

2.0 SUMMARY OF RESULTS

2.1 Report Organization

The results of the testing project are summarized in Section 2. The process tested is discussed in Section 3. The sampling and analytical methods utilized are discussed in Section 4 while the Quality Assurance/Quality Control results are presented in Section 5. Appendix A contains detailed results of the testing program. Appendix B contains the field data that was collected and Appendix C contains the analytical results. Appendix D contains all pertinent testing equipment calibration data. Refer to the Table of Contents and the List of Tables and Figures for a complete reference with appropriate page numbers.

2.2 Presentation of Results

Table 2-1 presents the results of the emissions testing project for Unit #1 while Table 2-2 presents the results of the emissions testing project for Unit #2. A more detailed summary of the sampling gas parameters is presented in Appendix A.

2.3 Unit #2 Dioxins/Furans Testing

Unit 2 experienced a severe malfunction event (tube rupture in the economizer) on January 27, 2008. It was returned to service January 29, 2008. The facility started compliance emission testing unit 2 on January 30, 2008 when it appeared to be stabilized. EPA Method 29 and 26 tests were then completed. The facility conducted dioxins/furans (DF) compliance emission testing, EPA Method 23, on unit 2 on February 1, 2008. The test program consisted of 3 consecutive EPA Method 23 test procedures. Run number 2-S-M231 began at 0819 and ended at 1229. An inspection of this sample indicated excess particulate matter (PM) in the sample compared to normal operations and that there was a malfunction in the fabric filter (FF) particulate control system during this test. The facility maintenance personnel immediately started inspection of the unit to identify the malfunction. The FF malfunction issues were resolved, damaged filter bags were replaced, and the unit was returned to normal operation. Emission test number 2-S-M23-2 was then started at 1720 and sample 2-S-M23-3 was started at 2144. The DF testing was completed at 0150, February 2, 2008.

The unit 2 tube rupture event adversely effected filter bags in the FF. This type of malfunction can damage the filter bag by hardening material on the bag surface. This may cause unexpected and unpredictable bag failure sometime after the FF is put back in service. A review of the events after the tube rupture indicates that this is the probable cause of the bag failure. The excess PM from the malfunctioning FF can contribute to the elevated DF results for sample run 2-S-M23-1. The other samples showed that the DF results decreased after repair. The results for the additional testing between February 19 (test runs 2-S-M23-4, 2-S-M23-6, 2-S-M23-7, all normal; test

**Table 2-1
Unit #1 Summary of Emissions**

Parameter	Rep. 1	Rep. 2	Rep. 3	Average	Permit Limits
Carbon Silo					
Opacity, %	0	---	---	0	10
Fugitive Emissions					
Fugitive Emissions, %	0.0	0.0	0.0	0.0	5 ¹
Unit #1 SDA Inlet Concentrations					
Carbon Monoxide, ppm @ 7% O ₂	10	---	---	10	100 ²
Hydrogen Chloride, ppm @ 7% O ₂	676	662	706	682	NA
Mercury, ug/DSCM @ 7% O ₂	45.9	68.0	113	75.7	NA
Sulfur Dioxide, ppmvd @ 7% O ₂	35	---	---	35	NA ²
Unit #1 Stack Concentrations					
Hydrogen Chloride, ppm @ 7% O ₂	7.19	7.94	9.50	8.21	29
Mercury, ug/DSCM @ 7% O ₂	9.23	5.58	5.60	6.81	70
Metals					
Cadmium, mg/DSCM @ 7% O ₂	0.00517	0.00238	0.00253	0.00336	0.04
Lead, mg/DSCM @ 7% O ₂	0.0348	0.0216	0.0155	0.0240	0.44
Nitrogen Oxides, ppm @ 7% O ₂	171	---	---	171	205 ²
Opacity, %	0	0	0	0	10
Particulate, mg/DSCM @ 7% O ₂	6.03	4.69	1.82	4.18	27
Sulfur Dioxide, ppm @ 7% O ₂	1	---	---	1	29 ²
Unit #1 Removal Efficiency %					
HCl RE%, ppm @ 7% O ₂	98.9	98.8	98.7	98.8	≥95%
Mercury RE%, ug/DSCM @ 7% O ₂	79.9	91.8	95.0	88.9	≥85%
Sulfur Dioxide RE%, ppm @ 7% O ₂	97.1	---	---	97.1	≥75% ²

¹ Permit limit is 5% (9 minutes during a 180 minute test). Results presented as 'Average' is cumulative for three 60 minute test runs.

² Data provided from facility CEM system.

**Table 2-2
Unit #2 Summary of Emissions**

Parameter	Rep. 1	Rep. 2	Rep. 3	Average	Permit Limits
Unit #2 SDA Inlet Concentrations					
Carbon Monoxide, ppm @ 7% O ₂ [~]	7	---	---	7	100 ¹
Hydrogen Chloride, ppm @ 7% O ₂	740	693	663	699	NA
Mercury, ug/DSCM @ 7% O ₂	79.3	102	73.4	85.0	NA
Sulfur Dioxide, ppmvd @ 7% O ₂	24	---	---	24	NA ¹
Unit #2 Stack Concentrations					
Dioxins/Furans, ng/DSCM @ 7% O ₂ Test Runs 1, 2, and 3 ²	46.0	37.4	18.6	28.0 ²	30
Dioxins/Furans, ng/DSCM @ 7% O ₂ Test Runs 4, 6, and 7 ³	6.04	6.39	5.78	6.07 ³	30
Hydrogen Chloride, ppm @ 7% O ₂	6.13	6.10	5.73	5.99	29
Mercury, ug/DSCM @ 7% O ₂	4.02	3.08	3.19	3.43	70
Metals					
Cadmium, mg/DSCM @ 7% O ₂	0.00200	0.00416	0.00276	0.00298	0.04
Lead, mg/DSCM @ 7% O ₂	0.0265	0.0358	0.0174	0.0266	0.44
Nitrogen Oxides, ppm @ 7% O ₂	187	---	---	187	205 ¹
Opacity, %	0	0	0	0	10
Particulate, mg/DSCM @ 7% O ₂	1.86	4.01	2.21	2.69	27
Sulfur Dioxide, ppm @ 7% O ₂	2	---	---	2	29 ¹
Unit #2 Removal Efficiency %					
HCl RE%, ppm @ 7% O ₂	99.2	99.1	99.1	99.1	≥95%
Mercury RE%, ug/DSCM @ 7% O ₂	94.9	97.0	95.7	95.9	≥85%
Sulfur Dioxide RE%, ppm @ 7% O ₂	91.7	---	---	91.7	≥75% ¹

¹ Data provided from facility CEM system.

² Average is a two run average, please refer to Section 2.3 for a discussion.

³ Additional testing results after fabric filter repair, please refer to Section 2.3 for a discussion.

run 2-S-M23-5 aborted due to FF malfunction) to 21, 2008 indicate very low emissions similar to previous test programs at this facility.

2.4 Opacity Results

Opacity measurements were taken during each EPA Method 29 test run. No opacity results are presented in Appendix A because all values were zero. The field data sheets are located in Appendix B.

Opacity measurements were also taken on the Carbon Silo. No opacity results are presented in Appendix A because all values were zero. The field data sheets are located in Appendix B.

2.5 Fugitive Emissions Results

Fugitive emissions measurements were taken along the ash discharge system and at the ash loading area. The field data sheets are located in Appendix B.

2.6 SO₂, NO_x, and CO Compliance Data

The sulfur dioxide, nitrogen oxides, and carbon monoxide results were provided by the facility as 24 hour averages. The facility CEM data printouts sheets are located in Appendix B.

3.0 PROCESS DESCRIPTION AND OPERATION

The Lake County Resource Recovery Facility processes up to 528 tons of solid waste each day, generating up to 14.5 megawatts of electricity. The facility was designed and built and is operated by Covanta of Lake, Inc. Each of the two (2) Martin GmbH waterwall furnaces processes up to 264 tons of waste per day. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment consisting of spray dryer absorbers (SDA) and fabric filter baghouses.