80	82.5	85	87.5	06
		Point			10			11			12			

Plant:

Covanta DYEC

Plant Location:

Courtice, ON

**Test Location:** 

APC Outlet No. 2

Test No.:

1 - Particulate & Metals November 9, 2020

Date:

100Veriliber 3, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	4.165 m <sup>3</sup>
AVGERGE ISOKINETICITY	101.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	18.18 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.234 Kpa
ABSOLUTE GAS PRESSURE	98.884 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	10.97 %
CARBON MONOXIDE CONCENTRATION	15.1 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	26.86 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	15.78 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE	20.04 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	18.83 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	14.1 mg
	-FILTER	0.3 mg
	-TOTAL	14.4 mg
DRY REF GAS VOLUME SAMPLED		4.165 m <sup>3</sup>
PARTICULATE CONC ACTUAL		2.032 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		3.458 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		2.723 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		2.899 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.054569 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant:

Covanta DYEC 1 - Particulate & Metals November 9, 2020 Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: TT

Operator:

0.3	14.1	4g CWTR(g) 565.8	WCBDA(g)		Leak Check Volume	Reading Interval	Number of Ports	Number of noists / Port
0.848 Filte	1.004 Prol			0.2651 inches		<b></b>		
		Barometric Pressure		Nozzle	Stack Diameter			

	Isokinetic	%		102.0	102.0	103.5	102.2	101.6	102.1	101.9	102.8	101.2	100.6	102.0	100.9	102.9	102.1	101.5	102.1	102.2	102.1	102.2	101.6	101.1	102.1	103.1	102.9	101.8	101.8	102.2	101.8	101.0	101.6
	Velocity	s/w	18.42	18.42	17.80	17.80	17.82	18.29	17.93	18.30	18.30	18,30	18.32	18.32	17.95	18.21	18.21	18.09	18.10	17.85	16.82	16.55	16.82	17.72	17.72	17.84	18.92	18.92	18.92	19.27	19.27	19.38	19.61
Leak	Check	Volume																															
	Vacuum	"Hg	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	H	"H20	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.25	2.3	2.3	2.25	2.25	2.2	2	1.9	2	2.2	2.2	2.25	2.5	2.5	2.5	2.6	2.6	2.6	2.7
	DGM In	3 <sub>0</sub>	75	75	78	81	83	85	87	88	68	06	91	92	92	92	93	93	93	93	94	94	94	94	94	94	94	94	95	95	95	95	95
tures	DGM Out		75	75	75	75	75	75	76	76	76	76	77	77	77	77	77	78	78	78	78	78	78	78	78	78	78	78	78	78	79	79	79
Temperatures	Imp. Out	J <sub>0</sub>	75	75	54	52	51	51	51	51	51	50	50	49	48	48	49	49	48	48	48	48	48	48	48	47	48	48	48	48	48	48	49
	Stack	u. o	287	287	286	286	287	286	286	287	287	287	288	288	288	289	289	289	290	290	289	289	289	289	289	289	289	289	289	289	280	289	289
	ďΦ	"H20	0.77	72.0	0.72	0.72	0.72	0.76	0.73	0.76	0.76	0.76	0.76	0.76	0.73	0.75	0.75	0.74	0,74	0.72	0.64	0.62	0.64	0.71	0.71	0.72	0.81	0.81	0.81	0.84	0.85	0.85	0.87
	DGM	Reading	23.13	25.19	27.25	29.28	31.29	33.29	35.36	37.39	39.48	41.54	43.59	45.67	47.73	49.79	51.86	53.92	55.98	58.04	60.07	61.99	63.87	65.77	67.79	69.83	71.88	74.03	76.18	78.34	80.53	82.73	84.93
		Time	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	50	52.5	55	57.5	9	62.5	65	67.5	70	72.5	75
		Point	-			2			ന			4			5			9			7			<b>∞</b>			6			10			11

Covanta DYEC

1 - Particulate & Metals

November 9, 2020 Plant: Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: TT

Combustion Gases	02% 8.33	CO2% 10.97	COppm 15.1	. In interconcernment of the property of the p	Measured H20	16.2 %		
					0.4 ft²	2.5 minutes	2	12
0.3	14.1	565.8	24.4					ŗ
Filter (mg)	Probe (mg)	CWTR (g)	WCBDA (g)		Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
0.848	1.004	29.86 "Hg	-8.970 "H <sub>2</sub> O	0.2651 inches	4.500 ft	0:000 ft	0.000 ft	
Pitot Factor	DGMCF	Barometric Pressure	Static Pressure	Nozzle	Stack Diameter	Length	Width	

					Temperatures	atures-				Leak		
		DGM	ďΣ	Stack	Imp. Out	DGM Out	DGM In	ЧΨ	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H2O	되 0	<b>4</b> 0	9 <sub>6</sub>	크0	"H20	"Hg	Volume	s/m	%
	77.5	87.17	0.87	288	48	78	95	2.7	5.5		19.60	102.2
	80	89.42	0.85	288	49	79	95	2.6			19.37	102.7
12	82.5	91.62	0.85	288	49	79	95	2.6			19.37	101.5
	85	93.82	0.85	288	49	79	95	2.6	5.5		19.37	101.5
	87.5	96.02	0.85	288	49	79	95	2.6	5.5		19.37	101.5
	06	98.22								0.4		101.5
₩.	0	98.62	0.81	288	58	77	83	2.5	5.5		18.91	
	2.5	100.79	0.82	288	51	78	86	2.5	5.5		19.03	103.9
	5	102.93	0.82	287	49	77	88	2.5	5.5		19.01	101.4
2	7.5	105.08	0.8	287	49	77	06	2.45	5.5		18.78	101.7
	10	107.20	0.85	287	49	77	92	2.5	5.5		19.36	101.4
	12.5	109.36	0.85	287	48	77	93	2.5	6.0		19.36	100.0
æ	15	111.52	0.85	287	49	77	93	2.5	6.0		19.36	6.66
	17.5	113.69	0.82	287	48	77	93	2.5	6.0		19:01	100.4
	20	115.86	0.82	287	48	77	93	2.5	6.0		19.01	102.2
4	22.5	118.03	0.75	287	48	77	93	2	5.5		18.18	102.2
	25	119.93	0.78	287	48	78	93	2.2	5.5		18.54	93.5
	27.5	121.97	0.78	287	48	77	93	2.2	5.5		18.54	98.4
Ŋ	30	124.02	0.75	287	48	77	93	2.2	5.5		18.18	6.86
	32.5	126.06	0.75	287	48	77	93	2.2	5.5		18.18	100.4
	35	128.10	0.74	287	48	77	93	2.2	5.5		18.06	100.4
9	37.5	130.14	0.65	287	48	77	93	2	5.5		16.93	101.1
	40	132.07	0.65	287	48	77	93	2	5.5		16.93	102.0
	42.5	133.97	0.65	287	48	77	93	2	5.5		16.93	100.4
7	45	135.86	0.65	287	48	77	93	2	5.5		16.93	6.66
	47.5	137.75	0.67	287	48	77	93	2.1	5.5		17.19	6.66
	20	139.72	0.67	287	48	77	93	2.1	5.5		17.19	102.6
8	52.5	141.66	0.67	288	49	77	93	2.1	5.5		17.20	101.0
	55	143.59	0.68	288	49	77	93	2.1	5.5		17.33	100.5
	57.5	145.53	0.68	288	48	77	93	2.1	5.5		17.33	100.3
6	09	147.47	0.69	287	49	77	93	2.1	5.5		17.44	100.3

Covanta DYEC
1 - Particulate & Metals
November 9, 2020 Plant: Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 2
Operator: TT

				Tempe	ratures				Leak		
		ДΡ	Stack	ack Imp. Out DGM	DGM Out	DGM In	ΗO	Vacuum	Check	Velocity	Isokinetic
		"H20	<u>L</u>	<u>u</u>	<u>ı</u> .	ı.	"H20	Hg H	Volume	m/s	%
149.44		0.7	288	49	77	93	2.2	6.0		17.58	101.1
151.49		0.7	287	49	77	693	2.2	6.0		17.57	104.5
153.49		0.71	287	49	77	66	2.2	6.0		17.69	101.9
155.49		0.72	287	49	77	66	2.2	6.0		17.82	101.2
157.49		0.73	287	49	77	93	2.2	6.0		17.94	100.5
159.49		0.73	287	49	77	93	2.2	6.0		17.94	8.66
161.48		0.71	286	49	77	93	2.2	6.0		17.68	99.3
163.47		0.71	286	50	77	66	2.2	6.0		17.68	100.6
165.46		7.0	286	50	77	93	2.2	6.0		17.55	100.6
167.45		0.7	286	50	77	93	2.2	6.0		17.55	101.3
		7.0	286	50	77	92	2.2	6.0		17.55	100.3
	171.10										100 9

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

**Test Location:** 

APC Outlet No. 2

Test No.:

2 - Particulate & Metals

Date:

November 10, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.494 m <sup>3</sup>
AVGERGE ISOKINETICITY	98.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.60 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.311 Kpa
OXYGEN CONCENTRATION	8.2 %
CARBON DIOXIDE CONCENTRATION	11.11 %
CARBON MONOXIDE CONCENTRATION	15.1 ppm

### FLOWRATE

ACTUAL GAS FLOWRATE	26.01 m³/s
DRY REF GAS FLOWRATE	15.16 Rm³/s
DRY ADJ GAS FLOWRATE	19.45 Rm³/s
WET REF GAS FLOWRATE	18.09 Rm³/s

### **PARTICULATE EMISSION DATA**

PARTICULATE COLLECTED	-PROBE	2.6 mg
	-FILTER	0.8 mg
	-TOTAL	3.4 mg
DRY REF GAS VOLUME SAMPLED		3.494 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.567 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.973 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.759 mg/m <sup>3</sup>
PARTICULATE CONC WET REF	· 是因此的人类的的特别的	0.816 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.014754 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

Covanta DYEC Test No.: Plant: Date:

2 - Particulate & Metals November 10, 2020

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2

В Operator:

Combustion Gases 11.11 Measured H20 16.2 % 8.2 02% CO2% COppm es 0.8 2.6 475.5 Number of Ports Number of points / Port Leak Check Volume Reading Interval Probe (mg) CWTR (g) WCBDA (g) Filter (mg) 0.851 0.999 29.74 "Hg -9.640 "H<sub>2</sub>O 0.2513 inches 0.000 ft 0.000 ft 4.500 ft Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Length Nozzle Width

	Hئ	minute		
	0.39	2.5	7	12
7 (				
20.2				

					lemperatures	atures						
		DGM	ΔР	Stack	Imp. Out	DGM Out	DGM in	Ηδ	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H2O	u.,	<b>-</b>	≟'0	J.0	"H20	"Hg	Volume	m/s	%
H	0	866.44	0.8	287	58	74	73	1.9	3.0		18.90	
	2.5	868.28	0.81	287	50	72	71	1.9	3.0		19.01	98.7
	5	870.12	0.81	288	47	72	71	1.9	3.0		19.03	98.4
2	7.5	871.97	0.82	288	46	71	71	1.9	3.0		19.14	0.66
	10	873.82	0.82	288	46	71	70	1.9	3.0		19.14	98.5
	12.5	875.66	0.83	288	46	71	70	1.9	3.0		19.26	98.1
က	15	877.48	0.78	290	44	70	70	1.8	3.0		18.70	96.4
	17.5	879.31	0.78	290	44	70	70	1.8	3.0		18.70	100.2
	20	881.09	0.78	290	44	70	70	1.8	3.0		18.70	97.5
4	22.5	882.87	0.65	290	44	71	70	1.5	3.0		17.07	97.5
	25	884.57	0.65	290	45	71	70	1.5	3.0		17.07	101.8
	27.5	886.24	0.65	290	45	72	70	1.5	3.0		17.07	100.0
5	30	887.82	0.63	290	45	72	70	1.45	3.0		16.80	94.6
	32.5	889.44	0.63	290	45	72	70	1.45	3.0		16.80	98.5
	35	891.03	0.63	290	45	72	71	1.45	3.0		16.80	96.6
9	37.5	892.61	0.57	290	45	72	71	1.4	3.0		15.98	95.9
	40	894.17	0.59	290	45	72	71	1.4	3.0		16.26	9.66
	42.5	895.75	0.59	290	45	73	71	1.4	3.0		16.26	99.1
7	45	897.31	0.64	290	45	73	71	1.5	3.0		16.94	97.8
	47.5	898.93	0.64	290	45	73	71	1.5	3.0		16.94	97.5
	50	900.54	0.65	290	45	73	71	1.5	3.0		17.07	96.9
∞	52.5	902.16	69'0	290	45	74	71	1.6	3.0		17.58	8.96
	55	903.84	0.7	290	45	74	71	1.6	3.0		17.71	97.3
	57.5	905.53	0.7	290	45	74	71	1.6	3.0		17.71	97.2
6	09	907.23	7.0	290	45	74	71	1.6	3.0		17.71	97.8
	62.5	908.93	0.72	289	45	74	71	1.65	3.0		17.95	87.8
	65	910.64	0.72	289	45	74	71	1.65	3.0		17.95	6.96
10	67.5	912.33	0.7	289	45	74	71	1.65	3.0		17.70	95.8
	70	914.05	0.7	290	45	75	72	1.65	3.0		17.71	98.9
	72.5	915.77	0.73	290	45	75	72	1.7	3.0		18.09	98.8
Ħ	75	917.52	0.5	290	45	75	72	1.2	3.0		[4.97	98.4

Plant: Test No.: Date:

Covanta DYEC 2 - Particulate & Metals November 10, 2020

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 2
Operator: IB

				**************************************
Pitot Factor	0.851	Filter (mg)	8.0	Combustion Gases
DGMCF	0.999			02% 8.2
Barometric Pressure	29.74 "Hg	7		CO2% 11.11
Static Pressure	-9.640 "H <sub>2</sub> O			COppm 15.1
Nozzle	0.2513 inches			
Stack Diameter	4.500 ft	Leak Check Volume	0.39 ft	Measured H20
Length	0.000 ft	Reading Interval	2.5 minutes	16.2 %
Width	0,000 ft	Number of Ports		
		Number of points / Port	12	

			2.5 minutes		
		£	Ē		· .
		0.39 ft	2.5	7	12
10.0	,				
475.5					
7					
					ints / Port
		olume			ts/
		=	Za.	irts	Ξ

					Temperatures	atures				Leak		
		DGM	ΔP	Stack	Imp. Out	DGM Out	DGM in	М	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H20	<b>4</b> °	<b>Ľ</b>	∃,	<b>ц</b>	"H20	"Hg	Volume	m/s	%
	77.5	919.00	0.48	290	45	75	72	1:1	3.0		14.67	100.4
	80	920.44	0.48	288	45	76	73	T.	3.0		14.65	99.7
12	82.5	921.87	0.48	288	45	76	73	T;	3.0		14.65	98.7
	85	923.30	0.47	288	45	76	73	ij	3.0		14.49	98.7
	87.5	924.71	0.47	288	46	26	73	1.1	3.0		14.49	98.4
	06	926.14								0.39		26.7
$\mathbf{H}$	0	926.53	0.85	289	45	76	74	2	3.0		19.50	
	2.5	928.43	0.85	288	48	76	74	7	3.0		19.49	98.7
	5	930.33	0.85	288	48	76	74	2	3.0		19.49	98.7
2	7.5	932.24	0.85	290	43	77	74	2	3.0		19.52	99.2
	10	934.16	0.85	290	43	77	74	2	3.0		19.52	8.66
	12.5	936.07	0.85	290	43	77	74	2	3.0		19.52	2.56
m	15	937.99	0.8	289	42	76	74	1.9	3.0		18.92	8.66
	17.5	939.83	0.78	289	42	76	74	1.9	3.0		18.68	98.5
	20	941.67	0.79	289	42	76	74	1.9	3.0		18.80	8.66
4	22.5	943.51	0.74	289	42	76	74	1.8	3.0		18.20	2.66
	25	945.29	0.74	289	42	76	74	1.8	3.0		18.20	99.1
	27.5	947.10	0.74	289	42	76	74	1.8	3.0		18.20	100.8
2	30	948.89	69:0	289	43	77	75	1.6	3.0		17.57	2.66
	32.5	950.59	0.69	289	43	77	75	1.6	3.0		17.57	97.8
	35	952.29	0.69	289	43	77	75	1.6	3.0		17.57	97.8
9	37.5	954.00	0.65	289	43	77	75	1.5	3.0		17.06	98.4
	40	955.64	0.64	289	43	77	75	1,5	3.0		16.92	97.2
	42.5	957.27	0.64	289	44	77	75	1.5	3.0		16.92	97.3
7	45	958.88	0.7	289	44	77	75	1.7	3.0		17.70	96.1
	47.5	960.61	7.0	289	44	77	75	1.7	3.0		17.70	98.8
	50	962.34	0.7	289	44	77	75	1.7	3.0		17.70	98.8
8	52.5	964.07	0.72	289	44	77	75	1.7	3.0		17.95	98.8
	55	965.82	0.72	289	44	77	75	1.7	3.0		17.95	98.6
	57.5	967.57	0.72	289	44	77	75	1.7	3.0		17.95	98.6
6	90	969.33	0.74	289	44	77	75	1.8	3.0		18.20	99.1

Covanta DYEC Plant:

2 - Particulate & Metals November 10, 2020 Date:

Test No.:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2 8 Operator: Combustion Gases 0.39 ft² 2.5 minutes 2 11 0.8 2.6 475.5 20.2 Number of Ports Number of points / Port Leak Check Volume Reading Interval Filter (mg) Probe (mg) CWTR (g) WCBDA (g) 29.74 "Hg -9.640 "H<sub>2</sub>O 0.2513 inches 0.000 ft 0.000 ft 4.500 ft 0.851 Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Length Width Nozzle

8.2 11.11 15.1	Measured H20	%
O2% CO2% COppm	Measu	16.2 %

	Isokinetic	%	97.8	7.76	8.86	97.5	98.0	96.9	6.66	101.1	100.5	98.3	100.4	98.6
	Velocity	s/m	18.20	18.20	18.31	18.31	18.31	16.50	16.50	16.50	16.77	16.64	16.64	
Leak	Check	Volume												
	Vacuum	"Hg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
er era era era	ЧΖ	"H20	1.8	1.8	1.8	1.8	1.8	1.5	1.5	1.5	1.5	1.5	1.5	
	DGM In	_5	75	75	76	92	76	76	76	76	76	76	76	
atures	DGM Out	년,	78	78	78	78	78	79	79	79	79	78	78	
Temperatures	Imp. Out	Ξlo	45	45	46	46	46	46	46	46	47	47	47	
	Stack	i,	289	289	288	288	288	287	287	287	287	287	287	
	σ∇	"H2O	0.74	0.74	0.75	0.75	0.75	0.61	0.61	0.61	0.63	0.62	0.62	
	DGM	Reading	971.09	972.85	974.63	976.40	978.18	979.94	981.58	983.24	984.89	986.53	988.19	989.82
		Time	62.5	65	67.5	70	72.5	75	77.5	80	82.5	85	87.5	06
		Point			10			11			12			

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location:

APC Outlet No. 2

Test No.: Date:

November 10, 2020

3 - Particulate & Metals

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	3.511 m <sup>3</sup>
AVGERGE ISOKINETICITY	98.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.56 m/s
BAROMETRIC PRESSURE (Station)	100.542 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.142 Kpa
OXYGEN CONCENTRATION	8.36 %
CARBON DIOXIDE CONCENTRATION	10.91 %
CARBON MONOXIDE CONCENTRATION	16.4 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE			25.95 m <sup>3</sup> /s
DRY REF GAS FLOWRATE			15.23 Rm³/s
DRY ADJ GAS FLOWRATE			19.29 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE			18.04 Rm³/s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	10.5 mg
	FILTER	0.7 mg
	TOTAL	11.2 mg
DRY REF GAS VOLUME SAMPLED		3.511 m <sup>3</sup>
PARTICULATE CONC ACTUAL		1.872 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		3.190 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		2.518 mg/m <sup>3</sup>
PARTICULATE CONC WET REF	化基质设置性基本基层基本	2.694 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.048577 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Covanta DYEC Test No.: Plant: Date:

November 10, 2020

3 - Particulate & Metals

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2

JB RW Operator:

Combustion Gases
02% 8.36
CO2% 10.91
COppm 16.4 Measured H2O 15.6 % 0.42 ft² 2.5 minutes 2 0.7 10.5 460.9 14.7 Leak Check Volume Reading Interval Number of Ports Filter (mg) Probe (mg) CWTR (g) WCBDA (g) 29.69 "Hg -9.640 "H<sub>2</sub>O 0.2513 inches

4.500 ft

Stack Diameter

Nozzle

0.851

**Barometric Pressure** 

Pitot Factor DGMCF Static Pressure

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Velocity Isol	Volume   m/s   %	18.92				19.01																										
Vacuum	"Hg				3.0	3.0	0 0																									
ln l	ੱF "H20	75 1.9	79 1.9	79 1.9	78 1.9	78 1.9	78 1.9		79 1.9	79 1.9 77 1.9	79 1.9 77 1.9 77 1.9	79 1.9 77 1.9 77 1.9 77 1.7	79 1.9 77 1.9 77 1.0 77 1.7 77 1.7	79 1.9 77 1.9 77 1.9 77 1.7 77 1.7	79 1.9 77 1.9 77 1.9 77 1.7 77 1.6 77 1.6	79 1.9 77 1.9 77 1.9 77 1.7 77 1.6 77 1.6	79 1.9 77 1.9 77 1.9 77 1.7 77 1.6 77 1.6 77 1.6	79 1.9 77 1.9 77 1.7 77 1.7 77 1.6 77 1.6 77 1.6 77 1.6 77 1.6		egi din din kecilik din din kecilik di din din kecilik din din kecilik din din din din din din din din din din	egi din Kanada Terpanan di Bajah di Kababa di A Abama di Kabaja di Kababa di Kabaja di Kabaja Abama di Kabaja di Kabaja di Kabaja di Kabaja di Kabaja Kabaja di Kabaja di Kabaja di Kabaja di Kabaja di Kabaja									enger fra de skape fra gereke en de geleg fra de tre en de en de geleg fra de fin en defin de felik filme. De gener en de geleg en de geleg fra de felik en de geleg fra de de felik de felik filmelijk. De geleg fra de felik fra de felik fra de felik fra de felik fra de felik fra de felik filmelijk fra de felik De felik fra de fe	engen kan berang di kegaman ang kegamat di kebana ang kegamat di kepangalikan di Kabulia (Kabulia). Kegaman kan di kegaman kegamat di kegamat di Kabulia di Kabulia kegamat kegamat di Kabulia di Kabulia di Kabu Kegamat kegamat di kegamat di Kabulia kegamat kegamat kegamat kegamat di Kabulia kegamat kegamat kegamat kegam Kabulia di Kabulia di K	en de la comitación de la La comitación de la comit La comitación de la comit La comitación de la comitación
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tack		289	290	32	287	287	87	77	,,	287 287	87 87 87	887 887 887	.87 .87 .87	287 287 887 87	287 287 287 87 87	287 287 287 287 287 287	337 337 337 337 337 337	33 33 34 34 34 34 34 34 34 34 34 34 34 3	287 287 287 287 287 287 287	287 287 287 287 287 287 287 287	887 887 887 887 887 887 887 887	887 887 887 887 887 887 887 887	887 887 887 887 887 887 887 887 887	3	287 287 287 287 287 287 287 287 286	3	3	287 287 287 287 287 287 287 287 287 286 886 886	3	287 287 287 287 287 287 287 287 286 886 886 885 885	287 287 287 287 287 287 287 286 885 885 885 885 885	287 887 887 887 887 887 886 886 886 885 885 885
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ΔP	"H2O	0.8	0.8	0.8	0.81	0.8	0.8	0.8	(	χ. ∩.α	o.8	0.8 0.8 0.7	0.8 0.7 0.7	0.8 0.7 0.7	0.8 0.8 0.7 0.7 0.7	0.8 0.7 0.7 0.7 0.7	8.0 0.8 7.0 7.0 7.0 7.0	0.8 0.7 0.7 0.7 0.7 0.7	0.8 0.7 0.7 0.7 0.7 0.7 0.0	0.8 0.7 0.7 0.7 0.7 0.0 0.0 0.0	0.8 0.7 0.7 0.7 0.7 0.7 0.0 0.0 0.0 0.0 0.0	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65 0.65 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.6 0.65 0.65 0.65 0.65 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65 0.65 0.65 0.65	0.8 0.7 0.7 0.7 0.7 0.6 0.6 0.65 0.65 0.65 0.65 0.65 0.65 0	0.8 0.7 0.7 0.7 0.7 0.6 0.65 0.65 0.65 0.65 0.67 0.67 0.65 0.67	0.8 0.7 0.7 0.7 0.7 0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.65
DGM	Reading	990.30	992.17	994.04	995.91	87.78	99.666	1001.50	70007	1003.36	1005.22	1005.22 1007.07	1005.35 1005.22 1007.07 1008.88	1003.36 1005.22 1007.07 1008.88 1010.65	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83 1022.44 1022.44	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1022.44 1022.44 1022.44 1022.44 1022.44	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83 1022.44 1022.44 1022.44 1022.44 1022.44 1022.44 1022.44 1022.44	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1020.83 1020.83 1022.44 1022.44 1025.82 1025.82 1025.82	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83 1022.44 1022.44 1022.83 1022.83 1022.83 1022.83 1022.83 1022.83 1023.83	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83 1022.44 1022.44 1022.44 1022.83 1022.44 1022.14 1023.63	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1022.44 1022.44 1022.44 1022.44 1022.44 1022.83 1022.44 1022.83 1023.63 1030.93 1030.93	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1019.20 1020.83 1022.44 1022.44 1025.82 1025.82 1029.21 1030.93 1032.63 1032.63	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1020.83 1022.44 1022.44 1022.44 1022.82 1022.82 1023.21 1032.63 1033.93 1035.99 1035.99	1005.35 1005.22 1007.07 1008.88 1010.65 1012.39 1014.11 1015.84 1017.57 1020.83 1022.44 1022.44 1022.44 1022.44 1022.44 1022.63 1032.93 1033.93 1034.32 1034.32 1034.32	1003.36 1005.22 1007.07 1008.88 1010.65 1012.39 1017.11 1015.84 1022.44 1022.44 1022.44 1022.44 1022.44 1022.44 1022.63 1023.63 1039.35 1039.35 1039.35
	Time	0	2.5	2	7.5	10	12.5	15		17.5	17.5	17.5 20 22.5	17.5 20 22.5 25	17.5 20 22.5 25 27.5	17.5 20 22.5 25 27.5 30	17.5 20 22.5 25 27.5 30 32.5	17.5 20 22.5 25 27.5 30 32.5 35	17.5 20 22.5 25 27.5 30 32.5 37.5	17.5 20 22.5 27.5 30 32.5 35 37.5 40	17.5 20 22.5 25 27.5 30 32.5 35 37.5 40 42.5	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5	17.5 20 22.5 25 27.5 30 32.5 35 37.5 40 42.5 47.5	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5 47.5 50	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5 47.5 50 50.5	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5 47.5 50 52.5	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5 47.5 50 52.5 57.5	20 22.5 22.5 25 27.5 30 32.5 37.5 40 42.5 47.5 50 52.5 57.5 60	20.5 22.5 25.5 27.5 30.32.5 37.5 40.42.5 47.5 50.5 52.5 57.5 60.60	17.5 20 20 22.5 25 27.5 30 32.5 37.5 40 40 42.5 45 47.5 50 52.5 50 57.5 60 60 62.5	17.5 20 20 22.5 25 27.5 30 32.5 37.5 40 40 42.5 45 47.5 50 52.5 57.5 60 62.5 67.5	17.5 20 22.5 25 27.5 30 32.5 37.5 40 42.5 45 47.5 50 52.5 50 52.5 60 62.5 67.5	17.5 20 22.5 25 27.5 30 32.5 30 32.5 37.5 40 42.5 40 42.5 45 47.5 50 52.5 50 52.5 60 62.5 67.5
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Plant: Test No.: Date:

Covanta DYEC 3 - Particulate & Metals November 10, 2020

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 2
Operator: JB RW

0.851	Filter (mg)	0.7		Combustion Gases	
0.999	Probe (mg)	10.5		02% 8.36	
29.69 "Hg	CWTR (g)	460.9		CO2% 10.91	
-9.640 "H <sub>2</sub> O	WCBDA (g)	14.7		COppm 16.4	
0.2513 inches					
4.500 ft	Leak Check Volume		0.42 ft²	Measured H20	
0:000 ft	Reading Interval		2.5 minutes	15.6 %	
0.000 ft	Number of Ports		2		
	Number of points / Port		12		

	Isokinetic	%	98.7	99.4	101.5	98.4	98.3	0.66		98.4	97.7	97.7	98.9	97.9	97.0	99.1	6.66	99.2	98.5	98.0	97.5	100.2	96.4	97.0	99.5	99.1	98.2	96.1	9.96	97.2	96.1	58.5	100.3
	Velocity	m/s	14.15	14.15	14.31	14.31	14.31		19.79	19.94	19.94	19.94	19.94	19.96	18.92	18.68	18.68	18.92	18.93	18.93	17.71	18.09	18.09	16.95	16.81	17.08	17.85	17.85	17.85	17.85	18.22	18.10	18.47
Leak	Check	Volume						0.42																									
	Vacuum	gH"	3.0	3.0	3.0	2.8	2.8		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
value N	НФ	"H20	1.05	1.05	1.05	1.05	1.05		2.1	2.1	2.1	2.1	2.1	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.7	1.7	1.7	1.5	1.5	1.5	1.7	1.7	1.7	1.7	1.8	1.8	1.8
	DGM In	д <sub>0</sub>	78	78	78	78	78		78	80	80	79	79	79	79	79	79	79	79	79	80	80	80	80	80	79	80	80	80	80	80	80	80
atures	DGM Out	<b>L</b> <sub>0</sub>	80	80	80	81	81		80	82	82	81	81	80	80	80	81	81	81	81	81	81	81	81	81	81	82	82	82	82	82	82	82
Temperatures	Imp. Out	Ľ.	47	47	47	47	47		46	48	48	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	47	47	47	47	47	47	46
	Stack	<b>4</b> 0	285	285	285	285	285		285	288	288	288	288	289	289	289	289	289	290	290	290	290	290	291	291	291	291	291	291	291	291	291	291
	dδ	"H20	0.45	0.45	0.46	0.46	0.46		0.88	0.89	0,89	0.89	0.89	0.89	0.8	0.78	0.78	0.8	0.8	8:0	7.0	0.73	0.73	0.64	0.63	0.65	0.71	0.71	0.71	0.71	0.74	0.73	0.76
	DGM	Reading	1044.14	1045.56	1047.01	1048.43	1049.85	1051.28	1051.70	1053.66	1055.62	1057.58	1059.56	1061.52	1063.46	1065.34	1067.21	1069.07	1070.94	1072.80	1074.65	1076.43	1078.18	1079.94	1081.63	1083.30	1084.98	1086.70	1088.43	1090.17	1091.89	1093.69	1095.51
		Time	77.5	80	82.5	85	87.5	06	0	2.5	2	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	20	52.5	55	57.5	09
		Point			12				⊣			7			ന			4			2			9			7			∞			6

Covanta DYEC
3 - Particulate & Metals
November 10, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2 Operator: JB RW

Pitot Factor	0.851	Filter (mg)	7.0		Combustion Gases
DGMCF	0.999	Probe (mg)	10.5		8.36
Barometric Pressure	29.69 "Hg	CWTR(g)	460.9		CO2% 10.91
Static Pressure	-9.640 "H <sub>2</sub> O	WCBDA (g)	14.7		COppm 16.4
Nozzle	0.2513 inches				
Stack Diameter	4.500 ft	Leak Check Volume		0.42 ft	Measured H2O
Length	0.000 ft	Reading Interval		2.5 minutes	15.6 %
Width	0.000 ft	Number of Ports		2	
		Number of points / Port		12	

and the second s	Isokinetic	%	96.7	96.4	100.0	100.5	101.0	100.1	102.7	6,66	96.1	69.3	99.5	100.8
	Velocity	s/m	18.68	18.20	17.70	17.70	17.71	15.70	15.70	16.12	15.70	15.71	15.71	
Leak	Check	volume												
Activities and the second seco	Vacuum	пg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	AH (CE)	220	1.8	1.8	1.7	1.7	1.7	1.4	1.3	1.3	1.3	1.3	1.3	
	DGM In	_	80	80	80	80	80	80	81	81	81	80	80	
Temperatures	DGM Out		82	82	83	83	82	82	83	83	83	82	82	
Tempe	Imp. Out		47	47	48	48	48	48	48	48	48	49	49	
	Stack °c		289	289	289	289	290	290	290	290	290	291	291	
	ΔP 	07E	0.78	0.74	0.7	7.0	0.7	0,55	0.55	0.58	0.55	0.55	0.55	
	DGM	neadilig	1097.30	1099.11	1100.94	1102.73	1104.53	1106.31	1107.93	1109.51	1111.07	1112.64	1114.21	1115.80
		רווום	62.5	9	67.5	70	72.5	75	77.5	80	82.5	85	87.5	06
	i C	romit			10			11			12			



### **APPENDIX 23**

Particle Size Distribution Test Emission Calculations (12 pages)

## EPA Draft Method - PM<sub>10/2.5</sub> Calculations

Client: Covanta Operator: DU Plant: DYEC Cation: Courtice Ontario
Location: Courtice Ontario

1.37	0.00	0.00	1.48	2	9	7	0.992	0.848	29.74	98'6-	8.36	10.93	13.8		0.1776
Stack Diameter (m)	Stack Width (m)	Stack Breadth (m)	Stack Area (m²)	No. of Traverses	No. of Points Per Traverse	Data Readings Per Point	DGMCF	Pitot Factor	Barometric Pressure (" Hg)	Static Pressure ("H <sub>2</sub> O)	Oxygen Content (%)	Carbon Dioxide Content (%)	Carbon Monoxide Content (PPM)	Assumed Moisture (%)	Nozzle Diameter (inches)
													Ü		

Cyclone	Cyclone Sampling Parameters	ers
Cyclone Qs <sub>ST</sub>	0.35 Rft³/min*	9.8 I/min*
Cyclone Qs <sub>actual</sub>	0.60 ft³/min	16.9 I/min
Stack Ga	Stack Gas Sampling Parameters	ters
sw V	41.5 Rft³*	1.176 Rm³*
Average Cyclo	Average Cyclone I Cut Diameter	10.17 µm
Average Cyclon	Average Cyclone IV Cut Diameter	2.35 µm
Ave	Average Isokineticity	95.7 %
Stack Ga	Stack Gas Physical Parameters	ters
<b>SM</b>	16.7 % v/v	۸/۸ %
Average m	220.4 (dimensionless)	ensionless)
N	30.08 lbs/lbs mole	lbs mole
<b>X</b>	28.06 lbs/lbs mole	lbs mole
Average T,	287 °F	142°C
Average U <sub>s</sub>	60.1 ft/s	18.3 m/s
Stack Area	15.9 ft²	$1.48~\mathrm{m}^2$
Actual Q,	57426 ACFM	27.1 m³/s
Wet Reference Q,	40071 SCFM*	18.9 Rm³/s*
Dry Reference Q <sub>s</sub>	33369 SCFM*	15.7 Rm³/s*
Summary of	Summary of Particulate Emission Rates	on Rates
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.96 mg/Rm³*	0.0308 g/s
Total Part. (b)	6.46 mg/Rm³*	0.102 g/s
PM <sub>10</sub> Part. (b)	6.04 mg/Rm³*	0.095 g/s
PM <sub>2.5</sub> Part. (b)	4.93 mg/Rm³*	0.078 g/s
Cond. Part.	4.51 mg/Rm <sup>3*</sup>	0.071 g/s
	Egypnen is reministed to the contract of the c	

- (a) does not include condensibles(b) includes condensibles

Impinger Recovery	Impinger 1	lmpinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	517.5	658.3	773.8	871.5	
final volume or weight (ml or mg)	682.7	658.3	773.1	880.7	
gain in volume or weight (ml or mg)	165.2	0.0	-0.7	9.2	0:0
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## Test Data Page Calculations

Date:	Date: November 10, 2020	10, 2020		) : : :	)			一 多 不 好 不 不							) ) )
Client:	Client: Covanta			Location:	Location: Courtice, Ontar	Ontario			Test	location:	Test location: APC Outlet No. 1	No. 1		Operator: DU	DO
and described the second of th	egilanassa egilan egila	Clock	Dwell	Dry Gas	Delta		Stack	Meter Temp	Temp	Meter	Pump	Stack	Cyclone I	Cyclone IV	
Port	Point	Time	Time	Meter	۵	Desired	Temp	Outlet	Inlet	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam.	150
S O				•	3	Ę	60	(40)	į	H [	Gauge	Velocity			(0)
		(min)	(mim)		1 H <sub>2</sub> C)			3	Ξ	( H <sub>2</sub> U)	(EHE)	(tr/s)	(mm)	(mm)	8
2	1	0.00	10.6	00:00	0.82	0.35	287	70	71	0.38	3.0	62.7	10.21	2.35	91.4
	2	10.6	10.6	3.64	0.77	0.35	286	71	72	0.38	3.0	8.09	10.20	2.35	94.4
	3	21.1	10.0	7.29	0.71	0.35	287	7.1	73	0.38	3.0	58.4	10.11	2.31	99.5
	4	31.1	9.7	10.79	0.68	0.35	287	72	74	0.38	3.0	57.1	10.32	2.40	6.86
	5	40.9	9.6	14.10	09:0	0.35	286	73	74	0.38	3.0	53.6	10.14	2.33	107.7
	9	50.4	9.3	17.44	09.0	0.35	286	73	74	0.38	3.0	53.6	10.45	2.45	103.3
		59.7		20.54											
1	1	0.00	10.6	20.54	06'0	0.35	286	74	75	0.38	3.0	65.7	10.15	2.33	87.9
	2	10.6	10.7	24.26	0.88	0.35	288	74	92	0.38	3.0	65.0	10.17	2.34	88.8
	3	21.3	10.4	28.00	0.85	0.35	288	75	- 76	0.38	3.0	63.9	10.16	2.33	90.4
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	31.8	10.1	31.65	0.83	0.35	288	75	9/	0.38	3.0	63.2	10.16	2.34	91.5
	5	41.9	5.4	35.20	0.74	0.35	289	75	- 76	0.38	3.0	59.7	10.04	2.29	98.7
	9	51.3	9.0	38.55	0.68	0.35	289	75	76	0.38	3.0	57.2	36'6	2.25	104.3
		60.3		41.80											
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# EPA Draft Method - PM<sub>10/2.5</sub> Calculations

	DGMCF 0.992	Data Readings Per Point 1	No. of Points Per Traverse 6	No. of Traverses	Stack Area $(m^2)$ 1.48	Stack breadth (III)		
--	-------------	---------------------------	------------------------------	------------------	-------------------------	---------------------	--	--

Cyclotto	cyclone sampling Parameters	c io
Cydone Qs <sub>ST</sub>	0.35 Rft³/min*	9.8 I/min*
Cyclone Qs <sub>actual</sub>	0.59 ft³/min	16.7 I/min
Stack Ga:	Stack Gas Sampling Parameters	ters
sωΛ	41.7 Rft³*	1.180 Rm³*
Average Cyclor	Average Cyclone I Cut Diameter	10.19 µm
Average Cyclone	Average Cyclone IV Cut Diameter	2.34 µm
Ave	Average Isokineticity	101.7 %
Stack Ga	Stack Gas Physical Parameters	ters
\$ <b>8 8 9 9 9 9 9 9 9 9 9 9</b>	16.1 % v/v	۸/۸ 9
Average m	219.8 (dimensionless)	insionless)
Ž	30.09 lbs/lbs mole	lbs mole
N	28.14 lbs/lbs mole	lbs mole
Average T <sub>s</sub>	283 °F	140 °C
Average U <sub>s</sub>	56.1 ft/s	17.1 m/s
Stack Area	15.9 ft²	$1.48\mathrm{m}^2$
Actual Q	53605 ACFM	25.3 m³/s
Wet Reference Q <sub>s</sub>	37584 SCFM*	17.7 Rm³/s*
Dry Reference Q <sub>s</sub>	31525 SCFM*	14.9 Rm³/s*
Summary of	Summary of Particulate Emission Rates	n Rates
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.59 mg/Rm³*	0.0088 g/s
Total Part. (b)	6.69 mg/Rm³*	0.100 g/s
PM <sub>10</sub> Part. (b)	6.52 mg/Rm³*	0.097 g/s
PM <sub>2.5</sub> Part. (b)	6.27 mg/Rm³*	0.093 g/s
Cond. Part.	6.10 mg/Rm <sup>3*</sup>	0.091 g/s

- (a) does not include condensibles (b) includes condensibles

	Impinger 1	Impinger 2	mpinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	491.1	672.0	782.7	925.5	
final volume or weight (ml or mg)	647.8	672.0	781.9	936.5	
gain in volume or weight (ml or mg)	156.7	0.0	-0.8	11.0	0.0

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## Test Data Page Calculations

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Client:	Client: Covanta			Location:	Location: Courtice, Onta	Ontario			Test	Test location:	APC Outlet No. 1	. No. 1		Operator: DU	DO
		Clock	Dwell	Dry Gas	Delta		Stack	Meter Temp	Temp	Meter	Pump	Stack	Cyclone I	Cyclone IV	
Port	Point	Time	Time	Meter	۵.	Desired	Temp	Outlet	Inlet	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam.	OSI
No		(wim)	(min)	(ft <sup>2</sup> )	("H,0	dfm	<b>3.</b>	£.	(E.	("H,0)	Gauge ("Hg)	Velocity (ft/s)	(mm)	(mm)	%
2	1	0.00	10.4	41.94	0.82	0.35	286	77	78	0.38	4.0	62.6	10.24	2.36	91.2
	2	10.4	10.1	45.60	0.81	0.35	286	77	78	0.38	4.0	62.2	10.13	2.32	93.1
	3	20.6	9.7	49.20	0.74	0.35	287	77	79	0.38	4.0	59.5	10.26	2.37	95.8
1/4.1 14.1	4	30.3	9.5	52.60	0.68	0.35	286	77	79	0.38	4.0	57.0	10.32	2.39	0.66
	5	39.8	8.9	55.90	09.0	0.35	286	78	79	0.38	4.0	53.6	10.28	2.38	106.0
	9	48.7	8.9	59.02	0.53	0.35	281	78	79	0.38	4.0	50.2	9.70	2.15	121.8
		57.7		62.40							NAME AND ADDRESS OF THE PARTY O				
П	1	0.00	10.9	62.40	0.70	0.35	277	79	81	0.38	4.0	57.5	10.26	2.36	97.5
	2	10.9	10.8	66.23	0.70	0.35	279	79	80	0.38	4.0	57.6	10.29	2.38	97.3
	က	21.8	10.6	70.00	0.67	0.35	282	79	80	0.38	4.0	56.5	10.09	2.30	102.5
	4	32.4	10.5	73.81	0.63	0.35	282	80	81	0.38	4.0	54.8	10.16	2.33	104.8
	5	42.9	6.6	77.55	0.56	0.35	283	80	81	0.38	4.0	51.7	10.29	2.38	109.3
	9	52.8	9.5	81.02	0.52	0.35	283	81	82	0.38	4.0	49.8	10.29	2.38	113.3
XX X		62.3		84.35											
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# EPA Draft Method - PM<sub>10/2.5</sub> Calculations

Date: November 10, 2020
Client: Covanta
Plant: DYEC
Location: Courtice, Ontario
Test No.: 3
Test Location: APC Outlet No. 1

1.37	0.00	0.00	1.48	2	9	7	0.992	0.848	29.67	-9:36	8.45	10.78	14.2		0.1776
Stack Diameter (m)	Stack Width (m)	Stack Breadth (m)	Stack Area (m²)	No. of Traverses	No. of Points Per Traverse	Data Readings Per Point	DGMCF	Pitot Factor	Barometric Pressure (" Hg)	Static Pressure ("H <sub>2</sub> O)	Oxygen Content (%)	Carbon Dioxide Content (%)	Carbon Monoxide Content (PPM)	Assumed Moisture (%)	Nozzle Diameter (inches)

Cyclolife	Cyclone sampling Parameters	200
Cyclone Qs <sub>ST</sub>	0.34 Rft³/min*	9.7 I/min*
Cyclone Qs <sub>actual</sub>	0.59 ft³/min	16.7 I/min
Stack Ga	Stack Gas Sampling Parameters	ters
$V_{ms}$	41.2 Rft³*	1.167 Rm³*
Average Cyclo	Average Cyclone I Cut Diameter	10.20 µm
Average Cyclon	Average Cyclone IV Cut Diameter	2.35 µm
AV	Average Isokineticity	99.2 %
Stack G	Stack Gas Physical Parameters	sers.
Bws	16.6 % V/v	۰ ۸/۸ %
Average m	220.3 (dimensionless)	nsionless)
Š	30.06 lbs/lbs mole	lbs mole
2	28.06 lbs/lbs mole	lbs mole
Average T <sub>s</sub>	287°F	141 °C
Average U <sub>s</sub>	57.7 ft/s	17.6 m/s
Stack Area	15.9 ft²	$1.48~\mathrm{m}^2$
Actual Q <sub>e</sub>	55135 ACFM	26.0 m³/s
Wet Reference Q <sub>s</sub>	38418 SCFM*	18.1 Rm³/s*
Dry Reference Q <sub>s</sub>	32026 SCFM*	15.1 Rm³/s*
Summary of	Summary of Particulate Emission Rates	n Rates
	Dry Ref. Conc.	<b>Emission Rate</b>
Total Part. (a)	0.86 mg/Rm³*	0.0129 g/s
Total Part. (b)	5.57 mg/Rm³*	0.084 g/s
PM <sub>10</sub> Part. (b)	5.14 mg/Rm³*	0.078 g/s
PM <sub>2.5</sub> Part. (b)	4.97 mg/Rm³*	0.075 g/s
Cond. Part.	4.71 mg/Rm <sup>3*</sup>	0.071 g/s

- (a) does not include condensibles (b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	517.5	658.3	773.1	880.7	
final volume or weight (ml or mg)	680.3	629.9	772.1	888.7	
gain in volume or weight (ml or mg)	162.8	1.6	-1.0	8.0	0.0
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## **Test Data Page Calculations**

Date:	Date: November 10, 2020	10, 2020		Plant: DYEC	DYEC					Test No.: 3	3			Project No.: 22050	22050
Client:	Client: Covanta		THE STATE OF THE S	Location:	Location: Courtice, Onta	Ontario			Test	Test location: APC Outlet No. 1	APC Outlet	No. 1		Operator: DU	DO
		Clock	Dwell	Dry Gas	Delta		Stack	Meter Temp	Temp	Meter	Pump	Stack	Cyclone I	Cyclone IV	
Port	Point	Time	Time	Meter	۵.	Desired	Temp	Outlet	Inlet	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam.	150
So.						dm				舌	Gauge	Velocity			
		(min)	(min)	(لٹے)	("H <sub>2</sub> O)		(°F)	(ae)	(%)	("H <sub>2</sub> 0)	("Hg)	(ft/s)	(mm)	(mm)	(%)
2		00:0	11.1	84.52	0.79	0.35	286	80	82	0.38	3.0	61.6	10.46	2.45	89.9
	2	11.1	11.1	88.31	92.0	0.35	285	80	81	0.38	3.0	60.4	10.23	2.36	94.4
	3	22.2	10.6	92.19	0.68	0.35	286	80	82	0.38	3.0	57.2	10.26	2.37	9.66
	4	32.8	10.2	95.89	0.63	0.35	286	8.1	83	0.38	3.0	55.0	9.95	2.25	108.0
	5	43.0	9.5	09.66	09.0	0.35	287	81	83	0.38	3.0	53.7	10.21	2.36	106.8
100	9	52.5	9.0	102.96	09.0	0.35	288	81	83	0.38	3.0	53.8	10.28	2.38	105.9
N.		61.5		106.09											
1	1	0.00	10.3	106.00	0.81	0.35	285	82	84	0.38	3.0	62.4	10.06	2.29	93.6
	2	10.3	10.3	109.71	0.79	0.35	287	82	84	0.38	3.0	61.7	10.09	2.31	94.7
	3	20.6	10.1	113.41	0.75	0.35	287	82	84	0.38	3.0	60.1	10.29	2.39	94.5
	4	30.7	8.6	116.93	0.71	0.35	287	83	84	0.38	3.0	58.5	10.26	2.38	97.5
	5	40.4	9.2	120.36	0.62	0.35	287	83	84	0.38	3.0	54.6	10.11	2.32	106.5
	9	49.7	8.9	123.66	0.59	0.35	287	83	84	0.38	3.0	53.3	10.23	2.36	107.4
		58.5		126.79											
Andread	-		of oriented from the state of t	**************************************		Vocasium parisimos de la companya de	100	£ C	§	000		664	C. C. P.	L C F	600

# EPA Draft Method - PM<sub>10/2.5</sub> Calculations

| Монительной применений                     |
|---|--------------------|
| Date: November 9, 2020  | Project No.: 22050 |
| <b>Client:</b> Covanta  | Operator: DU       |
| Plant: DYEC   |                    |
| Location: Courtice, Ontario   |                    |
| Test No.: 1   |                    |
| Test Location: APC Outlet No. 2   |                    |

1.37	0.00	00.00	1.48	2	9	Ţ	0.992	0.848	30.01	-8.20	8.43	11.07	19.7		0.1776
Stack Diameter (m)	Stack Width (m)	Stack Breadth (m)	Stack Area (m²)	No. of Traverses	No. of Points Per Traverse	Data Readings Per Point	DGMCF	Pitot Factor	Barometric Pressure (" Hg)	Static Pressure ("H <sub>2</sub> O)	Oxygen Content (%)	Carbon Dioxide Content (%)	Carbon Monoxide Content (PPM)	Assumed Moisture (%)	Nozzle Diameter (inches)

Cyclone Qs <sub>ST</sub>	0.35 Rft³/min*	9.9 l/min*
Cyclone Qs actual	0.58 ft³/min	16.4 I/min
Stack Ga	Stack Gas Sampling Parameters	ers
V. sm V. sm Λ	41.8 Rft³*	1.185 Rm³*
Average Cyclo	Average Cyclone I Cut Diameter	10.37 µm
Average Cyclon	Average Cyclone IV Cut Diameter	2.40 µm
Ž	Average Isokineticity	103.0 %
Stack G	Stack Gas Physical Parameters	ers
Bws	14.9% v/v	٧/٧
Average m	221.8 (dimensionless)	nsionless)
Ž	30.11 lbs/lbs mole	bs mole
<sup>*</sup>	28.31 lbs/lbs mole	bs mole
Average T <sub>s</sub>	287 °F	142°C
Average U <sub>s</sub>	54.3 ft/s	16.5 m/s
Stack Area	15.9 ft²	$1.48\mathrm{m}^2$
Actual Q,	51878 ACFM	24.5 m³/s
Wet Reference Q,	36659 SCFM*	17.3 Rm³/s*
Dry Reference Q <sub>s</sub>	31205 SCFM*	14.7 Rm³/s*
Summary of	Summary of Particulate Emission Rates	n Rates
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.42 mg/Rm <sup>3*</sup>	0.0062 g/s
Total Part. (b)	6.33 mg/Rm³*	0.093 g/s
PM <sub>10</sub> Part. (b)	6.25 mg/Rm <sup>3*</sup>	0.092 g/s
PM <sub>2.5</sub> Part. (b)	6.16 mg/Rm³*	0.091 g/s
\$500 Percy	T 0.4 3 (D 3.3 3*	7) 2000

- (a) does not include condensibles (b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	517.5	659.1	775.0	852.4	
final volume or weight (ml or mg)	658.2	6:099	7.4.7	863.1	
gain in volume or weight (ml or mg)	140.7	1.2	-0.3	10.7	0.0
		of decimal we're a secure of the second contract of the second contr		17.L.C.).	150.2

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	Particulate Weight Gains 10mm	particulate weight gains (mg) <0.1
	Particulate Weight Gains >10mm	particulate weight gains (mg) <0.1
	Particulate Weight Gains >10mm	particulate weight gains (mg) <0.1
	Particulate Weight Gains	particulate weight gains (mg) <0.1

<sup>\*</sup>Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

## Test Data Page Calculations

Contraction of the Contraction o												The state of the s			
Client: Covanta	/anta			Location: Courtice, Onta	Courtice,	Ontario			Test	Test location:	APC Outlet No. 2	t No. 2		Operator: DU	DO
		Clock	Dwell	Dry Gas	Delta		Stack	Meter Temp	Temp	Meter	Pump	Stack	Cyclone 1	Cyclone IV	
Port	Point	Time	Time	Meter	۵	Desired	Temp	Outlet	Inlet	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam.	OSI
So.						ц				舌	Gauge	Velocity			
		(min)	(min)	(ft <sup>2</sup> )	("H <sub>2</sub> O)		(°F)	(%)	(°F)	("H <sub>2</sub> 0)	("Hg)	(ft/s)	(mm)	(mm)	(%)
2	1	0:00	10.5	72.71	0.74	0.35	289	69	70	0.38	3.0	59.1	10.27	2.36	9.96
	2	10.5	10.4	76.39	0.71	0.35	288	20	71	0.38	3.0	57.8	10.32	2.38	97.8
	3	20.9	10.2	80.00	29.0	0.35	287	70	72	0.38	3.0	56.1	10.30	2.37	100.9
	4	31.1	10.0	83.55	0.61	0.35	287	70	74	0.38	3.0	53.5	10.31	2.38	105.6
	5	41.1	9.4	87.05	0.54	0.35	287	72	75	0.38	3.0	50.4	10.32	2.38	112.0
	9	50.5	9.0	90.34	0.49	0.35	286	73	75	0.38	3.0	48.0	10.33	2.38	117.4
		59.5		93.49											
1	, ,	00.00	10.3	93.49	0.67	0.35	285	73	92	0.38	3.0	56.0	10.75	2.55	94.9
	2	10.3	10.4	06:96	0.72	0.35	286	74	- 76	0.38	3.0	58.1	10.34	2.39	2.96
	3	20.7	10.8	100.53	29'0	0.35	287	75	92	0.38	3.0	56.1	10.34	2.39	100.3
	4	31.5	10.0	104.31	0.62	0.35	287	75	77	0.38	3.0	54.0	10.38	2.41	103.7
	5	41.5	6.7	107.80	0.59	0.35	287	75	11	0.38	3.0	52.7	10.35	2.39	106.7
	9	51.2	9.3	111.20	0.52	0.35	287	75	77	0.38	3.0	49.4	10.37	2.40	113.5
		60.5		114.43											
Averages					0.63		287	73	m	0.38		54.3	10.37	2.40	103.0

# EPA Draft Method - PM<sub>10/2.5</sub> Calculations

Date: November 9, 2020	Project No.: 22050
Client: Covanta	Operator: DU
Plant: DYEC	
Location: Courtice, Ontario	
Test No.: 2	
Test Location: APC Outlet No. 2	

1.37	0.00	0.00	1.48	2	9	Ţ	0.992	0.848	29.94	-8.20	8.17	11.13	13.2		0.1776
Stack Diameter (m)	Stack Width (m)	Stack Breadth (m)	Stack Area (m²)	No. of Traverses	No. of Points Per Traverse	Data Readings Per Point	DGMCF	Pitot Factor	Barometric Pressure (" Hg)	Static Pressure ("H <sub>2</sub> O)	Oxygen Content (%)	Carbon Dioxide Content (%)	Carbon Monoxide Content (PPIM)	Assumed Moisture (%)	Nozzle Diameter (inches)

Cyclone Qs <sub>sctual</sub> 0.59 ft³/min* 9.8 l/min* Cyclone Qs <sub>sctual</sub> 0.59 ft³/min 16.7 l/min  Stack Gas Sampling Parameters  V <sub>ms</sub> 41.7 Rft³* 1.181 Rm³*  Average Cyclone I Cut Diameter 10.24 μm  Average Cyclone IV Cut Diameter 2.36 μm  Average Bokineticity 103.1 %  Stack Gas Physical Parameters  B <sub>ws</sub> 16.1 % v/v  Average Isokineticity 103.1 %  30.11 lbs/lbs mole  Average U <sub>s</sub> 55.0 ft/s 16.8 m/s  Stack Area 15.9 ft²  Actual Q <sub>s</sub> 52579 ACFM 24.8 m³/s  Dry Reference Q <sub>s</sub> 37024 SCFM* 17.5 Rm³/s*  Dry Reference Q <sub>s</sub> 31065 SCFM* 14.7 Rm³/s*  Dry Reference Q <sub>s</sub> 31065 SCFM* 14.7 Rm³/s*  Dry Reference Q <sub>s</sub> 37024 SCFM* 14.7 Rm³/s*  Dry Reference Q <sub>s</sub> 37024 SCFM* 10.0186 g/s  Total Part. (a) 1.27 mg/Rm³* 0.0102 g/s  PM <sub>10</sub> Part. (b) 6.94 mg/Rm³* 0.099 g/s  Cond. Part. (6.35 mg/Rm³** 0.099 g/s	Cyclone	Cyclone Sampling Parameters	ers
0.59 ft³/min las Sampling Paramete 41.7 Rft³*  one I Cut Diameter ne IV Cut Diameter Je.1.8 v Sas Physical Parameter 30.11 lbs/lb 288 °F 55.0 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 31065 SCFM* 31065 SCFM* 31065 SCFM* 6257 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³* 6.35 mg/Rm³*	Cyclone Qs <sub>ST</sub>	0.35 Rft³/min*	9.8 I/min*
as Sampling Paramete  41.7 Rft³*  one I Cut Diameter  ne IV Cut Diameter  verage Isokineticity  Sas Physical Parameter  16.1 % v 220.9 (dimens 30.11 lbs/lb) 288 °F 58.0 ft/s 15.9 ft² 55.0 ft/s 37024 SCFM* 37024 SCFM* 37024 SCFM* 37024 SCFM* 37024 SCFM* 6977 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³* 6.77 mg/Rm³*	Cyclone Qs <sub>actual</sub>	0.59 ft³/min	16.7 I/min
41.7 Rft³*  one I Cut Diameter ne IV Cut Diameter verage Isokineticity Gas Physical Parametel 16.1 % v 220.9 (dimens 30.11 lbs/lb) 288 °F 55.0 ft/s 15.9 ft² 55579 ACFM 37024 SCFM* 31065 SCFM* 77024 SCFM* 6.94 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³* 6.77 mg/Rm³*	Stack Ga	s Sampling Parame	ters
one I Cut Diameter ne IV Cut Diameter Sas Physical Parametei Gas Physical Parametei 16.1% v 220.9 (dimens 30.11 lbs/lbb 288 °F 55.0 ft/s 15.9 ft² 55.5 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 37024 SCFM* 11.27 Mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	$V_{ms}$	41.7 Rft³*	1.181 Rm³*
ne IV Cut Diameter verage Isokineticity Sas Physical Parameter 16.1% v 220.9 (dimens 30.11 lbs/lbs 28.16 lbs/lbs 28.8 °F 55.0 ft/s 15.9 ft² 52579 ACFM* 37024 SCFM* 37024 SCFM* 37024 SCFM* 62579 ACFM* 37024 SCFM* 37024 SCFM* 37024 SCFM* 6257 Mg/Rm³* 6.94 mg/Rm³* 6.97 mg/Rm³* 6.35 mg/Rm³*	Average Cyclo	ne I Cut Diameter	10.24 µm
Sas Physical Parameter  16.1 % v 220.9 (dimens 30.11 lbs/lb) 288 °F 55.0 ft/s 15.9 ft² 52579 ACFM* 37024 SCFM* 31065 SCFM* 77024 SCFM* 31065 ACFM*	Average Cyclon	e IV Cut Diameter	2.36 µm
Gas Physical Paramete  16.1 % v  220.9 (dimens 30.11 lbs/lbb, 288 °F 28.16 lbs/lbb, 288 °F 55.0 ft/s 15.9 ft² 52579 ACFM* 37024 SCFM* 37024 SCFM* 37024 SCFM*  107 Ref. Conc. 1.27 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³* 6.35 mg/Rm³*	Ave	rage Isokineticity	103.1 %
16.1 % v 220.9 (dimens 30.11 lbs/lbb 28.16 lbs/lbb 28.8 °F 55.0 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 37024 SCFM* 10 Particulate Emission Dry Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.35 mg/Rm³*	Stack G	s Physical Paramet	ers
220.9 (dimens 30.11 lbs/lbs/lbb 288.°F 55.0 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 31065 SCFM* 31065 SCFM* 7.62 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.94 mg/Rm³* 6.94 mg/Rm³* 6.35 mg/Rm³* 6.35 mg/Rm³*	sw B	16.1%	N/Λ °
30.11 lbs/lbb 28.16 lbs/lbb 28.8 °F 55.0 ft/s 15.9 ft² 52579 ACFM* 31065 SCFM* 31065 SCFM* 7.024 SCFM* 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.94 mg/Rm³* 6.95 mg/Rm³*	Average m	220.9 (dime	nsionless)
28.16 lbs/lbb 288 °F 55.0 ft/s 15.9 ft² 52579 ACFM* 37024 SCFM* 31065 SCFM* 127 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Ŋ	30.11 lbs/	lbs mole
288 °F 55.0 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 31065 SCFM* 1105 Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	<b>X</b>	28.16 lbs/	lbs mole
55.0 ft/s 15.9 ft² 52579 ACFM 37024 SCFM* 31065 SCFM*  of Particulate Emission Dry Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Average T <sub>s</sub>	288 °F	142°C
15.9 ft² 52579 ACFM 37024 SCFM* 31065 SCFM*  In the second of particulate Emission  Dry Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Average U <sub>s</sub>	55.0 ft/s	16.8 m/s
52579 ACFM 37024 SCFM* 31065 SCFM* <b>if Particulate Emission Dry Ref. Conc.</b> 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Stack Area	15.9 ft²	$1.48~\mathrm{m}^2$
37024 SCFM* 31065 SCFM*  Inf Particulate Emission Dry Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Actual Q	52579 ACFM	24.8 m³/s
31065 SCFM*  of Particulate Emission  Dry Ref. Conc.  1.27 mg/Rm³*  7.62 mg/Rm³*  6.94 mg/Rm³*  6.77 mg/Rm³*	Wet Reference Q	37024 SCFM*	17.5 Rm³/s*
of Particulate Emission Dry Ref. Conc. 1.27 mg/Rm³* 7.62 mg/Rm³* 6.94 mg/Rm³* 6.77 mg/Rm³*	Dry Reference Q <sub>s</sub>	31065 SCFM*	14.7 Rm³/s*
Dry Ref. Conc. 1.27 mg/Rm <sup>3*</sup> 7.62 mg/Rm <sup>3*</sup> 6.94 mg/Rm <sup>3*</sup> 6.77 mg/Rm <sup>3*</sup>	Summary of	Particulate Emissio	n Rates
1.27 mg/Rm <sup>3*</sup> 7.62 mg/Rm <sup>3*</sup> 6.94 mg/Rm <sup>3*</sup> 6.77 mg/Rm <sup>3*</sup>		Dry Ref. Conc.	Emission Rate
7.62 mg/Rm <sup>3*</sup> 6.94 mg/Rm <sup>3*</sup> 6.77 mg/Rm <sup>3*</sup> 6.35 mg/Rm <sup>3*</sup>	Total Part. (a)	1.27 mg/Rm³*	0.0186 g/s
6.94 mg/Rm <sup>3*</sup> 6.77 mg/Rm <sup>3*</sup> 6.35 mg/Rm <sup>3*</sup>	Total Part. (b)	7.62 mg/Rm³*	0.112 g/s
6.77 mg/Rm³* 6.35 mg/Rm³*	PM <sub>10</sub> Part. (b)	6.94 mg/Rm³*	0,102 g/s
6.35 mg/Rm³*	PM <sub>2.5</sub> Part. (b)	6.77 mg/Rm <sup>3*</sup>	s/g 660.0
	Cond. Part.	6.35 mg/Rm³*	0.093 g/s

- (a) does not include condensibles (b) includes condensibles

Impilizer Recovery	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	491.1	673.0	784.1	914.7	
final volume or weight (ml or mg)	649.4	672.0	782.7	925.5	
gain in volume or weight (ml or mg)	158.3	-1.0	-1.4	10.8	0.0

back-up filter cond. part.	<0.1	
<2.5mm   bac	0.4	
	.2	
mm <10mm, >2.5mm	) 8:	
s   >10	g) (g	
Particulate Weight Gains	particulate weight gains (mg	

## Test Data Page Calculations

Date:	Date: November 9, 2020	. 9, 2020		Mant: UYEC	בננ										
Client:	Client: Covanta		THE PROPERTY OF THE PROPERTY O	Location:	Location: Courtice, Onta	, Ontario			Test	Test location:	APC Outlet No. 2	No. 2		Operator: DU	DO
NACONAL PROPERTY OF THE PROPER	AN EXPANSION CONTRACTOR DE SAN TOR DE SAN CONTRACTOR DE SAN CONTRACTOR DE SAN CONTRA	Clock	Dwell	Dry Gas	Delta		Stack	Meter Temp	Temp	Meter	Pump	Stack	Cyclone I	Cyclone IV	
Port	Point	Time	Time	Meter	۵	Desired	Temp	Outlet	Inlet	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam,	150
No.						cţw				舌	Gauge	Velocity			
		(min)	(min)	(ft <sup>3</sup> )	("H <sub>2</sub> O)		(%)	(£)	(J.)	("H <sub>2</sub> 0)	("Hg)	(ft/s)	(mm)	(mm)	%
2	Ţ	0.00	10.9	14.70	0.73	0.35	286	16	77	0.38	4.0	58.8	10.24	2.35	96.8
	2	10.9	10.6	18.50	0.71	0.35	288	9/	7.2	0.38	4.0	58.0	10.24	2.36	98.2
	3	21.5	10.3	22.22	0.65	0.35	288	177	78	0.38	4.0	55.5	10.27	2.37	102.4
	4	31.9	6.6	25.83	0.61	0.35	287	77	78	0.38	4.0	53.8	10.21	2.34	106.4
- 1	2	41.7	9.3	29.30	0.59	0.35	287	78	79	0.38	4.0	52.9	10.17	2.33	108.8
7.7	9	51.0	8.8	32.59	0.53	0.35	288	78	- 62	0.38	4.0	50.1	10.23	2.35	114.0
		59.8		35.70											
1	1	0.00	10.3	35.70	0.72	0.35	287	78	80	0.38	4.0	58.4	10.24	2.36	97.5
	2	10.3	10.7	39.33	0.72	0.35	289	79	80	0.38	4.0	58.5	10.30	2.38	6.96
	3	21.1	10.3	43.07	29.0	0.35	289	80	81	0.38	4.0	56.4	10.27	2.37	100.9
	4	31.4	6.6	46.70	0.62	0.35	288	80	81	0.38	4.0	54.2	10.21	2.34	105.7
	5	41.3	9.7	50.22	09:0	0.35	288	80	81	0.38	4.0	53.3	10.26	2.36	106.7
	9	51.0	9.1	53.63	0.53	0.35	288	80	81	0.38	4.0	50.1	10.31	2.38	112.7
- 1		60.2		56.81											
Averages	36				V3 0		000	C II							

# EPA Draft Method - PM<sub>10/2.5</sub> Calculations

Date: November 9, 2020	<b>Client:</b> Covanta	DYEC	Location: Courtice, Ontario	3	
Date:	Client:	Plant: DYEC	Location:	Test No.: 3	Maria de la company de la comp

1.37	0.00	0.00	1.48	2	9		0.992	0.848	29.88	-8.97	8.28	10.97	13.6		0.1776
Stack Diameter (m)	Stack Width (m)	Stack Breadth (m)	Stack Area (m²)	No. of Traverses	No. of Points Per Traverse	Data Readings Per Point	DGMCF	Pitot Factor	Barometric Pressure (" Hg)	Static Pressure ("H <sub>2</sub> O)	Oxygen Content (%)	Carbon Dioxide Content (%)	Carbon Monoxide Content (PPM)	Assumed Moisture (%)	Nozzle Diameter (inches)
													Carb		

Cyclone Qs <sub>5T</sub> 0.35 Rft³/min* 9.8  Cyclone Qs actual 0.59 ft³/min 16  Stack Gas Sampling Parameters  V <sub>ms</sub> 41.4 Rft³* 1.17.  Average Cyclone I Cut Diameter 10.3  Average Cyclone IV Cut Diameter 2.3  Average Bokineticity 94  Stack Gas Physical Parameters  B <sub>ws</sub> 1.59 % v/v  Average T <sub>s</sub> 22.1.2 (dimensionles 30.09 lbs/lbs mole 40.3 ft/s 18.7  Average U <sub>s</sub> 60.3 ft/s 18.7  Stack Area 15.9 ft² 1.4  Actual Q <sub>s</sub> 57650 ACFM 27.2  Wet Reference Q <sub>s</sub> 40415 SCFM* 16.0  Summary of Particulate Emission Rates Dry Reference Q <sub>s</sub> 133980 SCFM* 16.0	55 ft³/min*
0.59 ias Sampl 41.4 41.4 ione I Cut ne IV Cut verage Iss Sas Physi 60. 15 5765( 40415	eters 1.
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28 28 60. 15 57650 40415 33980 074 Re	
3as Physi 28 60. 15 57650 40415 33980 off Particul	e Isokineticity 94.4 %
28 60. 15 5765( 40415 33980 if Particul	nysical Parameters
28 60 15 5765( 40415 3398C if Particul	15.9 % v/v
288 60.3 15.9 57650, 40415 S 33980 S of Particula	221.2 (dimensionless)
288 60.3 15.9 57650, 40415 S 33980 S if Particula	30.09 lbs/lbs mole
Average U <sub>s</sub> 288 °F Average U <sub>s</sub> 60.3 ft/s Stack Area 15.9 ft² Actual Q <sub>s</sub> 57650 ACFM Wet Reference Q <sub>s</sub> 40415 SCFM* Dry Reference Q <sub>s</sub> 33980 SCFM* Summary of Particulate Emission Dry Ref Conc	28.16 lbs/lbs mole
Average U <sub>5</sub> 60.3 ft/s Stack Area 15.9 ft² Actual Q <sub>5</sub> 57650 ACFM Wet Reference Q <sub>5</sub> 40415 SCFM* Dry Reference Q <sub>5</sub> 33980 SCFM* Summary of Particulate Emission Dry Ref Conc	288 °F 142 °C
Stack Area 15.9 ft² Actual Q <sub>s</sub> 57650 ACFM Wet Reference Q <sub>s</sub> 40415 SCFM* Dry Reference Q <sub>s</sub> 33980 SCFM* Summary of Particulate Emission Dry Ref	60.3 ft/s 18.4 m/s
Actual Q <sub>s</sub> 57650 ACFM  Wet Reference Q <sub>s</sub> 40415 SCFM*  Dry Reference Q <sub>s</sub> 33980 SCFM*  Summary of Particulate Emission  Dry Ref. Conc.	15.9 ft² 1.48 m²
Wet Reference Q <sub>s</sub> 40415 SCFM*  Dry Reference Q <sub>s</sub> 33980 SCFM*  Summary of Particulate Emission  Dry Ref. Conc.	7650 ACFM 27.2 m³/s
Summary of Particulate Emission Dry Ref Conc	415 SCFM* 19.1 Rm³/s*
Summary of Particulate Emission Dry Ref Conc	980 SCFM* 16.0 Rm <sup>3</sup> /s*
Dry Ref Conc	iculate Emission Rates
	Dry Ref. Conc. Emission Rate
Total Part. (a) 1.45 mg/Rm <sup>3*</sup>	.5 mg/Rm³* 0.0232 g/s
<b>Total Part. (b)</b> 6.39 mg/Rm <sup>3*</sup>	19 mg/Rm <sup>3</sup> * 0.102 g/s
PM <sub>10</sub> Part. (b) 5.96 mg/Rm <sup>3*</sup>	36 mg/Rm <sup>3*</sup> 0.096 g/s
PM <sub>2.5</sub> Part. (b) 5.79 mg/Rm <sup>3*</sup>	19 mg/Rm3* 0.093 g/s
Cond. Part. 4.94 mg/Rm <sup>3*</sup>	14 mg/Rm³* 0.079 g/s

- (a) does not include condensit (b) includes condensibles

Impinger Recovery	Impinger 1	Impinger 2	lmpinger 3	Impinger 4	Impinger 5
initial volume or weight (ml or mg)	517.5	659.1	774.7	863.1	
final volume or weight (ml or mg)	674.3	658.3	773.8	871.5	
gain in volume or weight (ml or mg)	156.8	-0.8	-0.9	8.4	0.0

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## **Test Data Page Calculations**

Client: Covanta         Clock Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dry G Dwell Dwell Dry G Dwell Dwell Dry G Dwell Dwell Dry G Dwell Dwell Dry G Dwell Dwell Dry G Dwell Dwel		The state of the s		ORDER TO STATE OF THE PROPERTY OF THE PARTY						Contract of the Contract of th	The state of the s
Clock Dwell Point Time Time  (min) (min)  1 0.000 10.7  2 10.7 10.5  3 21.2 10.1  4 31.3 9.8  5 41.1 9.6  5 50.7 9.1  5 59.8  1 0.000 10.6  2 10.6 10.6  3 21.2 10.6  4 31.5 9.9	Location: Courtice, Onta	, Ontario			Test lo	Test location: A	APC Outlet No. 2	No. 2		Operator: DU	DU
Clock Dwell Point Time Time  (min) (min)  1 0.000 10.7  2 10.7 10.5  3 21.2 10.1  4 31.3 9.8  5 41.1 9.6  6 50.7 9.1  1 0.00 10.6  2 10.6 10.6  3 21.2 10.5  4 31.5 9.9	-		_								
Point         Time         Time           1         0.00         10.7           2         10.7         10.5           3         21.2         10.1           4         31.3         9.8           5         41.1         9.6           6         50.7         9.1           59.8         10.6         10.6           2         10.6         10.6           3         21.2         10.6           4         31.5         9.9           5         41.3         9.7	Dry Gas Delta		Stack	Meter Temp	dwe	Meter	Pump	Stack	Cyclone I	Cyclone IV	
(min)         (min)           1         0.00         10.7           2         10.7         10.5           3         21.2         10.1           4         31.3         9.8           5         41.1         9.6           6         50.7         9.1           6         50.7         9.1           1         0.00         10.6           2         10.6         10.6           3         21.2         10.2           4         31.5         9.9           5         41.3         9.7	Meter	Desired	Temp	Outlet	nlet P	Pressure	Vacuum	Gas	Cut Diam.	Cut Diam.	150
(min)         (min)           1         0.00         10.7           2         10.7         10.5           3         21.2         10.1           4         31.3         9.8           5         41.1         9.6           6         50.7         9.1           1         0.00         10.6           2         10.6         10.6           3         21.2         10.2           4         31.5         9.9           5         41.3         9.7		g m				舌	Gauge	Velocity			
1 0.00 10.7 2 10.7 10.5 3 21.2 10.1 4 31.3 9.8 5 41.1 9.6 6 50.7 9.1 1 0.00 10.6 2 10.6 10.6 3 21.2 10.2 4 31.5 9.9 5 41.3 97	(ft³)   ("H2O)		(°F)	(品)	(°F)	("H <sub>2</sub> O)	("Hg)	(ft/s)	(mm)	(mm)	(%)
2 10.7 10.5 3 21.2 10.1 4 31.3 9.8 5 41.1 9.6 6 50.7 9.1 5 9.8 1 0.00 10.6 2 10.6 10.6 3 21.2 10.6 4 31.5 9.9	57.61 0.85	0.35	288	81	82	0.38	3.0	63.6	10.32	2.39	88.8
3 21.2 10.1 4 31.3 9.8 5 41.1 9.6 6 50.7 9.1 5 59.8 1 0.00 10.6 2 10.6 10.6 3 21.2 10.5 4 31.5 9.9	61.35 0.81	0.35	289	81	82	0.38	3.0	62.1	10.02	2.27	95.0
4     31.3     9.8       5     41.1     9.6       6     50.7     9.1       1     0.00     10.6       2     10.6     10.6       3     21.2     10.2       4     31.5     9.9       5     41.3     9.7	65.20 0.76	0.35	289	81	82	0.38	3.0	60.2	10.32	2.39	94.0
5 41.1 9.6 6 50.7 9.1 1 0.00 10.6 2 10.6 10.6 3 21.2 10.2 4 31.5 9.9	68.73 0.70	0.35	288	8.1	83	0.38	3.0	57.7	10.33	2.39	97.8
6 50.7 9.1 1 0.00 10.6 2 10.6 10.6 3 21.2 10.2 4 31.5 9.9 5 41.3 9.7	72.15 0.63	0.35	287	81	83	0.38	3.0	54.7	10.31	2.39	103.3
59.8 1 0.00 10.6 2 10.6 10.6 3 21.2 10.2 4 31.5 9.9 5 41.3 9.7	75.52 0.54	0.35	288	81	83	0.38	3.0	50.7	10.32	2.39	111.5
1 0.00 10.6 2 10.6 10.6 3 21.2 10.2 4 31.5 9.9 5 41.3 97	78.71										
10.6 10.6 21.2 10.2 31.5 9.9 41.3 9.7	78.71 0.89	0.35	287	82	84	0.38	3.0	65.1	10.33	2.39	9.98
21.2 10.2 31.5 9.9 41.3 9.7	82.43 0.87	0.35	288	82	84	0.38	3.0	64.4	10.25	2.36	9.88
31.5 9.9	86.19 0.85	0.35	288	82	84	0.38	3.0	63.6	10.19	2.34	90.5
413 97	89.85 0.84	0.35	288	82	82	0.38	3.0	63.2	10.32	2.39	89.4
) 	93.30 0.77	0.35	288	82	82	0.38	3.0	9.09	10.33	2.40	93.2
51.0 9.1 96.6	02:0 69:96	0.35	289	82	82	0.38	3.0	57.8	10.51	2.47	95.5
60.2	08'66										
Averages	72.0		288	82		0.38		60.3	10.30	2.37	94.4



### **APPENDIX 24**

Acid Gases Test Emission Calculations (12 pages)

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location:

APC Outlet No. 1 1 - M26A

Test No.: Date:

November 9, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.338 m <sup>3</sup>
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.3 °C
AVERAGE GAS MOISTURE BY VOLUME	14.4 %
AVERAGE GAS VELOCITY	17.15 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.402 Kpa
OXYGEN CONCENTRATION	8.73 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	13.9 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE			25.33 m <sup>3</sup> /s
DRY REF GAS FLOWRATE			15.34 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE			18.85 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE			17.93 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

0 mg
0 mg
0 mg
338 m³
000 mg/m <sup>3</sup>
000 mg/m <sup>3</sup>
000 mg/m³
000 mg/m <sup>3</sup>
000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Plant Location: Courtice, Ontario

November 9, 2020 Covanta DYEC 1 - M26A Test No.: Plant: Date:

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CO2% COppm 02% 5 minutes 0 ft² 151.2 14.6 Leak Check Volume Number of Ports Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 30.01 "Hg -8.930 "H<sub>2</sub>O 0.2651 inches 0.000 ft 0.000 ft 4.500 ft 0.848 Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Length Nozzle Width

Number of points / Port

10.78 8.73

Measured H20

14.4 %

	Isokinetic	%		0.11.0	6.66	94.4	100.2	102.7	100.3	96.7	99.1	101.4	100.5	1.66	100.2
	Velocity	m/s	16.71	16.90	16.90	16.91	17.17	16.92	17.67	17.18	17.44	17.44	17.32	17.20	
Leak	Check	Volume													
	Vacuum	"Hg	6.0	5.0	5.0	5.0	5.5	5,5	5.5	5.5	5.5	5.5	5.5	5.5	
	H	"H20	2.8	7	7	2.1	2.15	2.1	2.1	2.1	2.2	2.2	2.1	2.1	
	DGM In	°F	89	71	75	79	83	85	86	87	88	68	06	91	
atures	DGM Out	<b>5</b> 0	89	89	69	69	70	71	71	72	72	73	74	74	
Temperatures	Imp. Out	95	99	50	49	50	50	51	51	52	52	52	53	53	
	Stack	9Р	288	282	282	283	284	284	284	285	285	285	286	286	
	ДΣ	"H20	0.64	99.0	99.0	99.0	0.68	99.0	0.72	0.68	7.0	7.0	69.0	0.68	
	DGM	Reading	82.60	86.72	90.49	94.07	97.88	101.86	105.70	109.57	113.43	117.44	121.42	125.32	129.24
		Time	0	ð	10	15	20	25	30	35	40	45	20	55	09
		Point	П	2	m	4	5	9	7	∞	6	10	11	12	

Plant:

Covanta DYEC

**Plant Location:** 

Courtice, Ontario

Test Location: Test No.: APC Outlet No. 1 2 - M26A

Date:

November 9, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.296 m <sup>3</sup>
AVGERGE ISOKINETICITY	100.0 %
STACK DIAMETER	1.37 m
ELENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.04 m/s
BAROMETRIC PRESSURE (Station)	101.524 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.300 Kpa
OXYGEN CONCENTRATION	8.59 %
CARBON DIOXIDE CONCENTRATION	10.76 %
CARBON MONOXIDE CONCENTRATION	12.2 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.18 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	14.92 Rm³/s
DRY ADJ GAS FLOWRATE	18.56 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	17.72 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.296 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Plant: Test No.: Date:

Covanta DYEC 2 - M26A November 9, 2020

Plant Location: Courtice, Ontario
Test Location: APC Outlet No. 1
Operator: TT

7960	
2,7	02% 8.59
co2% 10.76	10.76
madO3	12.2
0 ft°	Measured H20
5 minutes 15.8 %	%
	The second secon

	Isokinetic	%		102.7	100.3	69.3	99.5	102.5	9.66	99.4	98.1	9.66	99.5	99.4	100.4
	Velocity	s/w	17.15	17.14	17.15	17.28	17.28	17.28	17.28	16.89	16.89	16.89	16.63	16.62	
Leak	Check	Volume													
	Vacuum	BH.	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
	H	"H20	2.05	7	7	2.1	2.1	7	2.05	1.9	1.95	1.95	1.9	1.9	
	DGM In	-1 <sub>0</sub>	72	72	83	86	88	- 06	91	92	92	93	93	93	
atures	DGM Out	95	72	72	72	73	73	74	75	75	76	92	77	77	
Temperatures	Imp. Out	°F	73	- 60	58	09	59	59	58	58	56	56	56	56	
	Stack	<sup>o</sup> F	288	287	288	288	288	288	288	288	288	288	288	287	
	ΦD	"H20	0.67	0.67	0.67	0.68	0.68	0.68	0.68	0.65	0.65	0.65	0.63	0.63	
	DGM	Reading	29.77	33.63	37.40	41.17	44.99	48.93	52.77	56.61	60.32	64.09	67.86	71.57	75.32
		Time	0	2	10	15	20	25	30	35	40	45	20	55	09
		Point	<b>—</b>	2	ന	4	2	9	7	<b>∞</b>	6	10	11	12	

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

**Test Location:** 

APC Outlet No. 1 3 - M26A

Test No.: Date:

November 9, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.322 m <sup>3</sup>
AVGERGE ISOKINETICITY	101.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.5 °C
AVERAGE GAS MOISTURE BY VOLUME	17.6 %
AVERAGE GAS VELOCITY	17.57 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.224 Kpa
ABSOLUTE GAS PRESSURE	99.097 Kpa
OXYGEN CONCENTRATION	8.3 %
CARBON DIOXIDE CONCENTRATION	11.01 %
CARBON MONOXIDE CONCENTRATION	12.5 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE		25.95 m <sup>3</sup> /s
DRY REF GAS FLOWRATE		15.00 Rm³/s
DRY ADJ GAS FLOWRATE		19.09 Rm³/s
WET REF GAS FLOWRATE		18.21 Rm³/s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	O mg
DRY REF GAS VOLUME SAMPLED		1.322 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC Test No.: Plant:

3 - M26A Date:

November 9, 2020

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 1 Operator: Combustion Gases 11.01 8.3 Measured H20 17.6 % 02% CO2% COppm 5 minutes 0 ft³ 195.3 12.4 0 Number of Ports Number of points / Port Leak Check Volume Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 1.004 29.92 "Hg -8.930 "H<sub>2</sub>O 0.2651 inches 0.000 年 0.000 年 4.500 ft 0.848 Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Nozzle Length Width

	Isokinetic	%		101.6	100.8	102.1	100.9	102.9	101.3	99.4	102.1	102.3	101.3	101.9	101.3
	Velocity	m/s	17.36	17.99	17.36	17.37	17.37	17.37	17.88	17.88	17.88	17.63	17.36	17.36	
Leak	Check	Volume													
	Vacuum	"Hg	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	
	PΑ	"H20	2	2.1	2.05	2.05	2.05	2.05	2.1	2.15	2.15	2.1	2.05	2.05	
	DGM In	9¢	75	79	84	98	68	89	06	91	91	91	91	92	
atures	DGM Out	°F	75	75	75	75	76	76	76	77	77	78	78	78	
Temperatures	Imp. Out	<b>9</b> 6	74	52	49	50	50	50	50	51	52	54	56	57	
	Stack	°F	288	288	288	289	289	289	289	289	289	289	288	288	
	ФΦ	"H20	0.68	0.73	89.0	0.68	0.68	0.68	0.72	0.72	0.72	0.7	89.0	0.68	
	DGM	Reading	75.65	79.45	83.37	87.22	91.03	94.93	98.77	102.65	106.64	110.64	114.55	118.43	122.29
		Time	0	5	10	15	20	25	30	35	40	45	50	55	. 09
		Point	<del>,  </del>	2	m	4	5	9	7	8	6	10	11	12	

Plant:

Covanta DYEC

Plant Location: Test Location: Courtice, Ontario APC Outlet No.2

Test No.:

1 - M26A

Date:

November 10, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.319 m <sup>3</sup>
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
ELENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	17.46 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.311 Kpa
OXYGEN CONCENTRATION	7.9 %
CARBON DIOXIDE CONCENTRATION	11.21 %
CARBON MONOXIDE CONCENTRATION	16.7 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.79 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	15.05 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE	19.77 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	18.03 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.319 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC 1 - M26A November 10, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario
Test Location: APC Outlet No.2
Operator: TT

Pitot Factor	0.848	Filter (mg)		Combustion Gases
DGMCF	1.004	Probe (mg)		7.9
Barometric Pressure	29.74 "Hg	CWTR(g)	176.8	CO2% 11.21
Static Pressure	-9.640 "H <sub>2</sub> O	WCBDA (g)	14.6	COppm 16.7
Nozzle	0.2651 inches			
Stack Diameter	4.500 ft	Leak Check Volume		Measured H20
Length	0.000 ft	Reading Interval	5 minutes	16.5 %
Width	0.000 ft	Number of Ports		
		Number of points / Port		

				Temperatures	ratures				Leak		
-	DGM	<b>D</b>	Stack	Imp. Out	DGM Out	DGM In	ΗØ	Vacuum	Check	Velocity	Isokinetic
Time	Reading	"H20	о П.	u. °	U.	!L.	"H20	gH.	Volume	s/m	%
	171.77	0.67	269		70	69	2	4.5		17.03	
	175.51	0.67	285	51	69	71	7	4.5		17.22	99.2
0	179.25	0.7	287	51	69	75	2.1	4.5		17.62	100.2
7.	183.09	7.0	287	54	70	79	2.1	4.5		17.62	100.4
20	186.99	0.72	287	57	70	82	2.2	5.0		17.87	101.5
25	190.97	0.66	287	09	71	83	7	4.5		17.11	101.9
30	194.78	0.66	286	61	72	85	2	4.5		17.10	101.6
35	198.55	0.68	287	09	72	98	2.05	4.5		17.37	100.2
40	202.39	0.7	287	58	73	87	2.15	5.0		17.62	100.5
45	206.37	0.7	287	56	73	88	2.15	5.0		17.62	102.5
50	210.32	0.7	288	55	74	88	2.15	5.0		17.64	101.7
55	214.23	0.7	288	55	74	68	2.15	5.0		17.64	100.6
09	218.15										100.8

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location: Test No.: APC Outlet No.2 2 - M26A

Date:

November 10, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.324 m <sup>3</sup>
AVGERGE ISOKINETICITY	100.8 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.54 m/s
BAROMETRIC PRESSURE (Station)	100.711 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98. <b>311</b> Kpa
OXYGEN CONCENTRATION	8.28 %
CARBON DIOXIDE CONCENTRATION	11.10 %
CARBON MONOXIDE CONCENTRATION	16.5 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.92 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	15.13 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE	19.28 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	18.09 Rm³/s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.324 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE	•	.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Plant: Test No.: Date:

Covanta DYEC 2 - M26A November 10, 2020

Plant Location: Courtice, Ontario
Test Location: APC Outlet No.2
Operator: TT

Combustion Gases	02% 8.28	CO2% 11.10 COppm 16.5		Measured H20	16.3 %		
					5 minutes	<b>.</b>	
Filter (mg)	Probe (mg)	CWTR (g) 178.4 WCBDA (g) 11.7		Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
0.848	1.004	29.74 "Hg -9.640 "H <sub>2</sub> O	0.2651 inches	4.500 ft	0.000 ft	0.000 ft	
Pitot Factor	DGMCF	Barometric Pressure Static Pressure	Nozzle	Stack Diameter	Length	Width	

	Isokinetic	%		102.8	100.7	100.5	101.1	100.4	100.3	102.1	100.6	8.66	100.8	100.9	8.66
	Velocity	s/m	17.73	17.48	17.62	17.62	17.35	17.35	17.48	17.37	17.37	17.74	17.76	17.63	
Leak	Check	Volume													
	Vacuum	gH"	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
	ΑH	"H20	2	2.05	2.1	2.15	2.1	2.1	2.15	2.05	2.05	2.15	2.15	2.1	
	DGM In	보 0	72	79	85	68	91	92	92	93	93	94	94	94	
ratures	DGM Out	<b>3</b> 0	72	73	73	74	75	75	76	77	77	78	78	78	
Temperatures	Imp. Out	<b>4</b> °	69	52	50	50	50	51	52	52	52	53	54	55	
	Stack	<b>⊸</b>	286	286	287	287	286	286	286	287	287	287	288	288	
	ДЪ	"H20	0.71	0.69	0.7	0.7	0.68	0.68	0.69	0.68	0.68	0.71	0.71	0.7	
	DGM	Reading	218.65	222.62	226.48	230.38	234.32	238.19	242.06	246.03	249.92	253.78	257.77	261.76	265.68
		Time	0	2	10	15	20	25	30	35	40	45	50	55	09
		Point	1	2	m	4	Ŋ	9	7	<b>∞</b>	6	10	11	12	

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location: Test No.: APC Outlet No.2 3 - M26A

Date:

November 10, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	1.320 m <sup>3</sup>
AVGERGE ISOKINETICITY	99.6 %
STACK DIAMETER	1.37 m
ELENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.8 %
AVERAGE GAS VELOCITY	17.39 m/s
BAROMETRIC PRESSURE (Station)	100.610 Kpa
STATIC PRESSURE	-2.400 Kpa
ABSOLUTE GAS PRESSURE	98.209 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.65 %
CARBON MONOXIDE CONCENTRATION	18.3 ppm
法对法律法律证券 医乳头皮 医结膜性结膜 医皮肤炎 医皮肤炎 医皮肤炎 医二氏管 医二氏管 化二氯甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基二甲基	

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.70 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	15.27 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE	18.88 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	17.93 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.320 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC 3 - M26A November 10, 2020 Plant: Test No.: Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No.2 Operator:

Combustion Gases	02% 8.66	CO2% 10.65 COppm 18.3		Measured H20	14.8 %		
				0 ft*	5 minutes		
0	0	157.4 11.8					
Filter (mg)	Probe (mg)	CWTR (g) WCBDA (g)		Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
0.848	1.004	29.71 "Hg -9.640 "H <sub>2</sub> O	0.2651 inches	4.500 ft	0.000 ft	0.000 ft	
Pitot Factor		Barometric Pressure Static Pressure	Nozzle	Stack Diameter			

	Isokinetic	%		107.3	96.1	99.2	9.66	99.2	98.9	98.8	99.4	1.66	99.2	99.2	98.8
	Velocity	m/s	18.07	17.46	17,33	17.32	17.33	17.07	17.31	17.32	17.56	17.31	17.31	17.31	
Leak	Check	Volume													
	Vacuum	"Hg	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	
	큠	"H20	2	1.9	2.05	2.05	2.05	7	2.05	2.05	2.1	2.05	2.05	2.05	
	DGM In	9F	75	79	84	87	68	06	91	91	91	91	91	92	
atures	DGM Out	9°	75	75	75	76	76	77	77	77	78	78	78	79	
Temperatures	Imp. Out	10	70	49	49	50	51	53	54	26	58	61	61	61	
	Stack	٥,٤	286	287	287	286	287	286	285	286	285	285	285	285	
	ΔР	"H20	0.74	69'0	0.68	0.68	0.68	0.66	0.68	0.68	0.7	0.68	0.68	0.68	
	DGM	Reading	66.05	70.37	74.12	77.98	81.87	85.75	89.57	93.45	97.35	101.30	105.20	109.10	112.99
		Time	0	2	10	15	20	25	30	35	40	45	20	55	09
		Point	1	7	E	4	Ŋ	9	7	8	о С	10	ŢŢ	12	



### **APPENDIX 25**

SVOC Test Emission Calculations (18 pages)

Plant:

Covanta DYEC

Plant Location:

Courtice, ON

**Test Location:** 

APC Outlet No. 1

Test No.:

1 - SVOC

Date:

November 11, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.135 m <sup>3</sup>
AVGERGE ISOKINETICITY	99.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.30 m/s
BAROMETRIC PRESSURE (Station)	99.932 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.562 Kpa
OXYGEN CONCENTRATION	8.34 %
CARBON DIOXIDE CONCENTRATION	10.84 %
CARBON MONOXIDE CONCENTRATION	11.1 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE				25.57 m <sup>3</sup> /s
DRY REF GAS FLOWRATE				14.83 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE				18.82 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	<b>.</b>			17.78 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.135 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC 1 - SVOC November 11, 2020 Plant: Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Pitot Factor	0.849	Filter (mg)	0		Combustion Gases	
DGMCF	1.004	Probe (mg)	0		02% 8.34	
Sarometric Pressure	29.51 "Hg -9.520 "H,O	CWTR (g) WCBDA (g)	726.4 23		CO2% 10.84	
Nozzle	0.2651 inches					
Stack Diameter	4.500 ft	Leak Check Volume		0.26 ft	Measured H20	
Length	0.000 ft	Reading Interval		5 minutes	16.6 %	
Width	0.000 ft	Number of Ports		2		
		Number of points / Port		12		

					Temperatures	atures				Leak		
	<u>ă</u>	DGM	ΔP	Stack	Imp. Out	DGM Out	DGM In	₹	Vacuum	Check	Velocity	Isokinetic
Time		Reading	"H20	<sup>0</sup> F	op.	o <sub>F</sub> -	<sup>o</sup> F	"H20	"Hg	Volume	m/s	%
0	52	55.93	0.76	285	71	70	70	2.2	7.0		18.45	
2	59	.95	0.77	283	61	70	72	2.25	8.0		18.54	100.7
10	. 64	1.04	0.77	283	56	70	76	2.2	8.0		18.54	101.4
15	89	3.08	0.79	281	54	71	79	2.3	8.0		18.76	8.66
20	, 72	2.24	0.73	280	53	71	81	2.1	8.0		18.02	101.0
25	9/	5.19	0.75	280	52	72	83	2.2	8.0		18.26	99.4
30	08	).24	0.72	281	52	72	84	2.1	8.0		17.91	100.3
35	84	1.16	0.72	282	52	73	85	2.1	8.0		17.92	99.1
40		3.09	0.63	283	52	73	85	1.9	8.0		16.77	99.2
45	91	1.81	0.65	283	52	73	98	7	8.0		17.04	100.4
50		95.60	0.61	284	52	74	87	1.8	8.0		16.51	100.6
55		3.22	0.61	284	52	74	87	1.8	8.0		16.51	0.66
9		2.83	0.66	284	53	74	87	7	8.0		17.18	98
65		6.61	0.64	284	52	74	87	1.9	8.0		16.92	99.5
70		0.37	0.64	284	53	75	87	1.85	8.0		16.92	100.5
75		4.07	0.64	284	53	75	88	1.9	8.0		16.92	98.8
80		7.77	99.0	288	53	75	88	1.7	8.0		17.22	98.7
85		1.37	0.67	284	53	75	88	7	8.0		17.31	94.7
90		5.16	0.65	281	53	75	88	2	8.0		17.01	98.8
95		8.97	0.65	283	53	76	88	7	8.0		17.04	100.6
10(		2.84	0.65	283	54	76	88	7	8.0		17.04	102.3
105		69.9	89.0	281	54	76	87	2	8.0		17.40	101.7
11(		0.61	0.55	284	54	76	88	1.7	8.0		15.68	101.2
11!		4.21	0.56	284	54	76	88	1.5	7.0		15.82	103.4
12(		7.46								0.26		92.5
0	147	7.72	0.77	284	61	75	78	2.2	9.0		18.55	
5	151	1.77	0.78	284	57	75	82	2.2	9.0		18.67	99.5
10		5.84	0.78	284	59	75	84	2.25	9.0		18.67	6.86
15		96.6	0.78	284	55	75	85	2.25	0.6		18.67	100.0
20		4.08	0.74	284	51	75	85	2.15	9.0		18.19	0.00

Plant: Test No.: Date:

Covanta DYEC 1 - SVOC November 11, 2020

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Pitot Factor	0.849	Filter (mg)		Combustion Gases
DGMCF	1.004	Probe (mg)		02% 8.34
Barometric Pressure Static Pressure	29.51 "Hg -9.520 "H <sub>2</sub> O	CWTR (g) 72 WCBDA (g)	26.4	CO2% 10.84 COppm 11.1
Nozzle	0.2651 inches			
Stack Diameter	4.500 ft	Leak Check Volume	0.26 ft	Measured H2O
Length	0.000 ft	Reading Interval	5 minutes	16.6 %
Width	0.000 ft	Number of Ports		
		Number of points / Port	12	

	The state of the s			Temper	Temperatures				Leak		
	DGM	ΔP	Stack	Imp. Out	DGM Out	DGM In	HQ	Vacuum	Check	Velocity	Isokinetic
Time	Reading	"H20	٥. خ	<b>ქ</b> 0	o,	<b>5</b> 0	"H20	"Hg	Volume	m/s	%
25	168.08	0.77	285	49	75	98	2.25	0.6		18.57	99.5
30	172.17	0.71	285	51	75	98	2.1	9.0		17.83	8.66
35	176.12	0.71	285	51	75	98	2.1	9.0		17.83	100.3
40	180.07	0.64	285	51	75	87	1.9	9.0		16.93	100.3
45	183.81	0.64	285	51	75	87	1.9	8.5		16.93	6.66
50	187.52	0.61	285	52	75	87	1.8	8.5		16.53	99.1
55	191.18	0.59	285	52	75	87	1.75	8.5		16.25	100.1
09	194.78	0.65	285	52	75	87	1.95	8.5		17.06	100.1
92	198.55	0.65	285	51	75	87	1.95	8.5		17.06	6.66
70	202.33	99.0	286	48	75	87	1.95	8.5		17.20	100.2
75	206.12	99.0	285	46	75	87	1.95	8.5		17.19	8.66
80	209.92	99.0	283	45	75	87	1.95	8.5		17.17	100.0
85	213.73	0.64	282	45	75	87	1.9	8.5		16.89	100.1
06	217.48	99.0	282	46	75	87	1.95	8.5		17.16	100.0
95	221.27	99.0	283	46	75	87	1.95	8.5		17.17	99.5
100	225.06	0.56	281	46	75	87	1.7	8.0		15.79	98.6
105	228.65	9.0	281	46	75	87	1.8	0.6		16.35	102.2
110	232.30	0.57	281	46	75	87	1.6	8.0		15.93	100.4
115	235.78	9.0	281	56	92	88	1.8	0.6		16.35	98.2
120	239.23										94.7

Plant:

Covanta DYEC

Plant Location:

Courtice, ON

**Test Location:** 

APC Outlet No. 1

Test No.:

2 - SVOC

Date:

November 11, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.077 m <sup>3</sup>
AVGERGE ISOKINETICITY	99.0 %
STACK DIAMETER	1.37 m
LENGTH MANAGEMENT OF THE STREET AND A STREET OF THE STREET	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.09 m/s
BAROMETRIC PRESSURE (Station)	100.068 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.697 Kpa
OXYGEN CONCENTRATION	8.49 %
CARBON DIOXIDE CONCENTRATION	10.81 %
CARBON MONOXIDE CONCENTRATION	14.0 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE			25.25 m <sup>3</sup> /s
DRY REF GAS FLOWRATE			14.76 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE			18.51 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE			17.62 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.077 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC Plant:

Test No.: Date:

November 11, 2020 2 - SVOC

APC Outlet No. 1 Plant Location: Courtice, ON Test Location: Operator: Combustion Gases 10.81 8.49 Measured H20 16.2 % CO2% 02% 5 minutes 0.3 ft² 699.9 Leak Check Volume Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 29.55 "Hg -9.520 "H<sub>2</sub>O 0.2651 inches 4.500 ft 0.000 ft 0.849 Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGIMCF Length Nozzle Width

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Number of Ports Number of points / Port	
Number of Ports  Number of points / Port  12	1
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0.000 ft	

	Isokinetic	%		98.6	98.4	100.4	99.5	1.66	6.96	100.8	9.99 9.99	100.3	100.2	98.2	98.0	7.96	100.4	100.7	7.66	98.3	101.4	99.5	99.5	7.96	0.96	97.4	99.2		7.76	100.2	99.5	9.60 8.60
	Velocity	m/s	17.75	17.60	17.34	17.32	16.80	17.05	17.05	17.30	16.93	16.52	16.33	16.07	16.88	16.73	16.72	16.72	17.62	16.86	16.98	16.60	15.19	15.19	15.19	15.32		19.35	19.36	19.72	19.38	18.91
Leak	Check	Volume																									0.3					
	Vacuum	gH.	7.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	9.0	9.0	8.5	8.0	8.0	8.0	8.0		10.0	10.0	10.0	10.0	10.0
	PΗ	"H20	2	2,05	2.05	2.05	1.9	2.05	2.05	2.05	1.95	1.9	1.65	1.6	1.9	1.9	1.95	1.9	2.05	7	1.95	1.85	1.4	1.45	1.5	1.6		2.5	2.5	2.55	2.4	2.3
	DGM In	9 5	73	75	80	82	84	85	98	87	87	87	74	79	83	85	87	88	88	68	68	68	06	06	91	91		82	85	87	88	88
stures	DGM Out	1. o	73	73	73	73	74	74	74	75	75	75	73	74	74	75	75	76	76	77	77	77	77	78	78	78		78	78	78	78	78
Temperatures	Imp. Out	<b>4</b>	69	56	53	52	51	51	51	51	51	50	50	45	44	44	44	44	45	45	45	45	46	46	46	46		61	50	50	51	52
	Stack	<b>5</b> 0	281	279	278	276	276	275	275	275	276	275	282	283	283	282	281	281	280	281	280	282	281	281	281	279		284	285	286	286	286
	ΔP	"H20	0.71	0.7	0.68	0.68	0.64	99.0	99.0	0.68	0.65	0,62	9.0	0.58	0.64	0.63	0.63	0.63	0.7	0.64	0.65	0.62	0.52	0.52	0.52	0.53		0.84	0.84	0.87	0.84	0.8
	DGM	Reading	39.62	43.47	47.30	51.17	55.02	58.75	62.46	66.32	70.21	74.03	77.76	81.29	84.77	88.39	92.13	95.89	99.62	103.50	107.33	111.12	114.82	118.12	121.40	124.73	128.16	128.46	132.65	136.96	141.32	145.62
-		Time	0	<b>5</b>	10	15	20	25	30	35	40	45	50	55	09	65	20	75	08	85	06	95	100	105	110	115	120	0	ம	10	15	20
		Point	1		7		ĸ		4		2		9		7		<b>∞</b>		6		10		11		12			Н		2		ന

Covanta DYEC 2 - SVOC Test No.:

November 11, 2020 Date:

Test Location: APC Outlet No. 1 Plant Location: Courtice, ON Operator:

Combustion Gases 8.49 10.81 14.0 Measured H20 16.2 % 02% CO2% COppm 5 minutes 2 12 0.3 ft² 699.9 Number of points / Port Leak Check Volume Number of Ports Reading Interval CWTR (g) WCBDA (g) Filter (mg) Probe (mg) 29.55 "Hg -9.520 "H<sub>2</sub>O 0.2651 inches 0.000 ft 0.000 ft 4.500 ft 1.004 0.849 Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Length Nozzle Width

 -				Temperatures	atures				Leak		
	DGM	90	Stack	Imp. Out	DGM Out	DGM In	¥	Vacuum	Check	Velocity	Isokinetic
Time	Reading	"H2O	0F	r L	T.	±°	"H20	"Hg	Volume	s/m	%
25	149.78	0.8	286	52	78	88	2.3	10.0		18.91	6.86
30	153.97	0.76	286	53	78	68	2.2	10.0		18.43	9.66
35	158.02	0.74	286	53	78	68	2.15	10.0		18.19	98.7
40	162.04	99:0	286	53	78	68	7	10.0		17.17	99.2
45	165.86	0.7	287	53	77	68	2.1	10.0		17.70	8.66
50	169.76	0.62	287	53	77	68	1.8	9.0		16.66	99.1
55	173.44	9.0	287	52	77	68	1.8	9.0		16.39	99.3
09	177.10	99.0	287	52	77	68	1.95	9.5		17,19	100.4
65	180.89	0.66	287	51	77	88	1.95	9.5		17,19	99.2
70	184.67	99'0	287	51	77	88	1.95	9.5		17.19	0.66
75	188.45	0.65	287	51	92	88	1.95	9.5		17.06	99.0
80	192.21	0.65	286	51	92	87	1.95	9.5		17.04	99.3
85	195.98	0.65	285	51	92	87	1.95	9.5		17.03	9.66
06	199.74	0.64	284	51	92	87	1.9	9.5		16.89	69.3
95	203.45	0.64	286	51	75	87	1.9	9.5		16.91	98.6
100	207.18	0.58	281	51	75	98	1.7	9.5		16.05	99.4
105	210.74	0.58	278	51	75	68	1.7	0.6		16.01	4.66
110	214.29	0.54	278	51	75	98	1.5	8.5		15.45	98.6
115	217.65	0.58	277	51	75	98	1.7	9.0		16.00	96.9
120	221.12										9.96

Plant:

Covanta DYEC

Plant Location:

Courtice, ON

Test Location:

APC Outlet No. 1 3 - SVOC

Test No.: Date:

November 12, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.73 mm
DRY REF GAS VOLUME SAMPLED	5.162 m <sup>3</sup>
AVGERGE ISOKINETICITY	99.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.02 m/s
BAROMETRIC PRESSURE (Station)	101.253 Kpa
STATIC PRESSURE	-2.507 Kpa
ABSOLUTE GAS PRESSURE	98.746 Kpa
OXYGEN CONCENTRATION	8.49 %
CARBON DIOXIDE CONCENTRATION	10.95 %
CARBON MONOXIDE CONCENTRATION	15.8 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.15 m³/s
DRY REF GAS FLOWRATE	14.93 Rm³/s
DRY ADJ GAS FLOWRATE	18.71 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	17.76 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.162 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		$0.000 \text{ mg/m}^3$
PARTICULATE EMISSION RATE	0	.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Covanta DYEC
3 - SVOC
November 12, 2020 Plant: Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Pitot Factor	0.849	Filter (mg)	0		Combustion Gases
DGIMCF	1.004	Probe (mg)	0		02% 8.49
Irometric Pressure	29.9 "Hg	CWTR (g)	9.669		CO2% 10.95
atic Pressure	-10.070 "H <sub>2</sub> O	WCBDA (g)	20		COppm 15.8
)22le	0.2651 inches				
Stack Diameter	4.500 ft	Leak Check Volume		0.38 ft	Measured H20
Length	0.000 ft	Reading Interval		5 minutes	15.9 %
Width	0.000 ft	Number of Ports		2	
		Number of points / Port		12	

	Isokinetic	%		98.0	97.3	7.86	98.6	99.4	99.7	100.8	98.4	98.5	97.8	100.0	59.4	98.6	2.66	9.66	100.1	99.2	98.4	98.8	66.3	93.6	99.5	99.4	98.6		67.6	124.1	89.3	105.5
	Velocity	s/w	17.45	17.46	17.22	17.50	17.52	17.78	17.27	17.28	17.29	16.92	16.26	16.53	17.07	17.31	17.31	17.58	17.56	17.06	16.74	16.80	16.40	16.20	16.19	16.32		19.57	19.01	19.00	18.88	19.00
Leak	Check	Volume																									0.38					
	Vacuum	"Hg	7.0	7.0	7.0	7.5	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		9.5	9.5	10.0	12.0	9.5
	H	"H20	1.95	1.95	1.95	7	7	2.1	7	1.9	1.9	1.8	1.8	1.8	1.9	7	7	2.05	7	1.9	1.85	1.85	1,8	1.8	1.8	1.8		2.4	2.25	3.3	3.4	2.3
	DGM In	o <sub>F</sub>	59	61	65	89	70	71	72	73	74	74	75	76	92	92	92	92	92	76	92	77	77	77	77	77		99	70	73	74	74
atures	DGM Out	٥Ł	59	59	59	09	09	61	61	61	62	62	63	63	63	63	64	64	64	64	64	64	65	65	65	65		64	64	64	65	65
Temperatures	Imp. Out	<b>4</b> 0	61	56	53	52	51	51	51	51	52	50	47	46	45	44	44	44	44	44	44	44	44	44	44	45		55	47	48	49	52
	Stack	<b>J</b> o	275	276	277	279	281	282	281	282	283	284	285	285	286	285	285	286	284	285	280	285	285	279	278	278		284	285	284	284	284
	ΔР	"H2O	0.7	2.0	0.68	7.0	7.0	0.72	0.68	0.68	0.68	0.65	9.0	0.62	99.0	0.68	0.68	0.7	0.7	99:0	0.64	0.64	0.61	9.0	9.0	0.61		0.87	0.82	0.82	0.81	0.82
	DGM	Reading	21.42	25.12	28.80	32.49	36.24	40.02	43.87	47.66	51.36	55.07	58.67	62.21	65.79	69.45	73.19	76.95	80.78	84.58	88.24	91.87	95,51	80.66	102.63	106.18	109.73	110.11	114.25	119.36	123.04	127.37
		Time	0	J	10	15	20	25	30	35	40	45	50	55	09	65	70	75	80	85	06	95	100	105	110	115	120		2	10	15	20
		Point	П		2		r		4		2		9		7		∞		6		10		11		12			Н		2		m

Covanta DYEC 3 - SVOC November 12, 2020 Plant: Test No.: Date:

Plant Location: Courtice, ON
Test Location: APC Outlet No. 1
Operator: TT

Isokinetic %	100.0	99.1	97.5	
Velocity m/s	18.05	17.52	16.74	1
Leak Check Volume				
Vacuum "Hg	9.0	9:0	9.0	( (
ΔH "H2O	2.05	17	1.9	,
DGM In	76	78	79	(1
atures DGM Out °F	65	99	99	
Temper Imp. Out °F	53	52	49	
Stack °F	284	281	280	
ΔP "H2O	0.74	0.7	0.64	
DGM Reading	131.51 135.40	139.21	142.97	
Тіте	25	35	40	
Point	4		5	
	Temperatures Temperatures Temperatures Temperatures Time DGM In DGM IN D	DGM         ΔP         Stack         Imp. Out         DGM Out         DGM In Out         AH         Vacuum Vacu	DGM         AP         Stack         Imp. Out         DGM Out         DGM In         AH         Vacuum Check         Velocity Nolume         Velocity Nolume <th>DGM         AP         Stack         Imp. Out         DGM Out         DGM In OF         AH         Vacuum Check         Velocity Nolume         Valume         Vacuum Check         Velocity Nolume         Vacuum Check         Valume         Valume</th>	DGM         AP         Stack         Imp. Out         DGM Out         DGM In OF         AH         Vacuum Check         Velocity Nolume         Valume         Vacuum Check         Velocity Nolume         Vacuum Check         Valume         Valume

				ledwei	lemperatures				Leak		
	DGM	ΔP	Stack	Imp. Out	DGM Out	DGM In	PΗ	Vacuum	Check	Velocity	Isokinetic
Time	Reading	"H20	ŭ.	<u> 5</u> 0	0F	°F	"H20	"Hg	Volume	m/s	%
25	131.51	0.74	284	53	- 65	92	2.05	0.6		18.05	100.0
30	135.40	0.7	282	54	9	77	7	9.0		17.53	98.6
35	139.21	0.7	281	52	99	78	7	9.0		17.52	99.1
40	142.97	0.64	280	49	99	79	1.9	9.0		16.74	97.5
45	146.63	0.64	280	48	99	79	1.9	9.0		16.74	99.1
20	150.32	9:0	281	48	99	79	1.7	8.5		16.22	6.66
55	153.85	0.59	282	47	99	79	1.7	8.5		16.10	98.8
09	157.35	0.61	283	46	99	79	1.8	8.5		16.38	98.8
9	160.94	0.61	283	47	29	79	1.8	8.5		16.38	8.66
70	164.56	0.61	283	47	29	79	1.8	8.5		16.38	100.5
75	168.14	0.61	282	46	29	79	1.8	8.5		16.37	99.4
80	171.71	0.61	279	46	29	79	1.8	8.5		16.33	0.66
85	175.28	0.64	279	45	29	79	1.9	9.0		16.73	98.8
06	178.95	9.0	277	45	29	79	1.8	8.5		16,18	99.2
95	182.59	9.0	277	46	- 29	79	1.8	8.5		16.18	101.5
100	186.14	9.0	271	46	29	79	1.8	8.5		16.11	0.66
105	189.74	0.56	272	46	29	80	1.6	8.5		15.57	100.0
110	193.18	0.56	273	46	29	80	1.6	8.5		15.59	98.8
115	196.61	0.55	273	46	29	80	1.6	8.5		15.45	98.6
120	200.04										5.66

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario

Test Location:

APC Outlet No. 2 1 - SVOC

Test No.: Date:

November 11, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.590 m <sup>3</sup>
AVGERGE ISOKINETICITY	97.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.51 m/s
BAROMETRIC PRESSURE (Station)	99.932 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.562 Kpa
OXYGEN CONCENTRATION	8.42 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	13.2 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	25.87 m³/s
DRY REF GAS FLOWRATE	15.13 Rm³/s
DRY ADJ GAS FLOWRATE	19.07 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	17.96 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.590	m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000	mg/m³
PARTICULATE CONC DRY REF		0.000	mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000	mg/m³
PARTICULATE CONC WET REF		0.000	mg/m³
PARTICULATE EMISSION RATE		0.000000	g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Plant:

November 11, 2020 Test No.: Date:

Covanta DYEC 1 - SVOC

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2

JB RW Operator:

Combustion Gases 10.78 8.42 Measured H20 15.8 % 02% CO2% COppm 0.36 ft<sup>3</sup> 5 minutes 2 17 617.7 Number of Ports Number of points / Port Leak Check Volume Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 0.851 0.999 29.51 "Hg -9.520 "H<sub>2</sub>O 0.2513 inches 4.500 ft 0.000 ft 0.000 ft Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Length Nozzle Width

Covanta DYEC Test No.:

November 11, 2020 1 - SVOC Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2 JB RW Operator:

Combustion Gases 10.78 8.42 Measured H20 15.8 % CO2% COppm 05% 0.36 ft<sup>2</sup> 5 minutes 2 12 617.7 13.4 Number of Ports Number of points / Port Leak Check Volume Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 0.851 0.999 29.51 "Hg -9.520 "H<sub>2</sub>O 0.2513 inches 4.500 ft 0.000 ft 0.000 ft Barometric Pressure Static Pressure Stack Diameter Pitot Factor DGMCF Nozzle Length Width

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	<b>Temperatures</b>	Imp. Out   DGM Out   DGM In   AH   Vacuum   Check   Velocity   Isokinetic
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	Paradentarium proposory de indocesso de servicio de la constanció de la co				Tempe	Temperatures				Leak		
		DGM	ΔР	Stack	Imp. Out	DGM Out	DGM In	PΗ	Vacuum	Check	Velocity	Isokinetic
Point	Time	Reading	"H20	٥٤	<b>5</b>	u. o	ë.	"H20	500 IL =	Volume	m/s	%
	25	217.31	0.79	287	49	76	75	1.9	4.0		18.85	97.8
4	30	220.95	0.76	287	49	75	74	1.8	4.0		18.48	97.0
	35	224.56	0.75	288	48	75	74	1.8	4.0		18.37	58.3
<u>د</u> 2	40	228.08	0.73	288	48	76	75	1.75	4.0		18.13	96.5
	45	231.61	0.73	288	47	75	74	1.75	4.0		18.13	97.9
9	50	235.16	0.68	289	48	75	75	1.6	4.5		17.51	98.6
	55	238.62	99.0	288	48	75	74	1.6	4.5		17.24	93.6
7	09	242.10	7.0	289	49	76	75	1.6	4.5		17.76	101.7
	92	245.57	7.0	289	48	76	75	1.6	4.5		17.76	98.3
<b>∞</b>	70	249.05	0.72	289	44	76	75	1.65	4.5		18.01	98.6
	75	252.51	0.72	289	44	77	75	1.65	4.5		18.01	96.7
6	80	255.95	0.71	289	44	77	75	1.65	4.5		17.89	96.0
	82	259.43	0.72	288	42	77	75	1.65	4.5		18.00	97.8
10	06	262.89	7.0	288	43	77	75	1.6	4.5		17.75	96.5
	95	266.29	0.71	287	43	77	75	1.6	4.5		17.87	96.2
11	100	269.70	0.55	286	44	77	75	133	4.0		15.71	95.7
	105	272.75	0.54	287	44	77	75	1.3	4.0		15.58	97.1
12	110	275.78	0.54	286	44	77	75	1.3	4.0		15.57	97.4
	115	278.80	0.53	286	44	77	75	1.2	4.0		15.43	97.1
	120	281.79										97.0

# **ORTECH Environmental**

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario APC Outlet No. 2

Test Location: Test No.:

2 - SVOC

Date:

November 11, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.662 m <sup>3</sup>
AVGERGE ISOKINETICITY	97.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	17.95 m/s
BAROMETRIC PRESSURE (Station)	100.034 Kpa
STATIC PRESSURE	-2.370 Kpa
ABSOLUTE GAS PRESSURE	97.663 Kpa
OXYGEN CONCENTRATION	8.33 %
CARBON DIOXIDE CONCENTRATION	10.93 %
CARBON MONOXIDE CONCENTRATION	15.5 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE			26.52 m³/s
DRY REF GAS FLOWRATE			15.35 Rm <sup>3</sup> /s
DRY ADJ GAS FLOWRATE			19.49 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE			18.37 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.662 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

# ORTECH Environmental

Covanta DYEC 2 - SVOC Plant:

November 11, 2020 Test No.: Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2

JB RW Operator:

Combustion Gases 8.33 10.93 15.5 Measured H20 16.4 % 02% CO2% COppm 5 minutes 0.38 ft<sup>2</sup> 654.6 17.1 Leak Check Volume Number of Ports Reading Interval CWTR (g) WCBDA (g) Probe (mg) Filter (mg) 0.851 0.999 29.54 "Hg -9.520 "H<sub>2</sub>O 0.2513 inches 0.000 ft 0.000 ft 4.500 ft Barometric Pressure Stack Diameter Static Pressure Pitot Factor DGMCF Length Width Nozzle

2 12 Number of points / Port

	Isokinetic	%		97.9	97.1	96.0	97.3	100.9	97.8	98.2	98.2	9.66	99.3	102.4	100.5	96.3	96.3	96.1	93.9	102.3	98.6	99.2	99.3	98.5	97.0	8.96	97.4		92.4	92.4	92.8	95.0
	Velocity	s/m	18.97	18.95	19.55	19.43	18.71	18.83	18.24	18.24	17.75	17.75	17.11	17.13	17.77	17.76	18.01	17.75	17.76	17.75	17.10	17.10	16.44	16.44	15.01	15.00		19.57	19.55	20.00	20.00	19.55
Leak		Volume																									0.38					
	Vacuum	"Hg	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0		5.0	5,0	5.0	5.0	5.0
	H	"H20	1.9	1.9	7	7	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.5	1.5	1:4	1.4	끆	T		1.8	1.8	2	7	1.9
	DGM in	9 <sub>6</sub>	78	76	75	75	74	74	74	74	74	74	74	75	75	75	75	75	75	92	75	92	76	92	76	76		78	77	76	9/	77
atures	DGM Out	ц.	79	76	92	92	74	74	75	75	75	75	9/	77	77	77	77	77	77	78	77	78	78	78	78	78		79	79	78	78	78
Temperatures	Imp. Out	님	48	50	50	50	52	52	45	51	52	52	51	51	53	53	52	53	53	54	54	54	55	56	55	55		61	56	54	54	56
	Stack	다 <sub>°</sub>	287	285	286	286	285	285	286	286	287	287	288	289	289	288	288	287	288	287	287	287	288	288	288	287		288	286	286	286	286
	ΔР	"H2O	8.0	8.0	0.85	0.84	0.78	0.79	0.74	0.74	0.7	0.7	0.65	0.65	0.7	0.7	0.72	0.7	0.7	0.7	0.65	0.65	9.0	9:0	0.5	0.5		0.85	0.85	0.89	0.89	0.85
	DGM	Reading	282.43	286.12	289.77	293.48	297.22	300.95	304.59	308.13	311.67	315.16	318.64	322.10	325.50	328.88	332.26	335.68	338.98	342.57	346.04	349.40	352.77	355.98	359.14	362.02	364.92	365.30	368.89	372.48	376.28	380.05
		Time	0	Ŋ	10	15	20	25	30	35	40	45	50	55	09	65	70	75	80	85	06	95	100	105	110	115	120	0	2	10	15	20
-		Point	.÷.		7		æ		4				9		7		&		6		10		11		12					2		m

Covanta DYEC 2 - SVOC Test No.: Plant:

November 11, 2020 Date:

Plant Location: Courtice, Ontario APC Outlet No. 2 JB RW Test Location: Operator:

Combustion Gases 8.33 10.93 15.5 Measured H20 16.4 % 02% C02% C0ppm 0.38 ft° 5 minutes 2 654.6 17.1 Leak Check Volume Reading Interval Number of Ports Filter (mg) Probe (mg) CWTR (g) WCBDA (g) 0.851 0.999 29.54 "Hg -9.520 "H<sub>2</sub>O 0.2513 inches 4.500 ft 0.000 ft 0.000 ft **Barometric Pressure** Stack Diameter Static Pressure Pitot Factor DGMCF Nozzle Length Width

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	Isokinetic	%	96.9	96.7	96.3	97.7	98.5	99.3	97.4	94.9	94.1	97.1	96.6	96.6	96.5	96.7	99.1	686	96.3	93.1	0.86	98.4
	Velocity	s/m	19.56	19.57	18.99	18.38	17.76	17.51	18.01	18.38	18.38	18.37	18.37	18.97	18.99	17.76	17.76	15.74	15.74	15.01	15.01	
Leak	Check	Volume																				
	Vacuum	# H	5.5	5.5	5.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.0	5.0	5.0	5.0	
-	ЧΨ	"H20	1.9	1.9	1.8	1.7	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.6	1.6	ټ	H	1:1	1:	
	DGM In	٥F	77	77	76	77	77	77	77	77	77	77	77	78	77	77	77	77	77	77	77	
Temperatures	DGM Out	<b>3</b> 0	78	77	77	78	79	78	78	79	79	78	78	79	79	78	78	78	78	78	78	
Tempe	Imp. Out	<b>5</b> 0	57	57	58	59	09	09	57	54	53	52	52	52	51	51	51	51	51	51	52	
	Stack	<b>4</b> ₀	287	288	288	288	288	288	288	288	288	287	287	287	288	288	288	288	288	288	288	
	ФΣ	"H20	0.85	0.85	0.8	0.75	7.0	0.68	0.72	0.75	0.75	0.75	0.75	0.8	9.0	0.7	0.7	0.55	0.55	0.5	0.5	
	DGM	Reading	383.81	387.56	391.29	394.96	398.55	402.05	405.43	408.82	412.25	415.79	419,31	422.83	426.47	430.11	433.60	437.08	440.09	443.00	445.92	448.85
elemente de la companya de la companya de la companya de la companya de la companya de la companya de la compa		Time	25	30	35	40	45		55	09	92	70	7.5	80	85	06	95	100	105	110	115	120
		Point	-	4		2				7		8		6		10		11		12		

### **ORTECH Environmental**

Plant:

Covanta DYEC

Plant Location:

Courtice, Ontario APC Outlet No. 2

Test Location: Test No.:

3 - SVOC

Date:

November 12, 2020

### STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.851
DGM CORRECTION FACTOR	0.999
NOZZLE DIAMETER	6.38 mm
DRY REF GAS VOLUME SAMPLED	4.448 m <sup>3</sup>
AVGERGE ISOKINETICITY	96.7 %
STACK DIAMETER	1.37 m
LENGTH ASSESSMENT OF THE PROPERTY OF THE PROPE	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m <sup>3</sup>

### STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.5 °C
AVERAGE GAS MOISTURE BY VOLUME	14.4 %
AVERAGE GAS VELOCITY	16.63 m/s
BAROMETRIC PRESSURE (Station)	101.253 Kpa
STATIC PRESSURE	-2.395 Kpa
ABSOLUTE GAS PRESSURE	98.858 Kpa
OXYGEN CONCENTRATION	8.4 %
CARBON DIOXIDE CONCENTRATION	11.05 %
CARBON MONOXIDE CONCENTRATION	17.0 ppm

### **FLOWRATE**

ACTUAL GAS FLOWRATE	24.57 m <sup>3</sup> /s
DRY REF GAS FLOWRATE	14.74 Rm³/s
DRY ADJ GAS FLOWRATE	18.62 Rm <sup>3</sup> /s
WET REF GAS FLOWRATE	17.24 Rm <sup>3</sup> /s

### PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.448 m <sup>3</sup>
PARTICULATE CONC ACTUAL		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY REF		0.000 mg/m <sup>3</sup>
PARTICULATE CONC DRY ADJ		0.000 mg/m <sup>3</sup>
PARTICULATE CONC WET REF		0.000 mg/m <sup>3</sup>
PARTICULATE EMISSION RATE		0.000000 g/s

Note: \* Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

# ORTECH Environmental

Plant: Test No.: Date:

Covanta DYEC
3 - SVOC
November 12, 2020

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2 Operator: RW

Combustion Gases	02% 8.4	CO2% 11.05		Measured H20	14.4 %		
				0.37 ft°	5 minutes	2	12
0	0	537.7					
Filter (mg)	Probe (mg)	CWTR (g) WCBDA (g)	100	Leak Check Volume	Reading Interval	Number of Ports	Number of points / Port
		НВ Н,О	nches				
0.851	0.999	29.9 "Hg -9.620 "H <sub>2</sub> O	0.2513	4.500 化	0.000 ft	0.000 化	

		ISOKINETIC %		96.2	92.6	95.6	96.2	95.7	96.2	97.0	97.0	98.3	99.4	98.7	96.8	94.4	93.3	0.86	0.66	98.5	98.6	98.4	98.3	95.1	95.3	94.1	95.8		96.3	96.2	95.7	96.2
		velocity m/s	18.19	18.19	18.77	18.66	18.18	18.18	17.82	17.82	17.59	17.08	16.42	16.54	16.80	16.93	17.57	17.45	17.27	17.27	17.29	17.41	15.56	15.41	15.55	15.40		17.32	17.44	17.45	17.45	16.92
1001	reak	Volume																									0.37					
	1/7 co	Vacuum "Hg	3.5	3.5	4,0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.5	4.5	4.5
	-	"H20	1.7	1.7	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.4	1.4	1.4	1.4	1.7	1.7	1.6	1,6	1.6	1.6	1.2	1.2	1.2	1.2		1.6	1.6	1.6	1.6	1.5
	DC34 15	ii ii ji	62	61	09	09	09	09	61	61	61	61	61	61	61	62	62	62	62	63	63	63	63	64	63	64		65	65	65	65	65
36(1)40	DCM Out	20 P	63	61	61	61	61	61	62	62	63	63	63	64	64	64	64	64	65	99	99	65	99	99	99	99		29	99	99	99	99
Tamparakuras	in Carrida	5 5 6	62	50	48	46	44	44	43	43	43	43	43	43	43	43	43	43	43	44	44	44	43	44	44	44		55	44	44	45	44
	Crack	Jack Fo	288	288	287	287	287	287	288	288	289	289	289	288	288	288	288	288	284	284	285	285	286	286	285	285		288	287	288	288	287
	o <	"H20	0.75	0.75	0.8	0.79	0.75	0.75	0.72	0.72	0.7	99.0	0.61	0.62	0.64	0.65	7.0	69.0	89.0	0.68	0.68	69'0	0.55	0.54	0.55	0.54		0.68	69.0	69.0	0.69	0.65
	Den	Reading	49.25	52.70	56.12	59.65	63.18	09'99	70.04	73.44	76.84	80.24	83.58	86.77	89.93	93.06	96.18	99.58	102.99	106.37	109.76	113.14	116.54	119.48	122.40	125.31	128.25	128.62	131.93	135.26	138.57	141.90
		Time	0	2	10	15	20	25	30	35	40	45	50	55	09	92	70	75	80	85	06	95	100	105	110	115	120	0	5	10	15	20
	:	Point	٦		2		m		4		Ŋ		9		7		8		6		10		11		12					2		m

Covanta DYEC 3 - SVOC November 12, 2020 Plant: Test No.:

Date:

Plant Location: Courtice, Ontario Test Location: APC Outlet No. 2 Operator: RW

etric Pressure ressure iameter					Section of the sectio	
tric Pressure 29.9 "Hg CWTR(g) 537.7  ressure 29.9 "Hg CWTR(g) 537.7  9.620 "H <sub>2</sub> O WCBDA(g) 14.1  0.2513 inches  4.500 ft Leak Check Volume 5.minutes  0.000 ft Reading Interval 5.minutes  0.000 ft Number of Ports  Number of points / Port 12	Pitot Factor	0.851	Filter (mg)		Combustion Gases	
ressure 29.9 "Hg CWTR (g) 537.7  ressure -9.620 "H <sub>2</sub> O WCBDA (g) 14.1  0.2513 inches iameter 4.500 ft Leak Check Volume 5 minutes  0.000 ft Number of Ports 2  Number of points / Port 12	GMCF	0.999	Probe (mg)		02% 8.4	
ressure         -9.620 "H <sub>2</sub> O         WCBDA (g)         14.1           0.2513 inches         0.2513 inches         0.37 ft²           iameter         4.500 ft         Reading Interval         5 minutes           0.000 ft         Number of Ports         2           Number of points / Port         12	Barometric Pressure	29.9 "Hg	CWTR (g)	537.7	CO2% 11.05	
0.2513 inches lameter 4.500 ft Leak Check Volume 0.37 ft²  0.000 ft Reading Interval 5 minutes 2  0.000 ft Number of Ports 2  Number of points / Port 12	tatic Pressure	-9.620 "H <sub>2</sub> O	WCBDA (g)	14.1 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	COppm 17.0	
iameter 4.500 ft Leak Check Volume 0.37 ft³  0.000 ft Reading Interval 5 minutes  0.000 ft Number of Ports 2  Number of points / Port 12	Nozzle	0.2513 inches				
0.000 ft Reading Interval 5 minutes 0.000 ft Number of Ports 2 Number of points / Port 12	Stack Diameter	4.500 ft	Leak Check Volume	0.37 ft	Measured H20	
**************************************	Length	0.000 ft	Reading Interval	5 minutes	14.4 %	
Number of points / Port and 12 miles / Port an	Width	0.000 ft	Number of Ports			
			Number of points / Port			

	Isokinetic	%	95.5	7.76	97.3	97.5	99.2	97.4	95.6	94.3	92.7	95.0	98.1	98.6	97.5	95.1	97.5	95.6	97.3	96.7	101.3	99.6
	Velocity	, s/m	17.05	16.66	16.53	16.25	16.26	15.57	15.70	15.97	15.99	15.57	15.42	15.56	15.84	15.56	15.69	15.55	15.55	13.75	13.76	
Leak	Check	Volume																				
	Vacuum	aH.	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
	РΥ	"H20	1.5	1.5	1.5	1.4	1.4	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	, <del>, , ,</del>	ंच्य	
	DGM In	J <sub>o</sub>	65	65	65	65	65	65	65	65	65	99	99	99	99	99	99	29	29	29	29	
tures	DGM Out	°F		99	99	29	29	29	29	29	29	29	89	69	69	69	69	69	69	69	69	
Temperatures	Imp. Out	<b>5</b> 0	45	46	45	45	46	46	47	47	48	48	48	48	49	49	50	50	50	50	51	
	Stack	ч.	287	287	287	286	287	287	286	286	287	287	287	286	286	286	285	285	285	285	287	
	ΔP	"H20	99'0	0.63	0.62	9.0	9.0	0.55	0.56	0.58	0.58	0.55	0.54	0.55	0.57	0.55	0.56	0.55	0.55	0.43	0.43	
	DGM	Reading	145.11	148.32	151,54	154.74	157.95	161.10	164.06	167.01	169.96	172.98	176.02	179.05	182.08	185.09	188.12	191.12	194.15	197.16	199.95	202.69
		Time	25	30	35	40	45	50	55	09	92	70	75	80	85	06	95	100	105	110	115	120
		Point		4		Ŋ		9		7		<b>∞</b>		ი ნ		10		ਜ ਜ		12		



### **APPENDIX 26**

ORTECH Total Hydrocarbon CEM Data (26 pages)

# Covanta - Durham York Energy Centre Total Hydrocarbon Sampling at the Boiler No. 1 Quench inlet

Test No. 2

Test No. 3

Test No. 1

	November 9, 2020			November :		November 9, 2020				
	THC - 1 min	THC - 10 min Avg			THC - 10 min Avg			THC - 10 min Avg		
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry		
10:10	0.9		11:17	0.0		12:23	0.8			
10:11	0.8		11:18	0.0		12:24	0.7			
10:12	8.0		11:19	0.0		12:25	0.7			
10:13	8.0		11:20	0.0		12:26	0.6			
10:14	8.0		11:21	0.0		12:27	0.4			
10:15	8.0		11:22	0.0		12:28	0.4			
10:16	0.4		11:23	0.0		12:29	0.3			
10:17	4.6		11:24	0.0		12:30	0.5			
10:18	3.3		11:25	0.0		12:31	0.5			
10:19	2.8	1.6	11:26	0.0	0.0	12:32	0.4	0.5		
10:20 10:21	2.4 2.4	1.8 1.9	11:27 11:28	0.0 0.0	0.0 0.0	12:33	0.2	0.5		
10:22	2.0	2.0	11:29	0.0	0.0	12:34 12:35	0.2 0.2	0.4 0.4		
10:23	1.4	2.1	11:30	0.0	0.0	12:36	0.2	0.4		
10:24	1.1	2.1	11:31	0.0	0.0	12:37	0.2	0.3		
10:25	1.1	2.2	11:32	0.0	0.0	12:38	0.2	0.3		
10:26	1.1	2.2	11:33	0.0	0.0	12:39	0.3	0.3		
10:27	1.1	1.9	11:34	0.0	0.0	12:40	0.3	0.3		
10:28	1.0	1.6	11:35	0.0	0.0	12:41	0.2	0.3		
10:29	1.0	1.5	11:36	0.0	0.0	12:42	0.2	0.2		
10:30	0.9	1.3	11:37	0.0	0.0	12:43	0.2	0.2		
10:31	0.9	1.2	11:38	0.0	0.0	12:44	0.3	0.2		
10:32	8.0	1.0	11:39	0.0	0.0	12:45	0.3	0.2		
10:33	0.7	1.0	11:40	0.0	0.0	12:46	0.3	0.3		
10:34	0.8	0.9	11:41	0.0	0.0	12:47	0.2	0.3		
10:35	0.8	0.9	11:42	0.0	0.0	12:48	0.3	0.3		
10:36	0.8	0.9	11:43	0.2	0.0	12:49	0.3	0.3		
10:37	0.8	0.8	11:44	0.2	0.0	12:50	0.2	0.2		
10:38 10:39	0.7 0.7	0.8 0.8	11:45	0.3	0.1	12:51	0.2	0.2		
10:40	0.7	0.8	11:46 11:47	0.2 0.2	0.1 0.1	12:52	0.2 0.2	0.2 0.2		
10:41	0.7	0.7	11:48	0.3	0.1	12:53 12:54	0.2	0.2		
10:42	0.6	0.7	11:49	0.3	0.2	12:55	0.2	0.2		
10:43	0.6	0.7	11:50	0.3	0.2	12:56	0.2	0.2		
10:44	0.5	0.7	11:51	0.2	0,2	12:57	0.2	0.2		
10:45	0.5	0.7	11:52	0.2	0.2	12:58	0.1	0.2		
10:46	0.4	0.6	11:53	0.2	0.2	12:59	0.1	0.2		
10:47	0.5	0.6	11:54	1.3	0.3	13:00	2.5	0.4		
10:48	0.4	0.6	11:55	0.7	0.4	13:01	0.7	0.4		
10:49	0.5	0.5	11:56	0.4	0.4	13:02	0.5	0.5		
10:50	0.4	0.5	11:57	0.4	0.4	13:03	0.6	0.5		
10:51	0.4	0.5	11:58	0.3	0.4	13:04	0.6	0.5		
10:52	0.4	0.5	11:59	0.3	0.4	13:05	0.3	0.6		
10:53 10:54	0.5 1.6	0.4 0.6	12:00 12:01	0.2 0.2	0.4 0.4	13:06 13:07	0.4 0.4	0.6 0.6		
10:55	1.1	0.6	12:01	0.2	0.4 0.4	13:07 13:08	0.4 0.4	0.6 0.6		
10:56	1.0	0.7	12:02	0.2	0.4	13:09	0.4	0.7		
10:57	0.9	0.7	12:04	0.2	0.3	13:10	0.4	0.5		
10:58	0.8	0.7	12:05	0.3	0.3	13:11	0.3	0.4		
10:59	0.7	0.8	12:06	0.3	0.3	13:12	0.3	0.4		
11:00	0.6	8.0	12:07	0.3	0.2	13:13	0.2	0.4		
11:01	0.5	0.8	12:08	0.3	0.2	13:14	0.2	0.3		
11:02	0.5	0.8	12:09	0.3	0.2	13:15	0.2	0.3		
11:03	0.4	8.0	12:10	0.3	0.2	13:16	0.2	0.3		
11:04	0.4	0.7	12:11	0.3	0.3	13:17	0.1	0.3		
11:05	0.4	0.6	12:12	0.3	0.3	13:18	0.1	0.3		
11:06	0.4	0.6	12:13	0.3	0.3	13:19	0.1	0.2		
11:07 11:08	0,5 0.4	0.5 0.5	12:14	0.3	0.3	13:20	0.1	0.2		
11:08	0.4	0.4	12:15 12:16	0.3 0.3	0.3 0.3	13:21 13:22	0.1 0.2	0.2		
11:10	0.3	0.4	12:16	0.3	0.3	13:22 13:23	0.2 0.1	0.2 0.1		
								I		
Min	0.3	0.4	Min	0.0	0.0	Min	0.1	0.1		
Мах	4.6	2.2	Мах	1.3	0.4	Max	2.5	0.7		
Avg	0.9	1.0	Avg	0.2	0.2	Avg	0.3	0.3		

### Covanta - Durham York Energy Centre Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

	November	9, 2020		November	9, 2020		November	9, 2020
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
10:10	4.0		11:17	0.0		12:23	0.1	
10:11	3.5		11:18	0.1		12:24	0.0	
10:12	4.0		11:19	0.0		12:25	0.0	
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			4			1.00		
10:13	3.9		11:20	0.0		12:26	0.0	
10:14	3.5	analysis and a second	11:21	0.0		12:27	0.0	
10:15	3.2		11:22	0.1		12:28	0.0	
10:16	2.9		11:23	0,3		12:29	0.0	
10:17	2.7		11:24	0.4		12:30	0.0	
10:18	2.6		11:25	0.4		12:31	0.0	
10:19	2.1	3.2	11:26	0.3	0.2	12:32	0.0	0.0
10:20	2.0	3.0	11:27	0.3	0.2	12:33	0.0	0.0
10:21	1.8	2.9	11:28	0.3	0.2	12:34	0.2	0.0
10:22	1.6	2.6	11:29	0.3	0.2	12:35	2.0	0.2
10:23	1.6	2.4	11:30	0.4	0.3	12:36	0.5	0.3
10:24	1.3	2.2	11:31	0.4	0.3	12:37	0.0	0.3
10:25	1.2	2.0	11:32	1.1	0.4	1 1/4/2014	0.2	0.3
			4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4		8	12:38		8
10:26	1.1	1.8	11:33	1.5	0.5	12:39	0.7	0.4
10:27	1.1	1.6	11:34	1.4	0.6	12:40	0.5	0.4
10:28	1.1	1.5	11:35	1.9	0.8	12:41	0.6	0.5
10:29	1.0	1.4	11:36	3.0	1.0	12:42	1.0	0.6
10:30	0.8	1.3	11:37	1.3	1.1	12:43	0.4	0.6
10:31	0.8	1.2	11:38	1.9	1.3	12:44	1.4	0.7
10:32	0.7	1.1	11:39	1.5	1.4	12:45	0.6	0.6
10:33	0.7	1.0	11:40	1.6	1.5	12:46	0.3	0.6
10:34	0.6	0.9	11:41	2.7	1.8	12:47	0.4	0.6
10:35	0.7	0.9	11:42	1.1	1.8	12:48	0.1	0.6
10:36	0.7	0.8	11:43	1.6	1.8	12:49	0.7	0.6
10:37	0.8	0.8		1.4		1. 3. 4. 5. 49 (4.54)		\$
	to the control of the control of	<b>■</b>	11:44		1.8	12:50	0.4	0.6
10:38	4.2	1.1	11:45	1.8	1.8	12:51	1.0	0.6
10:39	3.2	1.3	11:46	1.5	1.6	12:52	0.4	0.6
10:40	1.8	1.4	11:47	1.6	1.7	12:53	0.2	0.5
10:41	2.9	1.6	11:48	1.7	1.6	12:54	0.1	0.4
10:42	2.9	1.8	11:49	1.9	1.7	12:55	0.1	0.4
10:43	2.0	2.0	11:50	1.0	1.6	12:56	1.5	0.5
10:44	1.7	2.1	11:51	1.4	1.5	12:57	0.5	0.5
10:45	0.9	2.1	11:52	1.5	1.5	12:58	0.1	0.5
10:46	0.5	2.1	11:53	1.4	1.5	12:59	0.6	0.5
10:47	0.1	2.0	11:54	1.3	1.5	13:00	0.6	0.5
10:48	0.0	1.6	11:55	1.0	1.4	13:01	0.4	0.4
10:49	0.9	1.4	11:56	0.8	1.4	13:02	0.4	0.4
10:50	1.0	1.3	11:57	1.2	1.3	13:03	0.9	0.5
10:51	5.1	1.5		1.4	1.3	1.00		· 🖁
			11:58			13:04	1.3	0.6
10:52	1.8	1.4	11:59	1.0	1.2	13:05	0.7	0.7
10:53	1.3	1.3	12:00	0.7	1.2	13:06	0.4	0.6
10:54	0.4	1.2	12:01	1.0	1.1	13:07	2.3	0.8
10:55	0.2	1.1	12:02	1.5	1.1	13:08	1.5	0.9
10:56	0.9	1.2	12:03	1.1	1.1	13:09	1.4	1.0
10:57	0.4	1.2	12:04	1.9	1.2	13:10	1.4	1.1
10:58	0.9	1.3	12:05	1.8	1.2	13:11	0.9	1.1
10:59	0.3	1.2	12:06	1.2	1.3	13:12	0.7	1.2
11:00	1.8	1.3	12:07	0.5	1.2	13:13	0.8	1.2
11:01	1.1	0.9	12:08	0,6	1.1	13:14	1.7	1.2
11:02	0.1	0.8	12:09	1.0	1.1	13:15	0.4	1.2
11:03	0.0	0.6	12:10	0.8	1.1	13:16	0.3	1.2
11:04	0.6	0.6	12:11	0.5	1.1	13:17	1.2	1.0
11:05	0.6	0.7	12:12	0.0	0.9	13:18	0.3	0.9
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	0.5	0.7	100 100 100 100 100 100 100 100 100 100			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		8
11:06		8	12:13	0.0	0.8	13:19	0.9	0.9
11:07	2.6	0.9	12:14	0.0	0.6	13:20	1.2	0.8
11:08	0.7	0.8	12:15	0.0	0.5	13:21	0.3	0.8
11:09	0.9	0.9	12:16	0.3	0.4	13:22	0.3	0.7
11:10	1.4	8.0	12:17	0.5	0.4	13:23	0.6	0.7
		gammanan mananan mananan g			danmanerammaneramente			manan erretariori sentrativament en sentratori
Min	0.0	0.6	Min	0.0	0.2	Min	0.0	0.0
Max	5.1	3.2	Max	3.0	1.8	Max	2.3	1.2
Avg	1.6	1.4	Avg	1.0	1.1	Avg	0.6	0.6

# Covanta - Durham York Energy Centre Total Hydrocarbon Sampling at the Boiler No. 1 APC Outlet

Test No. 2

Test No. 3

Test No. 1

	November 9	2020		November 9			November	
					유민들은 아무리를 하는 것이 되었다.			医多次性结合性 化二氯苯基甲基苯基苯基
<u> </u>		THC - 10 min Avg			THC - 10 min Avg			THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
14:52	0.0		15:58	0.0		17:04	0.5	
14:53	0.0		15:59	0.0		17:05	0.4	
14:54	0.0		16:00	0.0		17:06	0.4	
14:55	0.0		16:01	0.0		17:07	0.4	
14:56	0.0		16:02	0.0		17:08	0.4	
14:57	0.0		16:03	0.0		17:09	0.4	
14:58	0.0		16:04	0.0		17:10	0.4	
14:59	0.0		16:05	0.0		17:11	0.4	
15:00	0.0		16:06	0.1		17:12	0.4	
15:01	0.0	0.0	16:07	0.2	0.0	17:13	0.3	0.4
15:02	0.0	0.0	16:08	0.2	0.0	17:14	0.8	0.4
15:03	0.0	0,0	16:09	0.2	0.1	17:15	5.6	1.0
15:04	0.0	0.0	16:10	0.2	0.1	17:16	1.1	1.0
15:05	0.0	0.0	16:11	1.3	0.2		0.8	1.1
15:06	1.3	0.1	8			17:17		4
			16:12	3.2	0.5	17:18	0.7	1.1
15:07	0.3	0.2	16:13	0.3	0.6	17:19	0.3	1.1
15:08	0.0	0.2	16:14	0.2	0.6	17:20	0.0	1.0
15:09	0.0	0.2	16:15	0.1	0.6	17:21	0.0	1.0
15:10	0.0	0.2	16:16	0.0	0.6	17:22	0.0	1.0
15:11	0.0	0.2	16:17	0.1	0.6	17:23	0.0	0.9
15:12	0.0	0.2	16:18	0.1	0.5	17:24	2.5	1.1
15:13	0.0	0.2	16:19	0.0	0.5	17:25	0.6	0.6
15:14	0.0	0.2	16:20	0.0	0.5	17:26	0.1	0.5
15:15	0.0	0.2	16:21	0.1	0.4	17:27	0.1	0.4
15:16	0.0	0.0	16:22	0.1	0.1	17:28	0.0	0.4
15:17	4.8	0.5	16:23	2.5	0.3	17:29	0.1	0.3
15:18	0.4	0.5	16:24	0.2	0.3	17:30	0.0	0.3
15:19	0.0	0.5	16:25	0.0	0.3	17:31	0.0	0.3
15:20	0.0	0.5	16:26	0.1	0.3	17:32	0.0	0.3
15:21	0.0	0.5	16:27	0.2	0.3	17:33	0.0	0.3
15:22	0.0	0.5	16:28	0.1	0.3	17:34	0.0	0.1
15:23	0.0	0.5	16:29	0.0	0.3	17:35	1.7	0.1
15:24	0.0	0.5	16:29	0.0	0.3		1.4	0.2
15:25	0.0					17:36		
	8	0.5	16:31	0.0	0.3	17:37	0.3	0.3
15:26	0.0	0.5	16:32	0.0	0.3	17:38	0.5	0.4
15:27	0.0	0.0	16:33	0.0	0.1	17:39	0.0	0.4
15:28	0.0	0.0	16:34	0.0	0.0	17:40	0.0	0.4
15:29	0.0	0.0	16:35	0.0	0.0	17:41	0.0	0.4
15:30	2.1	0.2	16:36	0.0	0.0	17:42	0.0	0.4
15:31	0.0	0.2	16:37	0.0	0.0	17:43	0.6	0.4
15:32	0.0	0.2	16:38	0.0	0.0	17:44	0.0	0.4
15:33	0.0	0.2	16:39	0.0	0.0	17:45	0.0	0.3
15:34	0.0	0.2	16:40	0.0	0.0	17:46	0.0	0.1
15:35	0.0	0.2	16:41	0.0	0.0	17:47	0.6	0.2
15:36	0.0	0.2	16:42	0.0	0.0	17:48	0.8	0.2
15:37	0.0	0.2	16:43	0.2	0.0	17:49	2.5	0.4
15:38	0.0	0.2	16:44	0.2	0.0	17:50	3.7	0.8
15:39	2.8	0.5	16:45	0.3	0.1	17:51	4.6	1.3
15:40	0.0	0.3	16:46	1.5	0.2	17:52	2.9	1.6
15:41	0.0	0.3	16:47	2.2	0.4	17:52	1.7	1.7
15:42	0.0	0.3	16:48	3.4	0.8	17:53	1.7	1.9
15:43	0.0	0.3	16:49	2.8	1.0	17:54	1.3	2.0
15:44	1.3	0.4	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.2			
			16:50	2.0		17:56	0.5	2.0
15:45	2.4	0.7	16:51	1.4	1.4	17:57	0.0	2.0
15:46	3.8	1.0	16:52	0.9	1.5	17:58	0.0	1.9
15:47	2.1	1.2	16:53	0.7	1.5	17:59	0.0	1.6
15:48	1.1	1.3	16:54	0.5	1.6	18:00	0.0	1.3
15:49	0.4	1.1	16:55	0.4	1.6	18:01	0.0	0.8
15:50	0.0	1.1	16:56	0.4	1.5	18:02	0.0	0.5
15:51	0.0	1.1	16:57	0.4	1.3	18:03	0.0	0.3
15:52	0.0	1.1	16:58	0.3	1.0	18:04	0.0	0.2
	MARKS MALANESS AND AND AND AND AND AND AND AND AND AND			CONTROL DO CONTROL CON	000000000000000000000000000000000000000			
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.1
Max	4.8	1.3	Мах	3.4	1.6	Max	5.6	2.0
Avg					0.5		0.7	

# Covanta - Durham York Energy Centre Total Hydrocarbon Sampling at the Boiler No. 2 APC Outlet

Test No. 2

Test No. 3

Test No. 1

	November	9, 2020		November	9, 2020		November	9, 2020
		THC - 10 min Avg			THC - 10 min Avg			THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
14:52	0.1		15:58	0.2		17:04	0.4	
14:53	0.1		15:59	0.2		17:05	0.3	
14:54	0.1		16:00	0.2		17:06	0.4	
14:55	0.1		16:01	0.1		17:07	0.2	
14:56	0.1		16:02	0.2		17:08	0.2	
14:57	0.1		16:03	0.2		17:09	0.3	
14:58	0.0	THE REAL PROPERTY AND ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY AND ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDRESS OF THE PERTY ADDR	16:04	0.3		17:10	0.3	
14:59	0.0		16:05	0.0		17:11	0.2	
15:00	0.0		16:06	0.0		17:12	0.2	
15:01	0.0	0.1	16:07	0.0	0.1	17:13	0.1	0.3
15:02	0.0	0.0	16:08	0.0	0.1	17:14	0.1	0.2
15:03	0.0	0.0	16:09	0.0	0.1	17:15	0.2	0.2
15:04	0.0	0.0	16:10	0.0	0.1	17:16	0.3	0.2
15:05	0.0	0.0	16:11	0.0	0.1	17:17	0.2	0.2
15:06	0.0	0.0	16:12	0.0	0.0	17:18	0.2	0.2
15:07	0.0	0.0	16:13	0,0	0.0	17:19	0.2	0.2
15:08	0.0	0.0	16:14	0.0	0.0	17:20	0.2	0.2
15:09	0.0	0.0	16:15	0.0	0.0	17:21	0.2	0.2
15:10	0.0	0.0	16:16	0.0	0.0	17:22	0.2	0.2
15:11 15:12	0.0 0.0	0.0 0.0	16:17	0.0	0.0	17:23	0.2	0.2
15:12 15:13	0.0	0.0	16:18 16:19	0.0 0.0	0.0	17:24 17:25	0.2 0.1	0.2 0.2
15:14	0.0	0.0	16:19	0.0	0.0	17:25	0.1	0.2
15:15	0.0	0.0	16:21	0.0	0.0	17:26	0.0	0.2
15:16	0.0	0.0	16:22	0.0	0.0	17:28	0.0	0.1
15:17	0.0	0.0	16:23	0.0	0.0	17:29	0.1	0.1
15:18	0.0	0.0	16:24	0.0	0.0	17:30	0.0	0.1
15:19	0.0	0.0	16:25	0.0	0.0	17:31	0.0	0.1
15:20	0,0	0.0	16:26	0.0	0.0	17:32	0.0	0.1
15:21	0.0	0.0	16:27	0.0	0.0	17:33	0.0	0.0
15:22	0.0	0.0	16:28	0.0	0.0	17:34	0.0	0.0
15:23	0.0	0.0	16:29	0.0	0.0	17:35	0.0	0.0
15:24	0.1	0.0	16:30	0.0	0.0	17:36	0.0	0.0
15:25	0.2	0.0	16:31	0.0	0.0	17:37	0.0	0.0
15:26	0.2	0.0	16:32	0.0	0.0	17:38	0.0	0.0
15:27	0.1	0.1	16:33	0.0	0.0	17:39	0.0	0.0
15:28	0.1	0.1	16:34	0.0	0.0	17:40	0.1	0.0
15:29	0.2	0.1	16:35	0.0	0.0	17:41	0.1	0.0
15:30	0.1	0.1	16:36	0.0	0.0	17:42	0.0	0.0
15:31	0.2	0.1	16:37	0.0	0.0	17:43	0.1	0.0
15:32	0.2	0.1	16:38	0.0	0.0	17:44	0.0	0.0
15:33	0.2	0.1	16:39	0.0	0.0	17:45	0.0	0.0
15:34	0.2	0.2	16:40	0.0	0.0	17:46	0.0	0.0
15:35 15:36	0.2 0.2	0.2 0.2	16:41 16:42	0.0 0.0	0.0	17:47	0.0	0.0
15:35	0.2 0.1	0.2 0.2	16:42 16:43	0.0 0.3	0.0	17:48	0.6 2.1	0.1 0.3
15:37	0.1	0.2 0.2	16:43	0.3 0.3	0.0	17:49 17:50	2.1 2.4	0.5
15:39	0.1	0.2	16:45	0.3	0.1	17:50	3.8	0.9
15:40	0.2	0.2	16:46	1.1	0.2	17:52	2.8	1.2
15:41	0.1	0.2	16:47	1.6	0.3	17:53	1.9	1.4
15:42	0.1	0.2	16:48	2.4	0.6	17:54	1.1	1.5
15:43	0.7	0.2	16:49	2.4	0.8	17:55	0.7	1.5
15:44	1.5	0.3	16:50	1.9	1.0	17:56	0.3	1.6
15:45	2.4	0.6	16:51	1.2	1.1	17:57	0.2	1.6
15:46	3.5	0.9	16:52	0.7	1.2	17:58	0.0	1.5
15:47	2.7	1.2	16:53	0.5	1.2	17:59	0.0	1.3
15:48	1.8	1.3	16:54	0.4	1.2	18:00	0.0	1.1
15:49	1.0	1.4	16:55	1.0	1.3	18:01	0.0	0.7
15:50	0.7	1.4	16:56	1.5	1.4	18:02	0.0	0.4
15:51	0.3	1.5	16:57	1.4	1.3	18:03	0.2	0.3
15:52	0.3	1.5	16:58	1.4	1.2	18:04	0.6	0.2
				***************************************			***************************************	•
Min	0.0	0.0	Min	0.0	0.0	Min	0.0	0.0
Max	3.5 0.3	1.5 0.2	Max	2.4	1.4	Max	3.8	1.6
Avg	U.3	U.Z.	Avg	0.3	0.3	Avg	0.4	0.4



### **APPENDIX 27**

Dispersion Modelling Results for the November 2020 Testing Program (19 pages)



### **TECHNICAL MEMORANDUM**

DATE February 28, 2022

Project No. 20137524

TO

Lydia Kwan

Covanta Durham York Renewable Energy LP

CC

Anthony Ciccone

FROM

Katherine Armstrong

EMAIL ksarmstrong@golder.com

# CALPUFF MODELLING FOR NOVEMBER 2020 COMPLIANCE SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

### 1.0 INTRODUCTION

Covanta Durham York Renewable Energy LP (Covanta) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, as amended. The ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment, Conservation and Parks (MECP) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

Condition 7, Testing, Monitoring and Auditing, of the current ECA requires annual source testing be completed at the DYEC for over 100 different contaminants. According to Schedule "E" Source Testing Procedures, of the ECA, a source testing report is required that includes the following:

- 8. (7) the results of dispersion calculations in accordance with the O.Reg. 419/05, indicating the maximum concentration of the test contaminants, at the point of impingement.
- 8. (8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the test contaminants.

This memorandum summarizes the modelling results for the November 2020 compliance source testing program using the same CALPUFF model and other input data sets used in the ESDM Report and Environmental Assessment, however, the results are compared to O.Reg. 419/05 Schedule 3 limits last updated April 2018. Please note that this memorandum has been updated from the version issued in January 2021, to update the emission rates for Aldehydes, based on a unit correction made by the laboratory.

### 2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in November 2020 for each of the two combustion train units and results were provided to Golder on a mass per time basis. Three tests were completed for each unit and averaged. The average emission rates for each unit were then summed together to provide the total stack emission rate of each contaminant to be modelled. Where source testing results indicated that the measured concentration is below the detection limit, the full detection limit was used as the emission rate for conservatism.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in an updated Site-wide Emission Inventory included in Appendix A. This emission inventory includes emissions from silo filling and diesel generator testing taken from the ESDM report, in addition to source test emissions from the main stack.

In response to clarifications provided by the MECP of December 9, 2016, two different emission rates were calculated for Total Particulate Matter:

- 1) Filterable fraction emission rate only; and
- 2) Total Particulate Matter (Sum of condensable and filterable fractions).

As source testing for the condensable fraction of total particulate matter is not required pursuant to Schedule "D": of the ECA, the condensable content of PM10 was used as the condensable portion in the Total Particulate Matter emission.

### 3.0 MODELLING

As part of the ECA application, the MECP approved the use of the CALPUFF modelling software and CALMET meteorological data to demonstrate compliance with Ontario Regulation 419/05 Schedule 3 standards at the DYEC. As a result, the same modelling approach has been taken for this update. The following models and preand post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 5.8, level 070623);
- CALPUFF dispersion model (v. 6.263, level 080827);
- CALPOST post processor (v. 6.221, Level 080724);
- BPIP building downwash pre-processor (v. 04274):
- POSTUTIL post processor (v.1.64, Level 101025).

These model versions are consistent with those used in the original ESDM report. Dispersion Modelling inputs are described in the following subsections.

# 3.1 Modelling Domain

The CALPUFF Model domain used in this assessment is the same as the domain used in the previous Environmental Assessment (EA) and ESDM Report. It extends 40 km by 30 Km and is centred approximately 5 km north of the Site. This domain covers more than the air quality study area but will ensure that plumes are tracked beyond the furthest receptor locations to ensure the worst-case ground level concentrations are considered at all receptors.

# 3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment is the same as the meteorology and terrain data used in the EA and ESDM Report.

# 3.3 Receptors

The receptors used in this assessment are the same as the receptors used in the ESDM Report. They include gridded ground level receptors to meet the requirements of O.Reg. 419/05 in addition to 400 discrete receptors to represent locations of interest. They include hospitals, nursing homes, schools, daycares, Senior citizen centres, the nearest residential receptors, specific watersheds and water bodies and parks.

# 3.4 Building Downwash

The buildings used in this assessment to represent building downwash are the same as the buildings used in the ESDM Report. Building wake effects were considered in this assessment using the U.S. EPA's Building Profile Input Program (BPIP-ISC). The inputs into this pre-processor include the coordinates and heights of the buildings and stacks. The output data from BPIP is used in the building wake effect calculations. No changes were made to the BPIP input or output file for this assessment.

# 3.5 Deposition

CALPUFF has the capability to account for wet and dry deposition of substances that would reduce ground level concentrations at POIs. However, the deposition algorithm has not been implemented for conservatism and to maintain consistency with the ESDM report and the previous EA for maximum POI predictions.

# 3.6 Thermal Internal Boundary Layer

CALPUFF contains an option to account for sub-grid coastal influences on plume dispersion such as the development of a thermal internal boundary layer (TIBL). Given the proximity of the proposed Facility to Lake Ontario (approximately 500m) and the grid size (250m), variations in coastline location within the grid cells near the proposed facility were accounted for in the dispersion modelling. To achieve this, a digitized sub-grid coastline, extending to the boundaries of the air quality study area was included as an additional input. This is consistent with the approach used in the ESDM report.

# 3.7 Averaging Times and Conversions

CALPUFF can predict 1-hour average values. Many of the relevant Schedule 3 standards are based on a 24-hour averaging time, which is also provided by CALPUFF. Several of the modelled contaminants have averaging periods less than 1 hour. For these contaminants, the 1 hour average concentration was converted using the conversion factors listed in Table 4-1 of Air Dispersion Modelling Guidance for Ontario (ADMGO). For example, the hourly concentrations can be converted to a 10-min average by multiplying the hour value by 1.65. This is consistent with the approach used in the ESDM report.

In 2016, a number of O.Reg 419/05 standards were updated or modified to include annual average Point of Impingement (POI) limits. These standards were most recently updated in 2018. CALPUFF can predict annual average values, therefore the CALPOST input file was modified to provide this output in addition to outputs for the 1 hour, 24 hour and 30 day averaging periods already provided.

# 3.8 Chemical Transformation

For the purposes of assessing project contributions to Secondary Particulate Matter (SPM) formation, chemical transformation was considered in the CALPUFF modelling of particulate matter. To model the chemical transformation of emitted NO, NO2 and SO2 into HNO3, NO3 and SO4, CALPUFFs RIVAD/ARM3 mechanism was used. The flag MCHEM is set to 1 for model runs used to produce concentrations of particulate matter. This setting requires the input of monthly background ozone concentrations. The monthly background ozone data used in the modelling of secondary particulate matter is consistent with that used in the EA and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling<sup>(1)</sup>

Month	Ozone Concentrations (ppb)
January	13.70
February	18.50
March	24.22
April	11.09
May	32.29
June	33.63
July	16.32
August	21.33
September	12.63
October	15.39
November	17.10
December	20.91

Notes: 1 - Ozone levels from Courtice Road Station (2007-2008)

Chemical transformations were only modelled to calculate additional concentrations of particulate matter that is created as part of secondary transformations. Reported concentrations of NO<sub>2</sub> and SO<sub>2</sub> do not include the effects of depletion due to chemical transformation. The flag MCHEM is set to 0 for model runs used to produce concentrations of all other contaminants. This is consistent with the approach used in the ESDM report.

# 3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 2. The model options used are consistent with those used in the ESDM report. In the ESDM report, Exhibit 9 indicated that Puff splitting was used, however this was a typographical error and this option was not actually used in the modelling. To maintain consistency with the ESDM report, puff splitting was not modelled for this assessment.

Table 2: CALPUFF Options and Flags

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MGAUSS	1	1	Vertical distribution used in the near field
MCTADJ	3	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	0	Subgrid-Scale complex terrain flag
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	· · · ·		Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes  * NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling
MCHEM	1 (For SPM, PM <sub>10</sub> and PM <sub>2.5</sub> ) 0 (All other Contaminants)	1 (For SPM, PM <sub>10</sub> and PM <sub>2.5</sub> )  0 (All other Contaminants)	Chemical Transformation Scheme  0 = chemical transformation not modeled  1 = transformation rates computed internally (MESOPUFF II scheme)
MAQCHEM	0	0	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	0	Wet removal modelled 0 = NO; 1 = Yes
MDRY	0	0	Dry deposition modelled 0 = NO; 1 = Yes

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MTILT	0	0	Gravitational settling (plume tilt) modelled
MDISP	2	2	Methods used to compute dispersion coefficients 2 = (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables (u*, w*, L, etc.)
MTURBVW	3	3	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	0	PG sigma y,z adjusted for roughness
MPARTL	1	1	Partial plume penetration of elevated inversion
MTINV	0	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	1	Sub-grid TIBL module used for shore line
MBCON	0	0	Boundary conditions (concentration) modeled
MFOG	0	0	Configure for FOG Model output
MREG	0	0	Test options specified to see if they conform to regulatory values

### 3.10 Source Parameters

Stack exhaust temperature and flow rate were updated to match the stack characteristics at the time of source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 3, below:

**Table 3: Modelled Source Parameters** 

Source ID	Stack Height [m]			[m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	51.64 (UPDATED)	22.75 (UPDATED)	414.3 (UPDATED)

The ESDM Report includes an additional modelling scenario which include emissions from silo loading and the standby generator (Scenario H). The predominant contaminants from these sources are particulate from the silo loading and nitrogen oxides from the generator. These two contaminants were assessed and it was determined that, since the Main Stack emissions presented in this report are less than those in the ESDM Report, dispersion modelling would show a decrease in the point of impingement concentration for these two contaminants. As a result, additional dispersion modelling for Scenario H was not conducted.

### 4.0 MODELLING RESULTS

Modelling was completed for emissions from the main stack only, using a unit emission rate to generate dispersion factors in µg/m³ per g/s for 10-minute, ½ - hour, 1 hour, 24 hour, 30 day and annual averaging periods. In Ontario, MECP guidance allows for the removal of meteorological anomalies to account for extreme, rare and transient conditions that may be present in the datasets and considered outliers. As such, for air quality assessments that require 24-hour average concentrations, the highest predicted 24-hr concentration in each year of meteorological data may be removed. Similarly, for assessments that use shorter 1-hour average concentrations, the eight highest predicted concentrations in each year may be removed, as per the MECP guidance listed in ADMGO. No predicted results are removed for assessment against annual averaging periods. Elimination of these anomalies is optional but both methodologies are considered acceptable for the demonstration of compliance with Ontario Regulation 419/05 standards. Previously, maximums with anomalies were presented.

The resulting dispersion factors are presented in Table 4, below for both the with and without meteorological anomaly removal:

**Table 4: Modelling Dispersion Factors** 

Averaging Period	10-min	⅓- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor without meteorological anomaly removal [µg/m³ per g/s]	31.99	23.27	19.39	1.02	0.12	0.03
Dispersion Factor with meteorological anomaly removal [µg/m³ per g/s]	9.63	7.00	5.83	0.96	0.12	0.03

The average emission rate for each contaminant presented in Appendix A was multiplied by the applicable dispersion factor above to calculate the maximum point of impingement concentration for emissions from the main stack. The modelled POI concentrations were compared to the current Schedule 3 standards listed in O.Reg. 419/05 and in the case of PM2.5 and PM10, the MECP AAQC.

The MECP has recently updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated April 2018, which includes standards and guidelines (Benchmark 1) and screening levels (Benchmark 2). The ACB List is required to be used to assess point of impingement (POI) concentrations of contaminants released into the air.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered to be 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit.

The modelled concentrations of all compounds assessed were below their relevant MECP standards. The Emission Summary Table has been updated and is included in Appendix B. It has been modified to include reference to the new ACB List and to meet the requirements of the updated MECP guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04.1, March 2018). Results are presented both with and without meteorological anomaly removal but only the results with meteorological anomaly removal are presented as a percentage of the relevant limit.

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 6% of the relevant limit.

# 5.0 SUMMARY MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Voluntary November 2020 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

**Table 5: ECA Concordance Table** 

Table 5: ECA Concordance Table	
Modelling Inputs	Changes from ESDM Report
Emission Rates	Updated to use November 2020 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	No Change
Meteorology and Terrain data	No Change
Receptors	No Change
Building Downwash	No Change
Deposition	No Change
Chemical Transformations	No Change
Thermal Internal Boundary Layer	No Change
Averaging Times and Conversions	CALPOST input file was modified to generate annual averaging to account for new O.Reg. 419/05 standards introduced in 2016 (and most recently updated in 2018) that include annual averaging periods.
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	Ozone background data used in secondary particulate modelling consistent with the EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced after the ECA was approved and contaminants that were not included in the ESDM report but for which source testing data was available.

# 6.0 CONCLUSIONS

This assessment was completed to document compliance with Condition 8(7) and 8(8) of Schedule E of the ECA for the DYEC. The results of this assessment demonstrate that the Facility is operating in compliance with the POI limits listed in s.20 of O. Reg. 419/05.

# 7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

Golder Associates Ltd.

Katherine Armstrong, M.Sc.

Air Quality Specialist

KSA/ADC/ng

Anthony Ciccone, Ph.D., P.Eng. Principal, Vice-President

Attachments: Appendix A - Site Wide Emission Inventory

Appendix B - Emission Summary Table

https://golderassociates.sharepoint.com/sites/121611/project files/6 deliverables/nov 2020 - reporting/feb 2022 update/20137524-tm-rev1 covanta updated modelling memo 28feb2022.docx

**APPENDIX A** 

Site Wide Emission Inventory

February 2022

# Appendix A Site-Wide Emission Inventory

							Site-Wide Emission inventory						
	_	the chi	Source	Source Parameters	1,100,0		A THE PROPERTY OF THE PROPERTY		Emission Data				
Source Identifier	Source Description	stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas S Temperature [*C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location (x, y)	Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
14	Main Stack - Fall 2020	51.64	141.2	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	90-12-0	1.60E-07	1,24, annual	ST	Above-Average	100%
	Source Testing					•	1,1,2-Trichloroethane	79-00-5	1.31E-05	1,24, annual	ST	Above-Average	100%
	Conditions					اسسم	1,2,3,4-tetrachlorobenzene	634-66-2	7.43E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	2.23E-07	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	7.37E-07	1,24, annual	ST	Above-Average	100%
						•	1,2,4,5-Tetrachiorobenzene	95-94-3	1,59E-07	1,24, annual	ST	Above-Average	100%
						*****************	1,2-Dichlorobenzene	95-50-1	1.93E-06	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	107-06-2	4,26E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	78-87-5	1.31E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-frichlorobenzene	108-70-3	2.72E-07	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	2.61E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	2.39E-06	1,24, annual	ST	Above-Average	100%
						أسببينا	1,4-Dichlorobenzene	106-46-7	1.57E-06	1,24, annual	ST	Above-Average	100%
						·	1-Methylphenanthrene	B32-69-9	2.26E-07	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	2.92E-07	1,24, annual	ST	Above-Average	100%
				•		I	2,3,4,5-tetrachlorophenol	4901-51-3	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	3.72E-07	1,24, annual	ST	Above-Average	100%
				******		I	2,3,4-trichlorophenol	15950-66-0	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachiorophenol	935-95-5	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	3.72E-07	1,24, annuai	ST	Above-Average	100%
						L	2,3,6-trichlorophenol	933-75-5	3.72E-07	1,24, annual	ST	Above-Average	100%
				••••		L	2,3-dichlorophenol	576-24-9	3,72E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	3.72E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	7.50E-07	1,24, annual	ST	Above-Average	100%
		•					2,4-Dichlorophenal	120-83-2	3.93E-07	1,24, annual	ST	Above-Average	100%
						1	2,6-dichlorophenol	87-65-0	3.72E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	1.60E-03	1,24, annual	ST	Above-Average	100%
				-			2-Chloronaphthalene	91-58-7	7.43E-08	1,24, annual	ST	Above-Average	100%
			, 1				2-Methylanthracene	613-12-7	2.76E-07	1,24, annuai	ST	Above-Average	100%
							2-manochloraphenol	95-57-8	3.72E-07	1,24, annual	ST	Above-Average	100%
	•					l	3,4,5-trichlorophenol	609-19-8	3.72E-07	1,24, annual	ST	Above-Average	100%
				•		I	3,4-dichlorophenol	95-77-2	3.72E-07	1,24, annuat	ST	Above-Average	100%
					•	i	3,5-dichlorophenol	591-35-5	7.74E-07	1,24, annuai	ST	Above-Average	100%
	•						3-Methylcholanthrene	56-49-5	3.72E-07	1,24, annual	ST	Above-Average	100%
	•						3-monochlorophenol	108-43-0	3,72E-07	1,24, annual	ST	Above-Average	100%
						1	4-monachlorophenal	106-48-9	3.72E-07	1,24, annual	ST	Above-Average	100%
						1	7,12-Dimethylbenzo(a)anthracene	57-97-6	7.43E-08	1,24, annuai	ST	Above-Average	100%
		•					9,10-Dimethylanthracene	78143-1	9.86E-08	1,24, annual	ST	Above-Average	100%
			<del></del>	•••••		1	9-Methylphenanthrene	883-20-5	2.33E-07	1,24, annual	ST	Above-Average	100%

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1,24, annual   ST   1,24				Source	Source Parameters					Emission Data					_
Part   Part	Source	Source Description	Stack Volumetric	Stack Exit Gas Temperature	Stack Inner Diameter	Stack Height	Stack Location ix.	Contaminant	CAS No.	Maximum Emission Rate	Averaging	Emission Estimating	Emissions Data	Percentage of	1
208-95-9         1,83E-97         1,24, annual         ST           208-96-9         7,43E-59         1,24, annual         ST           75-07-0         1,63E-93         1,24, annual         ST           107-02-3         8,40E-05         1,24, annual         ST           107-02-4         8,40E-05         1,24, annual         ST           107-02-9         2,47E-02         1,24, annual         ST           107-02-9         1,46E-08         1,24, annual         ST           107-02-9         1,46E-08         1,24, annual         ST           107-02-9         1,47E-08         1,24, annual         ST           107-02-9         1,47E-08         1,24, annual         ST           107-02-9         1,43E-08         1,24, annual         ST           107-02-9         1,43E-08         1,24, annual         ST           107-02-9         1,43E-08         1,24, annual         ST           108-97-7         1,43E-08         1,24, annual         ST <th></th> <th>-</th> <th>Flow Rate [Am³/s]</th> <th>ľď</th> <th>Ξ</th> <th>Above Grade [m]</th> <th>۱۲</th> <th></th> <th></th> <th>[8/8]</th> <th>Period [hours]</th> <th>Technique</th> <th>Quality</th> <th>Emissions [%]</th> <th></th>		-	Flow Rate [Am³/s]	ľď	Ξ	Above Grade [m]	۱۲			[8/8]	Period [hours]	Technique	Quality	Emissions [%]	
208-96-9         1,24, annual         ST           75-07-0         1,53E-03         1,24, annual         ST           107-22-7         1,52E-03         1,24, annual         ST           107-22-7         1,24, annual         ST         ST           1120-12-7         2,47E-02         1,24, annual         ST           1120-12-7         1,48E-08         1,24, annual         ST           1120-12-7         1,43E-08         1,24, annual         ST           1120-20-2         1,24, annual         ST         Annual           1120-20-2         1,24, annual         ST         Annual           1120-20-2         1,24, annual         ST         Annual								Acenaphthene	83-32-9	1,83E-07	1,24, annual	ST	Above-Average	11%	_
15-07-0   153E-03   1,24, annual   ST     161-02-4   1,02E-03   1,24, annual   ST     161-02-4   1,02E-03   1,24, annual   ST     120-12-7   1,48E-08   1,24, annual   ST     140-38-2   1,57E-08   1,24, annual   ST     140-38-2   1,57E-08   1,24, annual   ST     140-38-3   1,43E-08   1,24, annual   ST     140-38-3   1,43E-08   1,24, annual   ST     140-38-3   1,43E-08   1,24, annual   ST     150-32-6   1,43E-08   1,24, annual   ST     150-32-6   1,43E-08   1,24, annual   ST     151-24-2   2,59E-07   1,24, annual   ST     191-24-2   2,59E-07   1,24, annual   ST     191-24-2   2,59E-07   1,24, annual   ST     191-24-2   1,31E-04   1,24, annual   ST     191-24-3   1,31E-04   1,24, annual   ST     175-27-4   4,30E-08   1,24, annual   ST     176-28-3   1,18E-04   1,24, annual   ST     181-07-1   1,31E-05   1,24, annual   ST     191-28-4   1,39E-04   1,24, annual   ST     191-28-5   1,44E-04   1,24, annual   ST     191-28-5   1,44E-04   1,24, annual   ST     191-28-6   1,24, annual   ST     191-28-7   1,41E-04   1,24, annual   ST     191-28-8   1,24, annual   ST     191-28-9								Acenaphthylene	208-96-8	7.43E-08	1,24, annual	ST	Above-Average	5%	
1,24-61   1,82E-03   1,24, annual   ST     10,702-6   8,40E-05   1,24, annual   ST     120-12-7   7,48E-06   1,24, annual   ST     1440,39-2   1,51E-06   1,24, annual   ST     1440,39-2   1,43E-08   1,24, annual   ST     120-28-4-6   7,43E-08   1,24, annual   ST     192-37-2   1,43E-08   1,24, annual   ST     192-37-2   1,43E-08   1,24, annual   ST     192-37-3   1,43E-08   1,24, annual   ST     192-37-3   1,13E-04   1,24, annual   ST     192-37-3   1,13E-04   1,24, annual   ST     192-37-4   1,13E-04   1,24, annual   ST     192-37-5   1,13E-04   1,24, annual   ST     192-37-6   1,13E-04   1,24, annual   ST     192-37-7   1,13E-04   1,24, annual   ST     192-37-8   1,14E-04   1,24, annual   ST     192-38-4   1,14E-04   1,24, annual   ST     192-38-5   1,14, annual   ST     192-38-6   1,24, annual   ST     192-38-4   1,14E-04   1,24, annual   ST     192-38-5   1,14E-04   1,24, annual   ST     192-38-7   1,24, annual   ST     192-38-7   1,24, annual   ST     192-38-8   1,24, annual   ST     192-38-9   1,24, annual   ST     192-38-9   1,24, annual   ST     192								Acetaldehyde	0-20-57	1,63E-03	1,24, annual	ST	Above-Average	%66	
107-02-6 8,40E-05 1,24, annual ST 120-12-7 7,48E-08 1,24, annual ST 1440-36-0 2,00E-06 1,24, annual ST 1440-36-0 2,00E-06 1,24, annual ST 1440-36-0 1,00E-06 1,24, annual ST 1440-38-2 1,50E-06 1,24, annual ST 1440-38-2 1,43E-08 1,24, annual ST 143E-08 1,24, annual ST 144E-04 1,24, annual ST 144E-04 1,24, annual ST 144E-08 1,24, annual ST 144E-08 1,24, annual ST 144E-08 1,24, annual ST 144E-08 1,24, annual ST 144E-08 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 144E-09 1,24, annual ST 142E-09 1,24, annual ST 142								Acetone	67-64-1	1.82E-03	1,24, annual	ST	Above-Average	100%	
766441-7         2.47E-02         1,24, annual         ST           740-38-0         1,24, annual         ST           740-38-0         1,24, annual         ST           740-38-2         1,57E-06         1,24, annual         ST           740-38-2         1,57E-06         1,24, annual         ST           740-38-3         5,51E-05         1,24, annual         ST           7440-38-3         5,51E-05         1,24, annual         ST           753-4-6         1,24, annual         ST         ST           208-90-2         7,43E-08         1,24, annual         ST           192-97-2         7,43E-08         1,24, annual         ST           192-97-3         7,43E-08         1,24, annual         ST           192-57-3         7,43E-08         1,24, annual         ST           192-97-3         1,18E-08         1,24, annual         ST           192-57-3         1,14E-09         1,24, annual         ST           198-68-3 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>-11-12-</td><td></td><td>Acrolein</td><td>107-02-8</td><td>8,40E-05</td><td>1,24, annual</td><td>ST</td><td>Above-Average</td><td>%26</td><td>_</td></t<>						-11-12-		Acrolein	107-02-8	8,40E-05	1,24, annual	ST	Above-Average	%26	_
120-12-7         7.48E-08         1,24, annual         ST           7440-8-0         1,67E-06         1,24, annual         ST           7440-8-2         1,87E-06         1,24, annual         ST           7440-8-3         5.81E-05         1,24, annual         ST           7440-3         5.81E-05         1,24, annual         ST           71-45-2         2.68E-04         1,24, annual         ST           8-55-3         7.43E-08         1,24, annual         ST           205-92-2         7.43E-08         1,24, annual         ST           205-92-2         7.43E-08         1,24, annual         ST           205-92-3         7.43E-08         1,24, annual         ST           205-92-4         7.43E-08         1,24, annual         ST           192-97-2         7.43E-08         1,24, annual         ST           192-97-3         7.43E-08         1,24, annual         ST           1740-41-7         1,61E-05         1,24, annual         ST           1740-43-9         1,24E-05         1,24, annual         ST           1740-43-9         1,24, annual         ST         1,24, annual           1744-43-9         1,24, annual         ST         1,24, an								Ammonia	7664-41-7	2.47E-02	1,24, annual	ST	Above-Average	100%	
7440-36-0         2,00E-06         1,24, annual         ST           7440-38-2         1,57E-06         1,24, annual         ST           7440-38-3         5,51E-05         1,24, annual         ST           7440-38-3         2,58E-04         1,24, annual         ST           558-35-3         7,43E-08         1,24, annual         ST           568-38-4         7,43E-08         1,24, annual         ST           205-90-2         7,43E-08         1,24, annual         ST           205-90-2         7,43E-08         1,24, annual         ST           205-90-2         7,43E-08         1,24, annual         ST           192-37-2         7,43E-08         1,24, annual         ST           192-37-2         7,43E-08         1,24, annual         ST           192-37-3         7,43E-08         1,24, annual         ST           192-37-4         4,3E-05         1,24, annual         ST           192-37-4         4,3E-05         1,24, annual         ST           198-27-3         1,18E-04         1,24, annual         ST           198-25-4         1,18E-04         1,24, annual         ST           198-25-5         1,14E-04         1,24, annual         ST<								Anthracene	120-12-7	7,48E-08	1,24, annuai	ST	Above-Average	16%	_
740-36-2         1,57-06         1,24, annual         ST           740-36-3         5,81E-05         1,24, annual         ST           71-43-2         2,86E-04         1,24, annual         ST           56-35-3         7,43E-08         1,24, annual         ST           50-38-4-5         7,43E-08         1,24, annual         ST           50-38-4-5         7,43E-08         1,24, annual         ST           50-38-24-5         7,43E-08         1,24, annual         ST           192-37-2         7,43E-08         1,24, annual         ST           191-24-2         2,68E-07         1,24, annual         ST           1740-41-7         1,01E-05         1,24, annual         ST           1740-41-7         1,18E-04         1,24, annual         ST           1740-41-7         1,18E-04         1,24, annual         ST           1740-42-9         1,24, annual         ST           1740-43-9         1,14E-04         1,24, annual         ST <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Antimony</td><td>7440-36-0</td><td>2.00E-08</td><td>1,24, annuai</td><td>ST</td><td>Above-Average</td><td>100%</td><td></td></tr<>								Antimony	7440-36-0	2.00E-08	1,24, annuai	ST	Above-Average	100%	
740-39-3         5.81E-05         1,24, annual         ST           71-43-2         2.68E-04         1,24, annual         ST           56-55-3         7.43E-06         1,24, annual         ST           50-32-6         7.43E-08         1,24, annual         ST           205-39-2         7.43E-08         1,24, annual         ST           205-39-2         7.43E-08         1,24, annual         ST           205-39-2         7.43E-08         1,24, annual         ST           191-24-2         2.68E-07         1,24, annual         ST           192-51-3         7.40C-01         1,24, annual         ST           1740-41-7         1.61E-06         1,24, annual         ST           1740-43-9         1.18E-04         1,24, annual         ST           1740-43-9         1.61E-06         1,24, annual         ST           106-90-7         1.61E-04         1,24, annual         ST           106-90-7         1.61E-04         1,24, annual         ST <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Arsenic</td> <td>7440-38-2</td> <td>1.67E-06</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>100%</td> <td></td>								Arsenic	7440-38-2	1.67E-06	1,24, annual	ST	Above-Average	100%	
71-43-2         2.68E-04         1,24, annual         ST           56-55-3         7.43E-08         1,24, annual         ST           56-55-4         7.43E-08         1,24, annual         ST           50-32-8         7.43E-08         1,24, annual         ST           205-99-2         7.43E-08         1,24, annual         ST           205-99-2         7.43E-08         1,24, annual         ST           192-417-4         7.43E-08         1,24, annual         ST           207-08-9         7.43E-08         1,24, annual         ST           207-08-9         7.43E-08         1,24, annual         ST           207-08-9         7.43E-08         1,24, annual         ST           75-27-4         1.67E-06         1,24, annual         ST           75-27-4         1.67E-06         1,24, annual         ST           75-27-4         1.67E-06         1,24, annual         ST           7440-41-7         1.61E-05         1,24, annual         ST           850-08-0         4.79E-01         1,24, annual         ST           850-08-0         4.79E-01         1,24, annual         ST           850-08-0         1.44, annual         ST           <								Barium	7440-39-3	5.81E-05	1,24, annual	ST	Above-Average	100%	_
56-55-3         7,43E-08         1,24, annual         ST           238-64-6         7,43E-08         1,24, annual         ST           203-24-8         7,43E-08         1,24, annual         ST           205-39-2         7,43E-08         1,24, annual         ST           243-174         7,43E-08         1,24, annual         ST           192-37-2         7,43E-08         1,24, annual         ST           192-37-2         7,43E-08         1,24, annual         ST           207-08-9         7,43E-08         1,24, annual         ST           207-08-9         7,21E-07         1,24, annual         ST           207-08-9         7,21E-07         1,24, annual         ST           7440-41-7         1,67E-06         1,24, annual         ST           7440-41-7         1,67E-06         1,24, annual         ST           7440-41-7         1,61E-05         1,24, annual         ST           562-5-3         1,18E-05         1,24, annual         ST           630-08-0         4,79E-01         1,24, annual         ST           7440-48-4         1,98E-05         1,24, annual         ST           748-5-3         1,44E-08         1,24, annual         ST <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Вепzепе</td> <td>71-43-2</td> <td>2.68E-04</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>51%</td> <td>_</td>								Вепzепе	71-43-2	2.68E-04	1,24, annual	ST	Above-Average	51%	_
238.446       7.43E-08       1,24, annual       ST         50-32-6       7.43E-08       1,24, annual       ST         205-99-2       7.43E-08       1,24, annual       ST         243-174       7.43E-08       1,24, annual       ST         192-97-2       7.43E-08       1,24, annual       ST         207-08-2       7.43E-08       1,24, annual       ST         207-08-3       7.43E-08       1,24, annual       ST         207-08-3       7.21E-07       1,24, annual       ST         75-27-4       4.36E-05       1,24, annual       ST         75-27-4       4.36E-05       1,24, annual       ST         7440-43-9       1.3E-05       1,24, annual       ST         7440-48-4       1.6E-04       1,24, annual       ST         16-05-5       1.24, annual       ST       1.24, annual         56-23-5       1.21E-04       1,24, annual       ST         16-65-3       1.4E-04       1,24, annual       ST         16-65-3       1.4E-04       1,24, annual       ST         1740-48-4       1.9E-05       1,24, annual       ST         1840-71       3.41E-05       1,24, annual       ST								Вепzо(а)апthrасепе	56-55-3	7,43E-08	1,24, annual	ST	Above-Average	27%	
50-32-9       7.43E-08       1,24, annual       ST         205-99-2       7.43E-08       1,24, annual       ST         243-17-4       7.43E-08       1,24, annual       ST         192-37-2       2.68E-07       1,24, annual       ST         207-08-3       7.43E-08       1,24, annual       ST         207-08-3       7.43E-08       1,24, annual       ST         740-41-7       1.67E-06       1,24, annual       ST         75-27-3       7.21E-07       1,24, annual       ST         75-27-4       4.36E-05       1,24, annual       ST         75-27-5       1.31E-05       1,24, annual       ST         75-27-7       1.16E-04       1,24, annual       ST         7440-43-8       2.53E-06       1,24, annual       ST         630-08-0       4.79E-01       1,24, annual       ST         108-90-7       1.61E-05       1,24, annual       ST         118-40-19       6.41E-08       1,24, annual       ST         118-40-19       1.24, annual       ST         118-40-19       1.24, annual       ST         118-50-3       1.24, annual       ST         118-40-19       1.24, annual       S								Benzo(a)fluorene	238-84-6	7.43E-08	1,24, annual	ST	Above-Average	100%	
205-99-2         7.43E-08         1,24, annual         ST           243-17-4         7.43E-08         1,24, annual         ST           192-37-2         7.43E-08         1,24, annual         ST           191-24-2         2.68E-07         1,24, annual         ST           207-08-9         7.43E-08         1,24, annual         ST           740-41-7         1.67E-06         1,24, annual         ST           75-27-3         7.21E-07         1,24, annual         ST           75-27-4         4.36E-05         1,24, annual         ST           75-27-3         1.31E-04         1,24, annual         ST           75-27-4         4.36E-05         1,24, annual         ST           7440-43-9         1.61E-04         1,24, annual         ST           630-08-0         4.79E-01         1,24, annual         ST           65-25-5         1.21E-04         1,24, annual         ST           65-25-5         1.61E-05         1,24, annual         ST           7440-48-4         1.99E-06         1,24, annual         ST           184-01-9         6.41E-08         1,24, annual         ST           184-02-9         6.41E-08         1,24, annual         ST								Вепzo(а)ругепе	50-32-8	7,43E-08	1,24, annual	ST	Above-Average	47%	7
243-174       7.43E-08       1,24, annual       ST         192-37-2       7.43E-08       1,24, annual       ST         191-24-2       2.68E-07       1,24, annual       ST         207-08-9       7.43E-08       1,24, annual       ST         740-41-7       1.67E-06       1,24, annual       ST         75-27-4       4.36E-05       1,24, annual       ST         75-27-5       1.31E-05       1,24, annual       ST         75-25-5       1.36E-06       1,24, annual       ST         7440-43-9       2.53E-06       1,24, annual       ST         630-08-0       4.79E-01       1,24, annual       ST         630-08-0       1.16E-05       1,24, annual       ST         67-65-3       1.16E-05       1,24, annual       ST         67-65-3       1.16E-05       1,24, annual       ST         728-01-9       6.4E-08       1,24, annual       ST         18540-29-9       3.4E-05       1,24, annual       ST         181-01-9       6.4E-08       1,24, annual       ST         181-01-9       6.28E-05       1,24, annual       ST         182-65-7       7.43E-08       1,24, annual       ST <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Benzo(b)fluoranthene</td><td>205-99-2</td><td>7.43E-08</td><td>1,24, annual</td><td>ST</td><td>Above-Average</td><td>17%</td><td></td></t<>								Benzo(b)fluoranthene	205-99-2	7.43E-08	1,24, annual	ST	Above-Average	17%	
192-97-2         7.43E-08         1,24, annual         ST           191-24-2         2.68E-07         1,24, annual         ST           207-08-9         7.43E-08         1,34, annual         ST           7440-41-7         1,67E-06         1,24, annual         ST           75-21-4         4.36E-05         1,24, annual         ST           74-433-9         2.58E-06         1,24, annual         ST           630-08-0         4.79E-01         1,24, annual         ST           65-23-5         1.21E-04         1,24, annual         ST           67-66-3         1.16E-05         1,24, annual         ST           67-66-3         1.46E-04         1,24, annual         ST           718-01-9         6.41E-08         1,24, annual         ST           718-01-9         6.41E-08         1,24, annual         ST           718-01-9         6.28E-05         1,24, annual         ST           718-01-9         6.28E-05         1,24, annual         ST								Вепzo(b)fluorene	243-17-4	7.43E-08	1,24, annual	ST	Above-Average	100%	
131-24-2         2.68E-07         1,24, annual         ST           207-08-3         7.43E-08         1,24, annual         ST           7440-41-7         1,67E-06         1,24, annual         ST           75-27-4         4,36E-05         1,24, annual         ST           75-27-4         4,36E-05         1,24, annual         ST           75-27-4         4,36E-05         1,24, annual         ST           75-27-5         1,31E-05         1,24, annual         ST           74-83-9         2,58E-06         1,24, annual         ST           630-08-0         4,79E-01         1,24, annual         ST           56-25-5         1,21E-04         1,24, annual         ST           67-66-3         1,16E-05         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           87-86-3         1,14E-04         1,24, annual         ST           18540-29-9         3,47E-05         1,24, annual         ST           18540-29-9         1,38E-05         1,24, annual         ST           189-06         1,24, annual         ST         1,24, annual           189-28         5,28E-05         1,24, annual         ST						*****		Вепzo(е)ругепе	192-97-2	7.43E-08	1,24, annual	ST	Above-Average	100%	
207-08-9         7.43E-08         1,24, annual         ST           7440-41-7         1.67E-06         1,24, annual         ST           92-51-3         7.21E-07         1,24, annual         ST           75-27-4         1,31E-05         1,24, annual         ST           75-25-2         1,31E-05         1,24, annual         ST           74-83-9         1,18E-04         1,24, annual         ST           74-83-9         2,53E-06         1,24, annual         ST           650-08-0         4.79E-01         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           56-25-5         1,21E-04         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           118-40-3         3,47E-05         1,24, annual         ST           118-40-3         8,41E-08         1,24, annual         ST           118-40-4         1,99E-04         1,24, annual         ST           119-6-6         1,24, annual         ST         1,24, annual           119-6-7         1,24, annual         ST         1,24, annual           119-6-7         1,24, annual         ST         1,24, annua								Benzo(g,h,i)perylene	191-24-2	2.69E-07	1,24, annual	ST	Above-Average	100%	
7440417         1,67E-06         1,24, annual         ST           92-51-3         7.21E-07         1,24, annual         ST           75-24         1,31E-05         1,24, annual         ST           75-25-2         1,31E-05         1,24, annual         ST           74-83-9         1,18E-04         1,24, annual         ST           74-83-9         1,18E-04         1,24, annual         ST           650-06-0         4.79E-01         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           67-86-3         1,14E-04         1,24, annual         ST           18540-29-9         3,47E-05         1,24, annual         ST           218-01-9         6,41E-08         1,24, annual         ST           1440-6-8         1,24, annual         ST         1,24, annual         ST           1440-6-8         1,24, annual         ST         1,24, annual         ST           1440-6-8         1,34, annual         ST         1,24, annual         ST           192-6-7         7,3E-09         1,24, annual         ST         1,24, annual           192-6-7         7,3E-09         1,24, annual         ST         1,24, annual <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Benzo(k)fluoranthene</td> <td>207-08-9</td> <td>7.43E-08</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>51%</td> <td></td>								Benzo(k)fluoranthene	207-08-9	7.43E-08	1,24, annual	ST	Above-Average	51%	
92-51-3         7.21E-07         1,24, annual         ST           75-27-4         4.36E-05         1,24, annual         ST           75-25-2         1,31E-05         1,24, annual         ST           74-43-9         1,18E-34         1,24, annual         ST           7440-43-9         2.53E-06         1,24, annual         ST           58-20-9         4.79E-01         1,24, annual         ST           108-90-7         1.61E-05         1,24, annual         ST           67-68-3         1.4E-04         1,24, annual         ST           18540-29-9         3.47E-05         1,24, annual         ST           18540-29-9         3.47E-05         1,24, annual         ST           18540-29-9         3.41E-07         1,24, annual         ST           1440-50-8         1.9E-06         1,24, annual         ST           189E-06         1,24, annual         ST         1,24, annual           189E-07         1,24, annual         ST           189E-08         1,24, annual         ST           189E-04         1,24, annual         ST           189E-05         1,24, annual         ST           189E-07         1,24, annual         ST <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Beryllium</td> <td>7440-41-7</td> <td>1.67E-06</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>100%</td> <td></td>								Beryllium	7440-41-7	1.67E-06	1,24, annual	ST	Above-Average	100%	
75-274         4,36E-05         1,24, annual         ST           75-25-2         1,3E-05         1,24, annual         ST           7440-43-9         1,16E-04         1,24, annual         ST           630-08-0         4,79E-01         1,24, annual         ST           108-23-5         1,21E-04         1,24, annual         ST           108-23-5         1,21E-04         1,24, annual         ST           108-23-5         1,4E-05         1,24, annual         ST           108-20-9         3,47E-05         1,24, annual         ST           128-01-9         0,41E-08         1,24, annual         ST           1440-50-8         1,9E-06         1,24, annual         ST           18-07-1         3,81E-07         1,24, annual         ST           18-07-1         3,81E-07         1,24, annual         ST           18-26-4         3,72E-07         1,24, annual         ST <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Biphenyl</td> <td>92-51-3</td> <td>7.21E-07</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>100%</td> <td>,</td>								Biphenyl	92-51-3	7.21E-07	1,24, annual	ST	Above-Average	100%	,
75-25-2     1,31E-05     1,24, annual     ST       7440-3-9     1,18E-04     1,24, annual     ST       630-08-0     4,79E-01     1,24, annual     ST       108-07-7     1,21E-04     1,24, annual     ST       108-07-3     1,14E-04     1,24, annual     ST       108-07-3     1,14E-04     1,24, annual     ST       118-01-3     3,47E-05     1,24, annual     ST       1218-01-9     6,41E-08     1,24, annual     ST       1440-48-4     1,99E-06     1,24, annual     ST       1440-50-8     1,99E-06     1,24, annual     ST       1870-7     3,81E-07     1,24, annual     ST       1870-7     3,81E-07     1,24, annual     ST       1870-7     3,81E-07     1,24, annual     ST       1870-8     3,73E-07     1,24, annual     ST       1870-8     3,73E-07     1,24, annual     ST       1870-8     1,24, annual     ST     1,24, annual       1870-8     1,24, annual     ST     1,24, annual       1870-8     1,24, annual     ST     1,24, annual       1870-9     1,24, annual     ST     1,24, annual       1870-9     1,24, annual     ST     1,24, annual       1870-9<								Bromodichloromethane	75-27-4	4.36E-05	1,24, annual	ST	Above-Average	100%	,
74-83-9         1.18E-04         1,24, annual         ST           7440-43-9         2.53E-06         1,24, annual         ST           630-08-0         4.79E-01         1,24, annual         ST           108-90-7         1,61E-04         1,24, annual         ST           67-68-3         1,61E-04         1,24, annual         ST           18540-29-9         3,47E-05         1,24, annual         ST           218-01-9         0,41E-08         1,24, annual         ST           1440-60-8         1,34E-06         1,24, annual         ST           1440-50-8         1,99E-04         1,24, annual         ST           1440-50-8         1,99E-04         1,24, annual         ST           198-26-4         1,24, annual         ST           53-70-3         7,43E-08         1,24, annual           53-70-3         7,43E-08         1,24, annual           51-4-4         1,24, annual         ST           53-70-3         7,43-annual								Вготобогт	75-25-2	1,31E-05	1,24, annual	ST	Above-Average	100%	
7440-43-9         2.53E-06         1,24, annual         ST           630-08-0         4.79E-01         1,24, annual         ST           56-23-5         1,21E-04         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           67-65-3         1,14E-04         1,24, annual         ST           18540-29-9         3,47E-05         1,24, annual         ST           1840-19-9         6,41E-08         1,24, annual         ST           1440-50-8         1,99E-04         1,24, annual         ST           1440-50-8         1,99E-04         1,24, annual         ST           1440-50-8         1,24, annual         ST         ST           1440-50-8         1,24, annual         ST         ST           1440-50-8         1,24, annual         ST         ST           142-63-9         1,24, annual         ST         ST           142-65-4         7,43-60         1,24, annual         ST           125-65-4         7,43-60         1,24, annual         ST           125-68-7         7,43-60         1,24, annual         ST           124-80-1         1,24, annual         ST           124-80-1 <td></td> <td>***************************************</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Bromomethane</td> <td>74-83-9</td> <td>1.18E-04</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>100%</td> <td></td>		***************************************						Bromomethane	74-83-9	1.18E-04	1,24, annual	ST	Above-Average	100%	
630-08-0         4,79E-01         1,24, annual         ST           56-23-5         1,21E-04         1,24, annual         ST           108-90-7         1,61E-05         1,24, annual         ST           67-66-3         1,14E-04         1,24, annual         ST           1840-29-9         3,47E-05         1,24, annual         ST           740-10-3         1,39E-06         1,24, annual         ST           740-20-8         1,39E-06         1,24, annual         ST           1940-21         3,81E-07         1,24, annual         ST           192-68-4         1,34, annual         ST         ST           192-68-4         3,72E-07         1,24, annual         ST           53-70-3         7,43E-08         1,24, annual         ST           124-48-1         1,31E-05         1,24, annual         ST           53-70-3         7,43E-08         1,24, annual         ST           75-14-8         1,24, annual         ST         1,24, annual           55-70-3         7,43E-08         1,24, annual         ST           75-14-8         1,24, annual         ST         1,24, annual           57-16-8         1,24, annual         ST         1,24, annual								Саdmium	7440-43-9	2.53E-06	1,24, annuai	ST	Above-Average	100%	
56-23-5         1,21E-04         1,24, amusal         ST           108-90-7         1,61E-05         1,24, amusal         ST           67-68-3         1,14E-04         1,24, amusal         ST           1840-29-9         3,47E-05         1,24, amusal         ST           740-08-4         1,24, amusal         ST         ST           740-08-4         1,39E-06         1,24, amusal         ST           1940-7-1         3,81E-07         1,24, amusal         ST           192-88-4         6,28E-05         1,24, amusal         ST           192-88-4         7,43E-08         1,24, amusal         ST           53-70-3         7,43E-08         1,24, amusal         ST           124, amusal         ST         1,24, amusal         ST           53-70-3         7,43E-08         1,24, amusal         ST           124, amusal         ST         1,24, amusal         ST           53-70-3         7,43E-08         1,24, amusal         ST           75-14-8         1,24, amusal         ST         1,24, amusal           57-76-3         1,31E-05         1,24, amusal         ST           75-44-3         1,31E-05         1,24, amusal         ST </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td>Carbon Monoxide</td> <td>630-08-0</td> <td>4.79E-01</td> <td>1,24, annual</td> <td>ST</td> <td>Above-Average</td> <td>65%</td> <td></td>						•		Carbon Monoxide	630-08-0	4.79E-01	1,24, annual	ST	Above-Average	65%	
108-90-7         1,61E-05         1,24, amusal         ST           15-56-3         1,14E-04         1,24, amusal         ST           18540-29-9         3,47E-05         1,24, amusal         ST           7440-48-4         1,99E-06         1,24, amusal         ST           7440-50-8         1,99E-06         1,24, amusal         ST           1940-7-1         3,81E-07         1,24, amusal         ST           192-86-4         6,28E-05         1,24, amusal         ST           192-86-4         3,72E-07         1,24, amusal         ST           124-48-1         1,31E-05         1,24, amusal         ST           174-48-1         1,31E-05         1,24, amusal         ST           175-18         2,79E-05         1,24, amusal         ST           175-18         1,24, amusal         ST         1,24, amusal								Carbon tetrachloride	56-23-5	1.21E-04	1,24, annual	ST	Above-Average	100%	
67-66-3         1.14E-04         1.24, amusal         ST           18640-29-9         3.47E-05         1.24, amusal         ST           218-01-9         6.41E-08         1.24, amusal         ST           7440-44         1.99E-06         1.24, amusal         ST           191-07-1         3.81E-07         1,24, amusal         ST           192-65-4         5.28E-05         1,24, amusal         ST           192-65-4         7.43E-08         1,24, amusal         ST           192-65-4         3.72E-07         1,24, amusal         ST           53-70-3         7.43E-08         1,24, amusal         ST           124-48-1         1.31E-05         1,24, amusal         ST           15-18         2.79E-05         1,24, amusal         ST           124-48-1         1.31E-05         1,24, amusal         ST								Сһіогорепzепе	108-90-7	1.61E-05	1,24, annual	ST	Above-Average	100%	
18540-29-9         3.47E-05         1,24, annual         ST           218-01-9         6.41E-08         1,24, annual         ST           7440-44         1,99E-06         1,24, annual         ST           7440-50-8         1,99E-04         1,24, annual         ST           191-07-1         3.81E-07         1,24, annual         ST           215-58-7         7.43E-08         1,24, annual         ST           192-65-4         3.72E-07         1,24, annual         ST           53-70-3         7.43E-08         1,24, annual         ST           124-annual         ST         1,31E-05         1,24, annual         ST           15-44-1         1,31E-05         1,24, annual         ST         1,24, annual           55-70-3         7.43E-08         1,24, annual         ST         1,24, annual         ST           75-74-8         2.79E-05         1,24, annual         ST         1,24, annual         ST								Chloroform	67-66-3	1.14E-04	1,24, annual	ST	Above-Average	100%	
218-01-9         0.41E-08         1,24, annual         ST           7440-48-4         1,99E-06         1,24, annual         ST           7440-58-8         1,98E-04         1,24, annual         ST           191-07-1         3.81E-07         1,24, annual         ST           21-58-7         7.43E-08         1,24, annual         ST           192-65-4         3.72E-07         1,24, annual         ST           12-48-1         1,31E-05         1,24, annual         ST           15-70-3         7.43E-08         1,24, annual         ST           15-71-8         2.79E-05         1,24, annual         ST           15-74-8         1,31E-05         1,24, annual         ST								Chromium (hexavalent)	18540-29-9	3.47E-05	1,24, annual	ST	Above-Average	100%	
7440-864         1,98E-06         1,24, annual         ST           7440-50-8         1,98E-04         1,24, annual         ST           191-07-1         3.81E-07         1,24, annual         ST           98-82-8         28.8E-05         1,24, annual         ST           192-65-4         3.72E-07         1,24, annual         ST           53-70-3         7.45E-07         1,24, annual         ST           124-48-1         1,31E-05         1,24, annual         ST           75-70-3         2.79E-05         1,24, annual         ST           75-74-8         1,31E-05         1,24, annual         ST           75-74-8         1,31E-05         1,24, annual         ST								Chrysene	218-01-9	6.41E-08	1,24, annual	ST	Above-Average	14%	
7440-50-8     1,98E-04     1,24, annual     ST       191-07-1     3.81E-07     1,24, annual     ST       98-82-8     6.28E-05     1,24, annual     ST       215-58-7     7.43E-08     1,24, annual     ST       53-70-3     7.45E-06     1,24, annual     ST       124-48-1     1,31E-05     1,24, annual     ST       75-71-8     2.79E-05     1,24, annual     ST       75-34-3     1,31E-05     1,24, annual     ST       75-34-3     1,31E-05     1,24, annual     ST								Cobalt	7440-48-4	1.99E-06	1,24, annual	ST	Above-Average	100%	,
191-07-1 3.81E-07 1,24, annual ST 98-82-6 6.28E-05 1,24, annual ST 215-58-7 7.43E-08 1,24, annual ST 192-65-4 3.72E-07 1,24, annual ST 124-48-1 1,31E-05 1,24, annual ST 75-71-8 2.79E-05 1,24, annual ST 75-71-8 1,31E-05 1,24, annual ST 75-34-34-3 -3 1,31E-05 1,24, annual ST 75-34-34-34-3 1,31E-05 1,34, annual ST 75-34-34-3 1,31E-05 1,34, annual ST 75-34-34-34-3 1,31E-05 1,34, annual ST 75-34-34-34-3 1,31E-05 1,34, annual ST 75-34-34-34-34-34-34-34-34-34-34-34-34-34-								Copper	7440-50-8	1.99E-04	1,24, annual	ST	Above-Average	100%	
98-82-6 6.28E-05 1,24, annual ST 215-58-7 7.43E-08 1,24, annual ST 192-65-4 3.72E-07 1,24, annual ST 124-48-1 1.31E-05 1,24, annual ST 75-71-8 2.79E-05 1,24, annual ST 75-71-8 1,31E-05 1,24, annual ST 75-34-34-3 -3 1,31E-05 1,34, annual ST 75-34-34-3 1,31E-05 1,34, annual ST 75-34-34-3 1,31E-05 1,34, annual ST 75-34-34-34-3 1,31E-05 1,34, annual								Согопепе	191-07-1	3.81E-07	1,24, annuai	ST	Above-Average	100%	
215-58-7     7.43E-08     1,24, annual     ST       192-65-4     3.72E-07     1,24, annual     ST       53-70-3     7.43E-08     1,24, annual     ST       124-48-1     1.31E-05     1,24, annual     ST       75-71-8     2.79E-05     1,24, annual     ST       75-34-3     1.31E-05     1,24, annual     ST								Cumene (Isopropylbenzene)	98-82-8	6.28E-05	1,24, annual	ST	Above-Average	100%	
192-65-4     3,72E-07     1,24, annual     ST       53-70-3     7,43E-08     1,24, annual     ST       124-48-1     1,31E-05     1,24, annual     ST       75-71-8     2,79E-05     1,24, annual     ST       75-34-3     1,31E-05     1,24, annual     ST								Dibenzo(a,c)anthracene	215-58-7	7.43E-08	1,24, annual	ST	Above-Average	100%	
53-70-3     7.43E-08     1,24, annual     ST       124-48-1     1,31E-05     1,24, annual     ST       75-71-8     2,79E-05     1,24, annual     ST       75-34-3     1,31E-05     1,24, annual     ST		*********	•					Dibenzo(a,e)pyrene	192-65-4	3.72E-07	1,24, annual	ST	Above-Average	100%	
12448-1     1,31E.05     1,24, annual     ST       75-71-8     2,79E.05     1,24, annual     ST       75-34-3     1,31E.05     1,24, annual     ST							1	Dibenzo(a,h)anthracene	53-70-3	7.43E-08	1,24, annual	ST	Above-Average	40%	,
75-71-8 2.79E-05 1,24, annual ST 75-34-3 1,31E-05 1,24, annual ST							1	Dibromochloromethane	124-48-1	1,31E-05	1,24, annual	ST	Above-Average	100%	
75-34-3 1.31E-05 1,24, annual ST								Dichlorodifluoromethane	75-71-8	2.79E-05	1,24, annual	ST	Above-Average	100%	
								Dichloroethene, 1,1 -	75-34-3	1.31E-05	1,24, annual	ST	Above-Average	100%	

Above-Average Above-Average Above-Average Above-Average

Above-Average Above-Average

Above-Average

Above-Average Above-Average Above-Average

Above-Average Above Average

	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	1,24, annual ST	
ł	1.10E-07   1,2	1,77E-06 1,2	4.63E-05 1,2	4.21E+00 1,2	4.21E+00 1,2	1,18E-07 1,2	1,02E-03 1,2	7.55E-08 1,2	3.72E-07 1,2	7.43E-08 1,2	1.04E-06 1,2	3.72E-07 1,2	1.86E-01 1,2	2.23E-02 1,2	1.76E-01 1,2	1.22E-02 1,2	6.80E-04 1,2	7.87E-08 1,2	2.40E-07 1,2	2.86E-05 1,2	1.67E-06 1,2	2,25E-04 1,2	5.76E-03 1,2	1 10 1
	92-06-8	91-20-3	7440-02-0	10102-44-0	10102-44-0	84-15-1	95-47-6	608-93-5	87-86-5	198-55-0	85-01-8	213-46-7	N/A	N/A	ΝΑ	N/A	ΝΆ	92-94-4	129-00-0	7782-49-2	7440-22-4	100-42-5	7446-09-5	A 417 10 A
	т-Тегрhелуі	Naphthalene	Nickel	Nitrogen Oxides	Nitrogen Oxides	O-terphenyl	O-Xylene	Pentachlorobenzene	Pentachlorophenol	Perylene	Phenanthrene	Picene	PM10 (Condensable and Filterable)	PM10 (Filterable Only)	PM2.5 (Condensable and Filterable)	PM2.5 (Filterable Only)	Polychlorinated Biphenyls (PCB)	p-Terphenyl	Pyrene	Selenium	Silver	Styrene	Sulphur Dioxide	Totrachlorothone

20137524

Percentage of Emissions [%] Overall

Emissions Data Quality

Emission Estimating Technique

Averaging Period [hours]

Maximum Emission Rate [g/s]

CAS No.

100% 100% 100%

ST S

0.00068 µg TEQ/s 1.23E-03

4.06E-04

100414 75-09-2

Ν

Dioxins, Furans and Dioxin-like PCBs

Dichloromethane Ethylbenzene Fluoranthene

Contaminant

Stack Location (x, y)

Stack Height Above Grade [m]

Stack Exit Gas Stack Inner
Temperature Diameter
['C] [m]

Stack Volumetric Flow Rate [Am²/s]

Source Description

Source Identifier

February 2022

Ethylene Dibromide

1,24, annual 1,24, annual Above-Average Above-Average

ST S Σ S S

1,24, annual 1,24, annual

Above-Average

Above-Average

Above-Average Above-Average

1,24, annual 1,24, annual

1,24, annual

3.97E-03 1.26E-07 1.52E-03

7664-39-3 86-73-7 50-00-0

Fluorine Formaldehyde

Fluorides

1,24, annual

2.61E-05 2.68E-07

106-93-4 206-44-0

Above-Average Above-Average

되지

1,24, annual 1,24, annual 1,24, annual

Above-Average

1,24, annual 1,24, annuai

7.43E-08 1.37E-01 7.53E-08 1.37E-05 2.81E-03 7.43E-06 4.52E-04

179601-23-1

7439-97-6 108-67-8 7439-98-7

Mesitylene (1,3,5-Trimethylbenzene)

Mercury Lead

Molybdenum

M&P-Xylene

118-74-1 7647-01-0 193-39-5 7439-92-1

Hydrogen Chloride Indeno(1,2,3 – cd)pyrene Hexachlorobenzene

Above-Average

Above-Average
Above-Average
Above-Average

ST ST ST

1,24, annual 1,24, annual

Above-Average
Above-Average
Above-Average

Above Average

Γ S

1,24, annual

Above-Average Above-Average

Above-Average Above-Average Above-Average

Above-Average

Above-Average Above-Average

Above-Average

Above-Average

February 2022

			Source	Courre Parameters					Emission Data				
Source	Source	Stack	Stack Exit Gas	Stack Inner	Stack	Stack			Maximum Emission Bate	Averaging	Emission	Emissions Data	Percentage of
Identifier	Description	Flow Rate [Am³/s]	Temperature [*C]	Diameter [m]	Above Grade [m]	Location [x, y]	Contaminant	CAS No.	[8/s]	Period [hours]	Estimating Technique	Quality	Overall Emissions [%]
							Thallium	7440-28-0	3,89E-06	1,24, annual	ST	Above-Average	100%
						•	Toluene	108-88-3	1.61E-03	1,24, annual	ST	Above-Average	95%
							Total Chromium (and compounds)	7440-47-3	3.47E-05	1,24, annual	ST	Ароче-Ачегаде	100%
						•	Total Particulate Matter (Condensable and Filterable)	N/A	2.53E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	NA	8.89E-02	1,24, annual	ST	Above-Average	100%
						•	trans,1,2-Dichloroethene	156-60-5	2.88E-05	1,24, annual	ST	Above-Average	100%
						•	Trichloroethane, 1,1,1 -	71-55-6	1,31E-05	1,24, annual	ST	Above-Average	100%
						•	Trichloroethene	86-42-0	1.31E-05	1,24, annual	ST	Above-Average	100%
						•	Trichloroethylene, 1,1,2-	79-01-6	1.40E-05	1,24, annual	ST	Above-Average	100%
-						•	Trichlorofluoromethane	75-69-4	8.23E-05	1,24, annual	ST	Above-Average	100%
-						•	Trichlorotrifluoroethane	76-13-1	2.61E-05	1,24, annual	ST	Above-Average	100%
						•	Vanadium	7440-62-2	1,08E-06	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	2.61E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, π-, p- and o-	1330-20-7	3.83E-03	1,24, annual	ST	Above-Average	98%
						•	Zinc	7440-66-6	2.10E-04	1,24, annual	ST	Above-Average	100%
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
						· ·	PM <sub>10</sub>	N/A	1.07E-02	1	22	Above-Average	17%
							PM <sub>2.5</sub>	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	4.8768	(680513,4860	Total Particulate Matter	N/A	1.07E-02	1	23	Above-Average	14%
	*******					1355	PM1n	A/N	1.07E-02	1	Si Si	Above-Average	17%
						1	PM <sub>2.5</sub>	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0,10	3.9624	(680517,4860	Total Particulate Matter	N/A	1.07E-02	1	ЭÐ	Above-Average	14%
						1000	PM:	A/N	1.07E-02	1	EC	Above-Average	17%
							PM <sub>2.5</sub>	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	12.4	(680537,4860	Total Particulate Matter	N/A	1.07E-02	Ħ	낊	Above-Average	14%
						<u> </u>	PM <sub>10</sub>	A/N	1.07E-02	1	EC	Above-Average	17%
							PM <sub>2.5</sub>	N/A	1.07E-02	1	EC	Above-Average	17%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860	Carbon Monoxide	630-08-0	2,56E-01	*	6	Marginal	35%
							Nitrogen Oxides	10102-44-0	1.12E+00	×	Ŧ	Marginal	12%
				-		1_	Sulphur Dioxide	7446-09-5	1.88E-02	××	43 13	Above-Average	77%
	1-11						Lotal Particulate Matter	4/8	3.23E-02 2.03F-02	, x	5 15	Above-Average	100%
					******	_1	PM10	A/N	1.88E-02	×	Ш	Above-Average	30%
						.L	PM <sub>2.5</sub>	N/A	1.88E-02	×	EF	Above-Average	30%
						4,	Sulphuric Acid	7664-93-9	2.88E-04	х	£C	Above-Average	100%
					****	·I	Benzene	71-43-2	2.54E-04	×	15 2	Marginal	49%
	,						Xvienes. m. p. and o-	1330-20-7	6.32E-05	77	1 15	Marginal	2%
						1	Propylene	115-07-1	9.14E-04	77	ä	Marginal	100%
						LJ.	Formaldehyde	20-00-0	2.58E-05	7,	£	Marginal	2%
							Acetaldehyde	75-07-0	8.265-06	××	ti 1	Marginal	<1%
						.1_	Naohthalene	91-20-3	4.26E-05	× ×	13	Marginal	%96
-	_	_	-	_	_	J			The state of the s				

Made by: TK Checked by: KSA Percentage of
Overall
Emissions [%]

Emissions Data Quailty

Emission Estimating Technique

> Averaging Period [hours]

Maximum Emission Rate [g/s]

CAS No.

Contaminant

Stack Location (x,

Stack Height Above Grade [m]

Stack Exit Gas Stack Inner
Temperature Diameter
[\*C] [m]

Stack Volumetric Flow Rate [Am³/s]

> Source Description

> Source Identifier

98% 89% 100% 93% 84% 84% 84% 84% 73% 86% 86% 66% 66% 66%

Marginal
Marginal
Marginal
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3.02E.06 1.53E.06 1.34E.05 1.34E.05 1.32E.06 2.04E.07 5.01E.07 7.14E.08 8.42E.08 1.35E.07 1.13E.07 1.13E.07

208-96-8
83-32-9
86-73-7
85-01-8
120-12-7
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Acenaphthylene
Acenaphthene
Fluorene
Phemarthrene
Anthracene
Fluoranthene
Pyrene
Pyrene
Chrysene
Chrysene
Benzo(a)fluoranthene
Benzo(b)fluoranthene
Benzo(b)fluoranthene
Indeno(1,2,3, = cd)pyrene
Indeno(1,2,3, = cd)pyrene

Made by: TK Checked by: KSA

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**APPENDIX B** 

**Emission Summary Table** 

February 2022

Made by: TK Checked by: KSA

Canting	(004-39-3	3.975-03	Carpen	4.USE-U3	3.825-03	790-P2	1./4	Vegetation	ě
Fluorides	7664-39-3	3.97ξ-03	Calpuff	4.57E-04	4,576-04	30-day	69'0	Vegetation	Sch. 3
Fluorides	7664-39-3	3,97E-03	Calpuff	4.05E-03	3.82E-03	24-hour	3,44	Vegetation	Sch. 3
Fluorides	7664-39-3	1,976.03	Calpuff	4.57E-04	4.57E-04	30-day	1.38	Vegetation	Sch. 3

Appendir B Emission Summary Table

February 2022

20137524

		_		Od ENGINEW	Maximum PO									
***************************************			Alr Dispersion	Concentration Before	ვ	Averaging		:				Percentage of MECP		rersion of Date of
	3	מינו פרווול דווויזיים ויפוב (פי ז'	Model Used	Meteorological Anomaly Removal fue/m³1	Meeorological Anomaly Removal Let/m <sup>2</sup> 1	Perlod		1300	Schedule	aconos.	Perkiller	נאלן אייט		ACB Ust
Fluarine	86-73-7	1.266-07	Calpuff	1.295-07	1.215-07	24-hour	0.1	-	_	De Minimus	ł	Below De Minimus		Apr-18
Formaldehyde	50-00-0	1.52£-03	Calpuff	1.55€-03	1.46E-03	24-hour	92	Odour & trritation	Sch. 3	Standard	81	<1%	1	Apr-18
Hexachlorobenzene	118-74-1	7.43E-08	Calpuff	7.595-08	7.15E-08	24-hour	0.011	Health	Sch. 3	151-151	62	Below St-JSL	***	Apr-18
Hydrogen Chforide	7647-01-0	1.376-01	Calpoff	1.405-01	1.325-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	URT - Note 4, Table 4	Apr-18
Hydragen Chloride	7647.01-0	1.376.01	ynd;e)	1.405-01	1.325-01	24-hour	500	Heath	Sch. 6	URT	-	<1%	and .	Apr-18
indeno[1,2,3 – cd]pyrene	193-39-5	7.53£-08	Calpuff	7.69E-08	7.25E-08	24-hour	0.1		1	De Minimus	1	Below De Minimus	_	Apr-18
Lead	7439-92-1	1.37E-05	Calpuff	1.40E-05	1.326-05	24-hour	0.5	Health	Sch. 3	Standard	91	<1%	Note 2URT - Note 4, Table 4	Apr-18
Lead	7439-92-1	1.376-05	Calpuff	1.58E-06	1.58E-06	30-day	0.2	Health	Sch. 3	Standard	81	<1%	Note 2URT - Note 4, Table 4	Apr-18
peal	7439-92-1	1.37E-05	Calpuff	1.40E-05	1.32E-05	24-hour	2	Health	Sch. 6	URT		<1%	Note 2URT - Mote 4, Table 4	Apr-18
Mercury	7439-97-6	7,43E-06	Calpuff	7.58E-D6	7.15E-06	24-hour	2	Health	Sch. 3	Standard	18	41%	_	Apr-18
Malybdenum	7439-98-7	1.985-04	Calpuff	2.03£-04	1,915-04	24-hour	120	Particulate	Sch. 3	Guideline	91	<1%	1	Apr-18
Naphthalene	91-20-3	1.77E-06	Calpuff	1.815-06	1.70£-06	24-hour	22.5	Odour	Sch. 3	Guideling	18	<1%	Nate 2, 3	Apr-18
Naphthalene	91-20-3	1.776-06	Calpuff	5.66E-05	1,706-05	10-minute	20	Odour	Sch. 3	Guideline	B1	<1%	Note 2, 3	Apr-18
Nickel	7440-02-0	4.53E-05	Calpuff	1,48E-06	1.48E-05	Annual	0.04	Health	Sch. 3	Standard	81	<1%	Note 19, Table 2, 3URT - Note 4, Table 4	Apr-18
Nickel	7440-02-0	4.63E-05	Calpuff	4.73E-05	4.46E-05	24-hour	2	Heatth	5ch. 6	URT	-	<1%		Apr-18
Mickel	7440-02-0	4.635.05	Calpuff	1.48E-06	1.485-06	Annual	0.4	Health	ı	AAV	1	¢1%	_	Apr-18
Mitrogen Orides	10102-44-0	4.21E+00	Calpuff	4.30E+00	4,06£+00	24-hour	300	Health	Sch. 3	Standard	81	2%	Notes 2, 17	Apr-18
Mitrogen Oxides	10102-44-0	4,21E+00	Calputf	8.175+01	10+39\$72	1-bour	400	Health	Sch. 3	Standard	18	*9	Notes 2, 17	Apr-18
O-terphenyl	B4-15-1	1.18E-07	Calpuff	1.205-07	1.135.07	24-hour	0.1	-	1	De Minimus	1	Below De Minimus	***	
PM <sub>19</sub> (Condensable and Filterable)	N/A	1.865-01	Calpuff	4.346-01	4,235-01	24-hour	8	-	1	AAQC	-	×13/	-	
PMto (Filterable Only)	N/A	2.23£-02	Calpuff	2.28E-02	2.65E-01	24-hour	05	1	1	AAGC	1	×1>		
PM <sub>2.5</sub> (Condensable and Filterable)	N/A	1.765-01	Calpuff	1.805-01	4.135-01	24-hour	30	1		AAGC	1	1%	1	
PM, s (Filterable Only)	N/A	1,225-02	Calpuff	1.258-02	2.555-01	74-bour	30			AAOC	ı	2/12		ľ
Pentachlorobenzene	608-93-5	7.55E-08	Calpuff	7.715-08	7,275-08	24-hour	08	Health	Sch. 3	151-15	69	Below St-15!		Apr-18
Pentachloraphenal	87-86-5	3.72E-07	Calpuff	3.805-07	3.58E-07	24-hour	30	Health	Sch. 3	Guideline	18	×1×		Apr-18
Perylene	198-55-0	7.43£-08	Calpuff	7.59E-08	7.15E-08	24-hour	0.1	_	-	De Minimus	,	Belaw De Minimus		Apr-18
Phenanthrene	85-01-8	1.04E-06	Calpuff	1.07E-06	1.01E-06	24-hour	0.1	1	,	De Minimus		Below De Minimus	1	Apr-18
Pyrene	129-00-0	2.40E-07	Caipuff	2.45E-07	2.316-07	24-hour	0.1	-	,	De Minimus	+	Below De Minimus		Apr-18
Selenium	7782-49-2	2.86E-05	Calpuff	2.92E-05	2.75E-05	24-hour	10	Health	Sch. 3	Guideline	16	×15	***	Apr-18
Silver	7440-22-4	1.675-06	Calpuff	1.705-06	1.60E-06	24-hour	1	Health	Sch.3	Standard	18	, , , , , , , , , , , , , , , , , , ,	_	Apr-18
Sulphur Diaxide	7446-09-5	5.76E-03	Calpuff	5.885.03	5.546-03	24-hour	275	Health	Sch. 3	Standard	61		Rective unbi July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Sulphur Dioxide	7446-09-5	5.76E-03	Calpuff	1,125-01	3.36E-02	1-hour	069	Health	Sch. 3	Standard	18		Effective until July 1, 2023Note 2URT - Note 4, Table 4	Apr-18
Tetrachbroethene	127-18-4	1.40£-05	Calpuff	1.43E-05	1.356-05	24-hour	360	Health	Sch. 3	Standard	B1		URT - Note 4, Table 4	Apr-18
Tetrachloroethene	127-18-4	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	3600	Health	Sch. 6	URT	_	<1%		
Tetralin	119-64-2	1.855-06	Calpuff	1.89E-06	1.78E-06	24-hour	151.5	Health	Sch. 3	151-15	82	Below SL-151	***	Apr-18
Thatlium	7440-28-0	3.895-05	Calpuff	3.98E-06	3.75E-06	24-hour	0.5	Health	Sch. 3	51-151	92	Below SL-15L	_	Apr-18
Toksene	108-88-3	1.61E-03	Calpuff	1.646:03	1.55£-03	24-hour	2000	Not Applicable	Sch. 3	Guideline	81	<1%	To be updated - Note 5	Apr-18
Total Chromium (and compounds)	7440-47-3	3.47E-05	Calpull	3.55E.05	3.346-05	24-hour	0.5	Health	Sch. 3	Standard	18	41%	Note 11aURT - Note 4, Table 4	Apr-18
Total Chromium (and compounds)	7440-47-3	3.475-05	Calpuff	3.55E-05	3.346-05	24-hour	5	Health	Sch. 6	UNT	-	<1%	_	Apr-18
Total Particulate Matter (Condensable and Filterable)	le) N/A	2535-01	Calpuff	2.58E-01	4.87E-01	24-hour	120	Particulate	Sch. 3	Guideline	10	×15	1	Apr-16
Total Particulate Matter (Filterable only)	N/A	2.53E-01	Calouff	2.58E-01	4.87E-01	24-hour	021	Particulate	1 45	Guideline	E	712		Apr.18
Trichloroethane, 1,1,1-	71-55-6	1.31E-05	Calpuff	1.335-05	1.26E-05	24-hour	115000	Health	Sch. 3	Standard	16	<1%		Apr-18
Trichloroethene	85-42-0	1.316-05	Calpuff	1.336-05	1.26E-05	24-hour	0.1		1	De Minimus	1	Below De Minimus	1	Apr-18
Trichlaraethylene, 1,1,2 -	79-01-6	1.406-05	Calpuff	1.43E-05	1.35E-05	24-hour	12	Realth	Sch. 3	Standard	B1	×13%	URT - Note 4, Table 4	Apr-18
Trichloroethylene, 1,1,2 -	79-01-6	1.40E-05	Calpuff	1.43E-05	1.35E-05	24-hour	1200	Health	5ch. 6	URT	J	×1>	_	Apr-18
Trichloroflapromethane	75-69-4	8.23£-05	Calpuff	8.416.05	7.92E-05	24-hour	0009	Health	Sch. 3	Guideline	19	<1%	Note 10	Apr.18
Vanadium	7440-52-2	1.08E-06	Calpuff	1.116.06	1.04E-06	24-hour	7	Health	Sch. 3	Standard	93	<1%	-	Apr-18
Vinyl chande	75-01-4	2,618-05	Calput	2.67E-05	2.528-05	24-hour	-	Health	Sch. 3	Standard	16	×15%	URT - Note 4, Table 4	Apr-18
Volence m. n. and o.	1230.30.7	3.835.03	Calouiff	101601	2.522-U3	24-hour	100	Health Man Amelian Man	201.0	URT		41%	The state of the s	Apr.18
Yolong m. o. and o.	1330-20-7	3.835-03	Calput	1.916-03	3.06E-U3	24-nour	08/	Not Applicable	50.5	Guideline	i :	41%	Note 7, 3, 22	Apr-18
Xylenes, m., D- and o-	1330-20-7	3.835-03	Calpuff	3.916-03	3.68E-03	24-hour	7300	Not Applicable	Sch 5	Guidesine	1	213	MOKE Z, 3, 42	Apr.16
Zinc	7440-66-6	2.106-04	Calpuff	2.15E-04	2,02E-04	24-hour	120	Particulate	Sch. 3	Standard	19	×1>		Apr.18

Golder Associates



# **APPENDIX 28**

DYEC CEMS 1-Hour Average Data (4 pages)

# Covanta - Durham York Energy Centre Boiler No. 1 CEMS

							H Outlet				Scrubber Inlet
		02		co @ 11% o,		SO <sub>2</sub> '@ 11% O <sub>2</sub>		10x	HCI	THC	0,
Date	Time	% 1-hr	mg/m i 1-hr	@ 11% U <sub>2</sub> Rolling 4-hr	mg/m 1-hr	@ 11% U <sub>2</sub> Rolling 24-hr	mg/m 1-hr	@ 11% O <sub>2</sub> Rolling 24-hr	mg/m³ @ 11% O <sub>2</sub> 1-hr Rolling 24-hr	mg/m³ @ 11% O <sub>2</sub> 1-hr	% 1-hr
9-Nov-20	0:00	8.81	11	noning 4 in	0	Noning 27-11	113	Nonng 24-111	5	0	9
9-Nov-20	1:00	8.59	9		0		111		5	0	9
9-Nov-20 9-Nov-20	2:00 3:00	8.55 8.42	7 8	8.8	0 0		105 105		4	0 0	9
9-Nov-20	4:00	8.53	11	8.8	0		111		4 2	ő	9
9-Nov-20	5:00	8.33	8	8.5	0		98		4	0	9
9-Nov-20	6:00	8.58	11	9.5	0		117		5	0	9
9-Nov-20 9-Nov-20	7:00 8:00	9. <b>1</b> 7 9.51	15 8	11.3 10.5	0		109 110		6 7	0	9
9-Nov-20	9:00	8.93	14	12.0	0		112			0	9
9-Nov-20	10:00	8.74	12	12.3	0		112		4	0	9
9-Nov-20 9-Nov-20	11:00 12:00	8.85	12	11.5	6		106		5	0	9
9-Nov-20	13:00	8.57 8.19	12 12	12.5 12.0	0 -1		108 113		4 (18.5) 18.3 (18.5) (18.5) (18.5)		9
9-Nov-20	14:00	9.13	10	11.5	0		103		5	ŏ	9
9-Nov-20	15:00	8.76	9	10.8	0		118		5	0	9
9-Nov-20 9-Nov-20	16:00 17:00	8.47 8.60	8 9	9.8	0		109 108		4	0	9
9-Nov-20	18:00	8.37	11	9.3	0		112		valad <b>3</b> valad apagasa dala Nas <b>2</b>	0	9
9-Nov-20	19:00	8.43	11	9.8	0		114		5	Ō	9
9-Nov-20	20:00	8.36	8	9.8	0		109		N 1 5	0	9
9-Nov-20 9-Nov-20	21:00 22:00	8.39 8.32	10 12	10.0 10.3	0		113 109		5 4	0	9
9-Nov-20	23:00	8.56	9	9.8	4	0.4	111	110	4 4.4	ő	9
10-Nov-20	0:00	8.46	8	9.8	0	0.4	116	110	4 4.3	0	9
10-Nov-20	1:00	8.33	9	9.5	0	0.4	108	110	4 4.3	0	8
10-Nov-20 10-Nov-20	2:00 3:00	8.44 8.26	11 13	9.3 10.3	0	0.4 0.4	107 103	110 110	4 4.3 3 4.3	0	9 9
10-Nov-20	4:00	8.16	12	11.3	0	0.4	112	110	3 4.3	0	8
10-Nov-20	5:00	<b>7</b> .97	12	<b>1</b> 2.0	0	0.4	100	110	3 4.3	0	8
10-Nov-20	6:00	8.74	10 12	11.8	1	0.5	112	110	6 4.3	0	9
10-Nov-20 10-Nov-20	7:00 8:00	8.49 8.52	12 17	11.5 12.8	0	0.5 0.5	109 108	110 110	4 4.2 4 4.1	0	9
10-Nov-20	9:00	8.31	10	12.3	Ö	0.5	110	110	3 4.0	0	9
10-Nov-20	10:00	8.45	13	13.0	0	0.5	107	109	4 4.0	0	9
10-Nov-20 10-Nov-20	11:00 12:00	8.58 8.37	14 13	13.5 12.5	0 0	0.2 0.2	112 113	110 110	5 4.0 5 4.0	0	9
10-Nov-20	13:00	8.26	15 15	13.8	0	0.2	107	110 110	5 4.0 4 4.1	0	9 8
10-Nov-20	14:00	8.50	13	13.8	0	0.2	109	110	4 4.0	0	9
10-Nov-20	15:00	8.61	11	13.0	0	0.2	115	110	4 4.0	0	9
10-Nov-20 10-Nov-20	16:00 17:00	8.35 8.27	11 11	12.5 11.5	0 0	0.2 0.2	108 112	110 110	4 4.0 4 4.0	0	9
10-Nov-20	18:00	8.34	10	10.8	0	0.2	113	110	4 4.1	Ö	9
10-Nov-20	19:00	8.49	8	10.0	0	0.2	108	110	2 4.0	0	9
10-Nov-20 10-Nov-20	20:00 21:00	8.55 8.28	7 10	9.0 8.8	0 0	0.2 0.2	110 113	110 110	4 4.0 5 4.0	0	8
10-Nov-20	22:00	8.46	18	10.8	0	0.2	113	110	5 4.0	0	8 9
10-Nov-20	23:00	8.56	8	10.8	0	0.0	100	110	4 4.0	0	9
11-Nov-20 11-Nov-20	0:00 1:00	8.23 8.00	7 9	10.8 10.5	0	0.0	108	109	4 4.0	0	9
11-Nov-20	2:00	8.00 8.07	8	8.0	0	0.0 0.0	110 107	109 109	4 4.0 4 4.0	0	8 8
11-Nov-20	3:00	8.55	7	7.8	0	0.0	108	110	5 4.1	ŏ	9
11-Nov-20	4:00	8.43	8	8.0	0	0.0	115	110	3 4.1	0	9
11-Nov-20 11-Nov-20	5:00 6:00	8.04 8.50	12 13	8.8 10.0	0 0	0.0 0.0	105 110	110 110	3 4.1 4 4.0	0 0	8 9
11-Nov-20	7:00	8.51	9	10.5	0	0.0	110	110	4 4.0	0	9
11-Nov-20	8:00	8.53	6	10,0	0	0.0	112	110	4 4.0	0	9
11-Nov-20 11-Nov-20	9:00 10:00	8.37 8.27	11 9	9.8	0	0.0	107	110	3 4.0	0	9
11-Nov-20	11:00	8.45	11	8.8 9.3	0 0	0.0 0.0	112 106	110 110	3 4.0 4 3.9	0 0	9 9
11-Nov-20	12:00	8.26	12	10.8	0	0.0	108	110	4 3.9	Ŏ	8
11-Nov-20	13:00	8.44	9	10.3	0	0.0	112	110	5 3.9	0	9
11-Nov-20 11-Nov-20	14:00 15:00	9.22 8.59	14 13	11.5 12.0	0	0.0 0.0	106	110 110	4 3.9	0	9
11-Nov-20	16:00	8.21	15 17	13.3	0	0.0	116 109	110 110	4 3.9 3 3.9	0	9 8
11-Nov-20	17:00	8.40	11	13.8	0	0.0	110	110	3 3.8	ő	9
11-Nov-20	18:00	8.16	9	12.5	0	0.0	109	110	3 3.8	0	8
11-Nov-20 11-Nov-20	19:00 20:00	8.27 8.53	9 9	11.5 9.5	0 0	0.0 0.0	110 110	110 110	1 3.8 3 3.7	0	9
11-Nov-20	21:00	8.28	9	9.0	0	0.0	106	109	3 3.6	0	9
11-Nov-20	22:00	8.67	15	10.5	0	0.0	107	109	5 3.6	0	9
11-Nov-20	23:00	8.33	7	10.0	0	0.0	113	109	5 3.7	0	8

# Covanta - Durham York Energy Centre Boiler No. 1 CEMS

						B	H Outlet					Scrubber Inlet
		02		co		SOz		XON		HCI	THC	0,
		%	mg/m	³ @ 11% O <sub>2</sub>	mg/n	າ³ @ 11% O₂	mg/m	³ @ 11% O <sub>2</sub>	mg/n	³ @ 11% O₂	mg/m³ @ 11% O <sub>2</sub>	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
12-Nov-20	0:00	8.03	7	9.5	0	0.0	108	109	3	3.6	0	8
12-Nov-20	1:00	8.29	20	12.3	0	0.0	113	110	3	3.6	0	8
12-Nov-20	2:00	8.56	16	12.5	0	0.0	110	110	3	3.5	0	9
12-Nov-20	3:00	8.48	10	13.3	0	0.0	109	110	3	3.5	0	9
12-Nov-20	4:00	8.38	11	14.3	0	0.0	114	110	2	3.4	0	9
12-Nov-20	5:00	8.41	16	13.3	0	0.0	100	109	3	3.4	0	9
12-Nov-20	6:00	8.30	11	12.0	0	0.0	110	109	3	3.4	0	9
12-Nov-20	7:00	9.22	26	16.0	0	0.0	113	110	6	3.5	0	9
12-Nov-20	8:00	8.63	10	15.8	0	0.0	108	109	4	3.5	0	9
12-Nov-20	9:00	8.39	18	16.3	0	0.0	113	110	3	3.5	0	9
12-Nov-20	10:00	8.41	13	16.8	0	0.0	108	110	3	3.5	0	9
12-Nov-20	11:00	8.96	15	14.0	0	0.0	112	110	5	3.5	0	9
12-Nov-20	12:00	8.62	13	14.8	0	0.0	109	110	4	3.5	0	9
12-Nov-20	13:00	8.67	11	13.0	0	0.0	111	110	3	3.4	0	9
12-Nov-20	14:00	8.77	17	14.0	0	0.0	113	110	4	3.4	0	9
12-Nov-20	15:00	8.28	12	13.3	0	0.0	111	110	4	3.4	0	9
12-Nov-20	16:00	8.42	14	13.5	0	0.0	112	110	- 5	3.5	0	9
12-Nov-20	17:00	8.51	14	14.3	0	0.0	108	110	4	3.5	0	9
12-Nov-20	18:00	8.00	15	13.8	0	0.0	112	110	3	3.5	0	8
12-Nov-20	19:00	9.04	10	13.3	0	0.0	109	110	2	3.6	0	9
12-Nov-20	20:00	8.36	10	12.3	0	0.0	105	110	3	3.6	0	9
12-Nov-20	21:00	8.54	11	11.5	0	0.0	115	110	4	3.6	0	9
12-Nov-20	22:00	8.41	16	11.8	0	0.0	112	110	5	3.6	0	8
12-Nov-20	23:00	8.53	12	12.3	0	0.0	108	110	4	3.6	0	9
	Min	7.97	6	7.8	0	0.0	98	109	1	3.4	0	8
	Мак	9.51	26	16.8	6	0.5	118	110	7	4,4	0	9
	Avg	8.48	11	11.4	0.1	0.1	110	110	4	3.8	0	9
	Std Dev	0.27	3.3	2.0	0.7	0.2	3.75	0.2	1.0	0.3		0.4

# Covanta - Durham York Energy Centre Boiler No. 2 CEMS

						Bl	H Outlet					Scrubber Inlet
		02	СО		SO <sub>2</sub>		NOx		HCI		THC	02
		%		@ 11% O₂		D 11% O₂		³ @ 11% O₂		³ @ 11% O <sub>2</sub>	mg/m³ @ 11% O <sub>2</sub>	%
Date 9-Nov-20	Time 0:00	1-hr 8.54	1-hr	Rolling 4-hr	SELECTION CONTRACTOR AND CONTRACTOR	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
9-Nov-20	1:00	8.25	19 19		0		114 106		4		0	8
9-Nov-20	2:00	8.27	21		0		107		3		Ö	8
9-Nov-20	3:00	8.21	24	20.8	0		110		3		0	8
9-Nov-20 9-Nov-20	4:00 5:00	8.18 8.45	11 10	18.8 16.5	0		115 111		3 4		0 1	8
9-Nov-20	6:00	8.31	12	16.3 14.3	0		121		4			8
9-Nov-20	7:00	8.51	11	11.0	0		112		4		ō	8
9-Nov-20	8:00	8.48	21	13.5	0		103		4		0	8
9-Nov-20 9-Nov-20	9:00 10:00	8.52 8.44	17 20	15.3 17.3	0		115 108		4		0	8
9-Nov-20	11:00	8.24	13	17.8	0		105		4		0	8
9-Nov-20	12:00	8.30	17	16.8	0		111		4		0	8
9-Nov-20	13:00	7.97	9	14.8	0		113		4		Mark 1984 (0 1994 )	8 040
9-Nov-20 9-Nov-20	14:00 15:00	8.45 8.35	16 14	13.8 14.0	0 1		108 108		4		0	8
9-Nov-20	16:00	8.17	11	12.5	0		110		4		0	8
9-Nov-20	17:00	8.34	11	13.0	0		105		4			8
9-Nov-20	18:00	8.43	12	12.0	0		113		4		0	8
9-Nov-20 9-Nov-20	19:00 20:00	8.21 8.50	17 14	12.8 13.5	0		109 105		4		0	8
9-Nov-20	21:00	8.77	14	14.3	0		116		3		0	9
9-Nov-20	22:00	8.62	11	14.0	0		102		3		0	8
9-Nov-20	23:00	8.26	12	12.8	0	0.0	104	110	3	3.7	Ó	8
10-Nov-20 10-Nov-20	0:00 1:00	8.25 8.68	9 <b>1</b> 4	11,5 11,5	0	0.0 0.0	117 110	110 110	3 3	3.7 3.7	0	8 8
10-Nov-20	2:00	8.66	11	11.5	Ö	0.0	110	110	3	3.7	ŏ	8
10-Nov-20	3:00	8.58	11	11.3	0	0.0	119	110	3	3.7	0	8
10-Nov-20	4:00 5:00	8.23 7.97	8	11.0	0	0.0	113	110	3	3.7	0	8
10-Nov-20 10-Nov-20	6:00	8.20	13 13	10.8 11.3	2 2	0.1 0.2	107 121	110 110	4 4	3.7 3.7	1	8
10-Nov-20	7:00	8.25	17	12.8	3	0.3	111	110	3	3.6	ō	8
10-Nov-20	8:00	7.88	15	14.5	0	0.3	100	110	3	3.6	0	8
10-Nov-20 10-Nov-20	9:00 10:00	8.48 8.15	13 13	14.5 14.5	0	0.3 0.3	117	110	4	3.6	0	8
10-Nov-20	11:00	8.70	15 17	14.5 14.5	0	0.3	110 102	110 110	3 4	3.5 3.5	0	8 9
10-Nov-20	12:00	8.39	13	14.0	0	0.3	112	110	4	3.5	Ŏ	8
10-Nov-20	13:00	8.22	16	14.8	0	0.3	109	110	4	3.5	0	8
10-Nov-20 10-Nov-20	14:00 15:00	8.44 8.29	11 12	14.3 13.0	0 0	0.3 0.3	110 111	110 110	4 3	3.5 3.5	0 0	8
10-Nov-20	16:00	8.68	15	13.5	0	0.3	108	110	3	3.5 3.5	Ö	8
10-Nov-20	17:00	8.53	11	12.3	0	0.3	108	110	3	3.4	0	8
10-Nov-20	18:00	8.43	15	13.3	0	0.3	117	110	4	3.4	0	8
10-Nov-20 10-Nov-20	19:00 20:00	8.64 8.90	18 21	14.8 16.3	0	0.3 0.3	102 107	110 110	4 4	3.4 3.4	0 0	9 8
10-Nov-20	21:00	8.30	18	18.0	Ö	0.3	112	110	3	3.4	ŏ	8
10-Nov-20	22:00	8.47	11	17.0	0	0.3	108	110	3	3.4	0	8
10-Nov-20 11-Nov-20	23:00 0:00	8.26 8.15	12 12	15.5 13.3	0	0.3	104	110	3 3	3.4	0	8
11-Nov-20 11-Nov-20	1:00	8.36	16	13.3 12.8	0	0.3 0.3	113 106	110 110	3 4	3.4 3.5	0	8 8
11-Nov-20	2:00	8.28	13	13.3	0	0.3	108	110	4	3.5	0	8
11-Nov-20	3:00	8.47	9	12.5	0	0.3	116	110	3	3.5	0	8
11-Nov-20 11-Nov-20	4:00 5:00	8.43 8.21	12 11	12.5 11.3	0	0.3 0.2	113 120	110 110	3 4	3.5 3.5	0	8 8
11-Nov-20	6:00	8.56	12	11.0	0	0.1	119	110	3	3.5	$\mathbf{i}$	8
11-Nov-20	7:00	8.43	11	11.5	0	0.0	108	110	3	<b>3</b> .5	0	8
11-Nov-20	8:00	8.35	10	11.0	0	0.0	107	110	3	3.5	Ō	8
11-Nov-20 11-Nov-20	9:00 10:00	8.40 8.31	12 11	11.3 11.0	0	0.0 0.0	109 107	110 110	3	3.4 3.4	0 0	8
11-Nov-20	11:00	8.45	12	11.3	Ō	0.0	113	110	3	3.4	Ŏ	8
11-Nov-20	12:00	8.72	14	12.3	0	0.0	112	110	3	3.3	0	8
11-Nov-20	13:00	8.50 8.14	15 15	13.0	0	0.0	106	110	3	3.3	0	8
11-Nov-20 11-Nov-20	14:00 15:00	8.14 8.45	15 15	14.0 14.8	0	0.0 0.0	106 109	110 110	3 3	3.3 3.3	0	8 8
11-Nov-20	16:00	8.25	11	14.0	0	0.0	116	110	3	3.3	0	8
11-Nov-20	17:00	8.51	17	14.5	0	0.0	109	110	3	3.3	0	8
11-Nov-20 11-Nov-20	18:00 19:00	8.73 8.22	21	16.0	0	0.0	108	110 110	3	3.2	0	8
11-Nov-20 11-Nov-20	20:00	8.22 8.26	12 12	15.3 15.5	0	0.0 0.0	112 104	110 110	2 2	3.1 3.0	0 0	8 8
11-Nov-20	21:00	8.08	11	14.0	0	0.0	108	110	2	3.0	0	8
11-Nov-20	22:00	8.18	25	15.0	0	0.0	106	110	2	3.0	0	8
11-Nov-20	23:00	8.51	15	15.8	0	0.0	112	110	2	2.9	0	8

## Covanta - Durham York Energy Centre Boiler No. 2 CEMS

						В	H Outlet					Scrubber inlet
			со		SO <sub>2</sub>		NOx		HCI		THC	02
		%	mg/m³ @ 11% O <sub>2</sub>		mg/m³ @ 11% O <sub>2</sub>		mg/m³ @ 11% O <sub>2</sub>		mg/m³ @ 11% O <sub>2</sub>		mg/m³ @ 11% O <sub>2</sub>	%
Date	Time	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
12-Nov-20	0:00	8.02	11	15.5	0	0.0	111	110	3	2.9	0	8
12-Nov-20	1:00	8.21	13	16.0	0	0.0	111	110	3	2.9	0	8
12-Nov-20	2:00	8.24	10	<b>1</b> 2.3	0	0.0	102	110	3	2.8	0	8
12-Nov-20	3:00	8.88	14	12.0	0	0.0	122	110	3	2.8	0	9
12-Nov-20	4:00	8.33	24	<b>1</b> 5.3	0	0.0	115	111	3	2.8	0	8
12-Nov-20	5:00	8.20	12	15.0	0	0.0	115	110	4	2.8	1	8
12-Nov-20	6:00	8.44	13	<b>1</b> 5.8	0	0.0	120	110	3	2.8	1	8
12-Nov-20	7:00	8.60	15	16.0	0	0.0	109	110	3	2.8	Ō	9
12-Nov-20	8:00	8.33	14	13.5	0	0.0	102	110	3	2.8	0	8
12-Nov-20	9:00	8.19	18	15.0	0	0.0	111	110	2	2.8	0	8
2-Nov-20	10:00	8.19	16	15.8	0	0.0	110	110	3	2.8	0	8
L2-Nov-20	11:00	8.78	11	14.8	0	0.0	111	110	3	2.8	0	9
12-Nov-20	12:00	8.56	15	15.0	0	0.0	108	110	3	2.8	0	8
12-Nov-20	13:00	8.82	14	14.0	0	0.0	112	110	3	2.8		9
12-Nov-20	14:00	8.54	18	14.5	0	0.0	103	110	3	2.8	0	8
12-Nov-20	15:00	8.28	18	16.3	0	0.0	<b>1</b> 16	111	3	2.8	Ö	8
12-Nov-20	16:00	8.30	17	16.8	6	0.3	111	110	3	2.8	0	8
12-Nov-20	17:00	8.59	21	18.5	1	0.3	109	110	3	2.8	Ŏ	8
12-Nov-20	18:00	7.93	17	18.3	1	0.3	107	110	3	2.8	0	8
12-Nov-20	19:00	8.51	12	16.8	0	0.3	107	110	2	2.8	0	8
12-Nov-20	20:00	8.45	11	15.3	0	0.3	111	110	2	2.8	Ŏ	8
12-Nov-20	21:00	8.63	13	13.3	0	0.3	113	111	3	2.8	0	8
12-Nov-20	22:00	8.41	14	12.5	0	0.3	112	111	3	2.9	0	8
12-Nov-20	23:00	8.60	21	14.8	3	0.5	107	111	3	2.9	0	8
	Min	7.88	8	10.8	0	0	100	110	2	2.8	0	8
	Max	8.90	25	20.8	6	0.5	122	111	4	3.7	1	9
	Avg	8.39	14	14.1	0.2	0.1	110	1 <b>1</b> 0	3	3.2	0.1	8
	Std Dev	0.21	3.6	2.1	0.8	0.2	4.77	0.2	0.6	0.3	0.3	0.3