New Jersey Department of Environmental Protection
Reason for Application

Permit Being Modified

Permit Class: BOP **Number:** 90003

Description of Modifications: This is the five year Title V renewal application for the Covanta Essex Company, Essex County Resource Recovery Facility, PI #07736.

Because of the replacement of the electrostatic precipitators (ESPs) for all three MWCs with baghouses, which was completed in November, 2016, we are requesting removal of all permit conditions related to operation of the ESPs and emission limits associated with operation of the MWCs with an ESP. The specific changes requested are included as an attachment to this application in Appendix C.

Also, we are requesting that the responsible official be changed to be our current Facility Manager, Carlos Ascencio.

Additionally, Equipment ID numbers E31, Re-Feed Chute, and E32, Feeder, have been permanently removed from the facility because re-feeding of combined ash for metal recovery is prohibited by condition 126 of the Solid Waste Facility Permit for the Essex County Resource Recovery Facility issued by NJDEP Division of Solid and Hazardous Waste. Please remove all references to E31 and E32 from the emission unit description for U15 Ash and Metals Recovery System and from the Equipment Inventory. Specific changes to the permit requested are included as an attachment to this application.

Finally, additional changes to permit conditions are requested to remove obsolete requirements and correct some typographical errors found. These changes are also included as an attachment to this application in Appendix C.

New Jersey Department of Environmental Protection
Facility Profile (General)

Facility Name (AIMS): Covanta Essex Company

Facility ID (AIMS): 07736

Street Address:

Mailing Address:

State Plane Coordinates:

X-Coordinate:	574
Y-Coordinate:	4,510
Units:	UTM Zone 18N - Meters
Datum:	Unknown
Source Org.:	Other/Unknown
Source Type:	Other/Unknown

County: Essex

Location Description: Municipal Waste Combustion using mass-burn waterwall furnace and boiler that generates electricity.

Industry:

Primary SIC:	
Secondary SIC:	
NAICS:	562213

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: Air Permit Information Contact

Organization: Covanta Essex Company
Name: Patricia Earls
Title: NJ Regional Environmental Manager
Phone: (973) 817-7322 x
Fax: (973) 344-4999 x
Other: (201) 621-1845 x
Type: Mobile
Email: pearls@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

Contact Type: BOP - Operating Permits

Organization: Covanta Essex Company
Name: Patricia Earls
Title: NJ Regional Environmental Manager
Phone: (973) 817-7322 x
Fax: (973) 344-4999 x
Other: (201) 621-1845 x
Type: Mobile
Email: pearls@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

Contact Type: Environmental Officer

Organization: Covanta Essex Company
Name: Patricia Earls
Title: NJ Regional Environmental Manager
Phone: (973) 817-7322 x
Fax: (973) 344-4999 x
Other: (201) 621-1845 x
Type: Mobile
Email: pearls@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: General Contact

Organization: Covanta Essex Company
Name: Patricia Earls
Title: NJ Regional Environmental Manager
Phone: (973) 817-7322 x
Fax: (973) 344-4999 x
Other: (201) 621-1845 x
Type: Mobile
Email: pearls@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

Contact Type: On-Site Manager

Organization: Covanta Essex Company
Name: Carlos Ascencio
Title: Facility Manager
Phone: (973) 817-7228 x
Fax: (973) 344-4999 x
Other: (973) 722-3574 x
Type: Mobile
Email: cascencio@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

Contact Type: Responsible Official

Organization: Covanta Essex Company
Name: Carlos Ascencio
Title: Facility Manager
Phone: (973) 817-7228 x
Fax: (973) 344-4999 x
Other: (973) 722-3574 x
Type: Mobile
Email: cascencio@covanta.com

Org. Type: Partnership
NJ EIN: 75611300000

Mailing Address: 183 Raymond Boulevard
Newark, NJ 07105

New Jersey Department of Environmental Protection
Facility Profile (Permitting)

1. Is this facility classified as a small business by the USEPA?	No
2. Is this facility subject to N.J.A.C. 7:27-22?	Yes
3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22?	No
4. Has a copy of this application been sent to the USEPA?	No
5. If not, has the EPA waived the requirement?	No
6. Are you claiming any portion of this application to be confidential?	No
7. Is the facility an existing major facility?	Yes
8. Have you submitted a netting analysis?	No
9. Are emissions of any pollutant above the SOTA threshold?	Yes
10. Have you submitted a SOTA analysis?	No
11. If you answered "Yes" to Question 9 and "No" to Question 10, explain why a SOTA analysis was not required	Title V Renewal
12. Have you provided, or are you planning to provide air contaminant modeling?	No

New Jersey Department of Environmental Protection
Insignificant Source Emissions

RADIUS File Submission

Note: Following is a summary of the information contained in your application. If you have completed the submittal, the service will appear in the "My Services - Submitted" section of your My Workspace page. Please check the "Status" column to confirm whether it was successfully transmitted or not. If the status of the service is "Submission Failed - Please Contact NJDEP," please send an e-mail message to PortalComments@dep.nj.gov for assistance, including the Service ID number of the failed submittal in the message. If you have not yet completed the submittal, the service will appear in the "My Services - In Progress" section of the My Workspace page instead, and the "Status" column will indicate the stage of the submittal.

Selected Facility Name: COVANTA ESSEX CO

Selected Facility ID: 07736

Submittal Type: Operating Permit Application - Initial - (5 Year Renewal)

Click here to access the pdf version of the information submitted in the RADIUS file.

Certification

Certifier: Patricia Earls
Certifier ID: PEARLS12
Challenge/Response Question: What is your mother's maiden name?
Challenge/Response Answer: ******
Certification PIN: ******
Date/Time of Certification: 10/02/2017 14:31

For Air Permits:
"I certify under penalty of law that I believe the information provided in this document is true, accurate, and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information."

For Emission Statements:
"I certify under penalty of law that I believe the information provided in this document is true, accurate, and complete. For those portions of the document that are based on estimates, those estimates are the result of good faith application of sound professional judgment, using techniques, factors, or standards approved by the Department or EPA, or generally accepted in the trade. I am aware that there are significant civil and criminal penalties, including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

Patricia Earls — **Individual With Direct Knowledge**
10/02/2017 — **Date**

Certifier:	Carlos Ascencio
Certifier ID:	CASCENCIO
Challenge/Response Question:	What is your favorite pet?
Challenge/Response Answer:	******
Certification PIN:	******
Date/Time of Certification:	10/02/2017 14:58

For Air Permits:
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

For Emission Statements:
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in the attached document and, based on my inquiry of those officials immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I certify that, based on my inquiry of those officials immediately responsible for obtaining the information, I believe that any estimates are the result of good faith application of sound professional judgment, using techniques, factors, or standards approved by the Department or EPA, or generally accepted in the trade. I am aware that there are significant civil and criminal penalties, including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

Carlos Ascencio	10/02/2017
Responsible Official	**Date**

Payment Information

Total Payment Amount:	$.00
Payment Date:	
Payment Method:	

New Jersey Department of Environmental Protection
Division of Air Quality

Attachment to the RADIUS Air Operating Permit Renewal Application

Submittal Date: 10/02/2017

Facility Name: Essex County Resource Recovery Facility PI#: 7736

This package must be submitted as an attachment to the RADIUS Air Operating Permit Renewal Application. The forms contained in this package must not be altered. Use of any non-standard forms will require resubmittal of the renewal application.

New Jersey Department of Environmental Protection
401 East State Street, 2nd Floor, P.O. Box 420, Mail Code 401-02, Trenton, NJ 08625-0420

Operating Permits Helpline 609-633-8248

Revised Aug 3, 2017

Table of Contents

Applying for an Air Operating Permit Renewal

This summary was prepared to assist you in renewing an operating permit. To continue lawful operation of a facility that has obtained an approved operating permit, a permittee must initiate the renewal of the operating permit by submitting a timely and administratively complete permit application. A complete operating permit renewal application consists of the RADIUS Air Operating Permit Renewal application forms and all forms contained in this package, along with any supporting documents (if needed).

1. **Timely**
   To be considered timely pursuant to N.J.A.C. 7:27-22.30(c), the Department must receive an administratively complete renewal application at least 12 months prior to expiration of the operating permit. The applicant is encouraged to voluntarily submit the renewal application at least 15 months prior to expiration of the operating permit, so that any deficiencies in the application can be addressed prior to the application due date. Only applications, which are administratively complete by the application deadline, will be eligible for coverage by an application shield.

2. **Administratively Complete**
   To be deemed administratively complete pursuant to N.J.A.C. 7:27-22.30(d), an operating permit renewal application must include all information requested in the RADIUS Air Operating Permit Renewal application forms and all forms contained in this package.

3. **Application Shield**
   The Department will grant an application shield when a timely and administratively complete application is received pursuant to N.J.A.C. 7:27-22.30(g). An application shield grants the right to operate the facility upon the expiration of its operating permit. If an operating permit has expired, the conditions of the operating permit remain enforceable until the operating permit is reissued. Unless a facility obtained an application shield, the right to operate the facility terminates upon the expiration of its operating permit pursuant to N.J.A.C. 7:27-22.30(i).

4. **Permit Changes During Renewal Process**
   Minor changes, such as those that would qualify for a seven-day-notice change or administrative amendment, may be made with the renewal pursuant to N.J.A.C. 7:27-22.30(d). Significant changes, such as those qualifying for a minor or significant modification, must be submitted as a separate permit application. The Department at its discretion may include approval of these proposed changes along with the approval of the renewal application.

The forms contained in this attachment must not be altered. Use of any non-standard forms will require resubmittal of the renewal application.

Section 1
Compliance Requirements

A. Compliance Assurance Monitoring (CAM) Applicability Determination

EPA developed 40 CFR 64 (Compliance Assurance Monitoring or "CAM") in order to provide reasonable assurance that facilities comply with emission limitations by monitoring the operation and maintenance of their control devices. In general, CAM applies to emission units that meet all of the following conditions:

1. The emission unit is located at a major source for which a Title V permit is required;
2. The emission unit is subject to an emission limitation or standard for a specific contaminant;
3. The emission unit uses a control device to achieve compliance with that specific contaminant's federally enforceable limit or standard;
4. The emission unit has potential pre-control or post-control emissions (of that specific contaminant) of at least 100% of the major source amount (see 40 CFR 64.2 - "Major facility"); and
5. The emission unit is not otherwise exempt from CAM (for exemptions, see 40 CFR 64.2(b)).

To learn more about the CAM program and for guidance on how to prepare a CAM plan, check EPA's website: https://www.epa.gov/air-emissions-monitoring-knowledge-base/compliance-assurance-monitoring.

After reviewing the information above, check the following boxes as applicable:

☐ **NO**, my facility **does not** have any emission units subject to CAM requirements.

☑ **YES**, my facility **does** have one or more emission units subject to CAM requirements, and

- ☑ A CAM plan is provided with this operating permit renewal application.
- ☐ A CAM plan will be submitted during the technical review of this renewal application.

B. Health Risk Assessment

1. Consistent with N.J.A.C. 7:27-22.3(cc), the Department will review each operating permit renewal application to ensure that emissions of Hazardous Air Pollutants (HAPs) do not pose a public health risk.

2. After receipt of the renewal application, the Department will notify applicants if a Facility-Wide Risk Assessment must be performed. A plot plan and air dispersion modeling protocol will be required in that case.

3. Previous Facility-Wide Risk Assessment, additions and changes in toxicity values or standards, and changes in the air model and/or the facility's location (in an Environmental Justice area, near a sensitive population etc.) will determine the need for health risk assessment.

C. Acid Rain Program

To learn more about Acid Rain Program, check EPA's website: https://www.epa.gov/airmarkets/acid-rain-program.

Check the following boxes as applicable:

☑ **NO**, this facility **is not subject** to the Acid Rain Program, codified at 40 CFR 72.

☐ **YES**, this facility **is subject** to the Acid Rain Program, codified at 40 CFR 72, and

- ☐ There have been no changes affecting my facility's Acid Rain Permit and a renewal application is provided with this operating permit renewal application.
- ☐ There have been changes affecting my facility's Acid Rain Permit and a revised/updated application is provided with this operating permit renewal application.

D. N.J.A.C. 7:27-18 Netting Analysis and General Operating Permit Determination

Air permit applications requesting air emissions increases are required to include a netting analysis to determine if the resulting net emission increase at the facility constitutes a significant net emission increase pursuant to N.J.A.C. 7:27-18.7. These netting analyses must be kept on site or submitted to the Department consistent with the Department's guidance included in the memo listed under "N.J.A.C. 7:27-18 Netting Analysis" and the "General Procedures for General Operating Permits" on the Department's webpage http://www.state.nj.us/dep/aqpp/permitguide.html and http://www.state.nj.us/dep/aqpp/gop.html, respectively. The Department intends to review these analyses at least once in 5 years unless no permit modifications proposing emissions increases were made and no GOPs were obtained during the past 5-year permit term. All netting analyses corresponding to a modification to increase emissions or a GOP must be submitted to the Department. Any netting analyses submitted with a modification application during the 5-year permit term do not need to be submitted again with the permit renewal application.

Check the following boxes as applicable:

☑ **NO**, this facility **has not made** permit changes resulting in emissions increases, including GOPs, since the last permit renewal.

☐ **YES**, this facility **has made** permit changes resulting in emissions increases, including GOPs, since the last permit renewal, and

- ☐ One or more netting analyses, prepared consistent with N.J.A.C. 7:27-18.7 during this permit term, were provided with a modification application during the 5-year permit term.
- ☐ One or more netting analyses, prepared consistent with N.J.A.C. 7:27-18.7 during this permit term, are provided with this permit renewal application.
- ☐ One or more netting analyses, prepared consistent with N.J.A.C. 7:27-18.7 during this permit term, will be submitted during the technical review of this permit renewal application.

Attachment to the RADIUS Air Operating Permit Renewal Application

Section 2

Certification

No additional certification is required when submitting the operating permit renewal application through NJDEP Online: http://www.nj.gov/dep/online/.

Complete the information below when submitting the operating permit renewal application on an electronic storage device, through the mail. Click on the icon on the signature line to add an image of a signature saved on your computer. If you do not have one, print the form out and manually sign on the line.

Facility PI#: 7736

Facility Name: Essex County Resource Recovery Facility

Responsible Official:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

Name: Carlos Ascencio **Signature:** _____ **Date:** _____

Individuals with Direct Knowledge:

I certify under penalty of law that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

Name: Patricia Earls **Signature:** _____ **Date:** _____

Section Being Certified: _____

Name: _____ **Signature:** _____ **Date:** _____

Section Being Certified: _____

Name: _____ **Signature:** _____ **Date:** _____

Section Being Certified: _____

Name: _____ **Signature:** _____ **Date:** _____

Section Being Certified: _____

The forms contained in this attachment must not be altered. Use of any non-standard forms will require resubmittal of the renewal application.

Section 3
Summary of 7-Day Notice Changes

Instructions
Complete this form if any 7-day notice changes were submitted to the NJDEP since the approval of the initial operating permit or most recent renewal thereof. With this information, the NJDEP will include the provisions of any eligible 7-day notice changes into the renewed permit.

No.	Date of 7-Day Notice	Brief Description of Change
		No 7-day Notice Changes have been submitted since the most recent OP renewal date of October 28, 2013.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	5	For equipment E1, E2 and E3, each owner or operator required to install a continuous monitoring device shall submit an excess emissions .....following the end of each six-month period. [40 CFR 60.7(c)]	None	Other: Written records of excess emissions shall include the following information: (1) The magnitude of excess ..... or adjusted, such information shall be stated in the report. [40 CFR 60.7(c)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): Semi-annually .....applicable requirement. [40 CFR 60.7(c)]	✔	
GR1	6	For equipment subject to NSPS CMS requirements (E1, E2 and E3): Each owner or operator required to install a continuous .... All reports shall be postmarked by the 30th day following the end of each six-month period. [40 CFR 60.7(c)]	None	Other: Written records of excess emissions shall include the following information: (1) The magnitude of excess emissions computed in ....or adjusted, such information shall be stated in the report. report. [40 CFR 60.7(c)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): Semi-annually beginning on the 30th day of the 6th ..... requirement of this applicable requirement. [40 CFR 60.7(c)]	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	7	For equipment E1, E2 and E3, the owner or operator shall conduct performance tests and data reduction in ..... methods and procedures contained in each applicable subpart, unless otherwise specified and approved by the Administrator. [40 CFR 60.8(b)]	None	None	None	✔	
GR1	8	For equipment E1, E2 and E3, performance tests shall be conducted under conditions the Administrator specifies to the plant .... otherwise specified in the applicable standard. [40 CFR 60.8(c)]	None	None	None	✔	

Make additional copies of this form if needed.

Section 4
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Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	9	For equipment E1, E2 and E3, the owner or operator shall provide the Administrator at least 30 days prior notice of any performance test and shall provide adequate performance testing facilities as specified in 40 CFR Part 60.8(e). [40 CFR 60.8(d)]	None	None	None	✔	
GR1	10	For equipment E1, E2 and E3, unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. [40 CFR 60.8(f)]	None	None	None	✔	

Make additional copies of this form if needed.

Section 4
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Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	11	For equipment E1, E2 and E3, compliance with NSPS standards specified in this permit, other than opacity, shall be determined only by performance tests established by 40 CFR 60.8, unless otherwise specified in NSPS. [40 CFR 60.11(a)]	None	None	None	✔	
GR1	12	For equipment subject to the NSPS COM requirement (E1, E2, and E3), the owner or operator shall demonstrate compliance with NSPS opacity standards specified in 40 CFR Part 60. [40 CFR 60.11(b)]	None	None	None	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	13	For equipment required to conduct visual opacity tests (E16 and E17): The owner or operator shall ..... specified and approved by the Administrator. [40 CFR 60.11(b)]	Monitored by visual determination annually, based on 6 minute blocks. Compliance with fugitive ash ....at 40 CFR 60.58b(k). [40 CFR 60.39b(d)] & [40 CFR 60.11(b)]	Recordkeeping by data acquisition system (DAS) / electronic data storage annually, or manually in a .... emissions based on Method 9 observations. [40 CFR 60.13(h)]	Submit a report: Annually. The owner or operator shall submit results of Method 9 observation data to the Administrator. [40 CFR 60.11(e)(2)]	✔	
GR1	14	For equipment E1, E2, E3, E16 and E17, the NSPS opacity standard shall apply at all times except during periods of startup, shutdown, malfunctions and as otherwise specified in this permit. [40 CFR 60.11(c)]	None	None	None	✔	

Make additional copies of this form if needed.

Section 4
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Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	17	Opacity: For equipment E1, E2, and E3, the owners and operators of a COMS installed in accordance with the provisions of 40 ..... automatic zero compensation exceeds 4 percent opacity. [40 CFR 60.13(d)(1)]	None	Other: Maintain records in accordance with 40 CFR 60.7 (f). [40 CFR 60.13(d)].	None	✔	
GR1	18	Opacity: Unless otherwise approved by the Administrator, the following procedures must be followed for a ..... and or software used during normal measurement operation. [40 CFR 60.13(d)(2)]	None	Other: Maintain records in accordance with 40 CFR 60.7 (f). [40 CFR 60.13(d)].	None	✔	

Make additional copies of this form if needed.

Section 4
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Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	19	Except for system breakdowns, repairs, calibration checks, and zero and span adjustments, all .....of data recording for each successive 6-minute period. [40 CFR 60.13(e)(1)]	Other: See Applicable Requirement. [40 CFR 60.13(e)(1)].	Other: See Applicable Requirement. [40 CFR 60.13(e)(1)].	None	✔	
GR1	20	Except for system breakdowns, repairs, calibration checks, and zero and span adjustments, all ..... analyzing and data recording) for each successive 15-minute period. [40 CFR 60.13(e)(2)]	Other: See Applicable Requirement. [40 CFR 60.13(e)(2)]	Other: See Applicable Requirement. [40 CFR 60.13(e)(2)]	None	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	21	All continuous monitoring systems or monitoring devices shall be installed such that representative .....systems contained in the applicable Performance Specifications of Appendix B of 40 CFR Part 60 shall be used. [40 CFR 60.13(f)]	None	None	None	✔	
GR1	22	For equipment E1, E2, and E3, the owner or operator shall reduce all continuous monitoring systems for .....limit (e.g. rounded to the nearest 1 percent opacity). [40 CFR 60.13(h)]	None	Other: See Applicable Requirement [40 CFR 60.13(h)]	None	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
GR1	23	For equipment E1, E2, and E3, the owner or operator shall reduce all continuous monitoring systems (other than opacity) data to 1-hour .....subparts to specify the emission limit (e.g. rounded to the nearest 1 percent opacity). [40 CFR 60.13(h)]	None	Other: See Applicable Requirement. [40 CFR 60.13(h)]	None	✔	
						✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1,OS Sum.	1	STACK TESTING SUMMARY The permittee shall conduct stack tests using an approved protocol to demonstrate ..... allowed by this permit, shall be taken at the same worst case conditions as described above. N.J.A.C. 7:27-22.16(a)]	Other: Monitoring as required by this OS Summary or under the applicable operating scenario(s). [N.J.A.C. 7:27-22.16(o)].	Recordkeeping by stack test results upon occurrence of event. Recordkeeping as required by this OS Summary or under the applicable operating scenario(s). [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule , i.e., as required by the OS Summary or Operating Scenario conditions elsewhere in this permit. [N.J.A.C.7:27-22.16(o)]	✔	
U1, OS Sum.	2	STACK TESTING REQUIREMENTS: For facilities demonstrating compliance with 40 CFR 62, Subpart FFF ... in each 5-year calendar period. From BOP090003. [40 CFR 62.14109(a)] & [40 CFR 60.58(b)]	Monitored by stack emission testing annually, based on each of three Department validated stack test runs. [40 CFR 60.58(b)(c)]	Recordkeeping by stack test results annually. [40 CFR 60.59(b)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule Stack test report must be submitted within 60 days afterperforming the test. [40 CFR 60.58(b)]	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1,OS Sum.	3	STACK TESTING REQUIREMENTS: Conduct annual stack tests on each municipal solid waste combustor to demonstrate compliance with the lead...[N.J.A.C. 7:27-22.16 (o)], [40 CFR 60.39b(d) & (f)] & [40 CFR 62.14109(b)]	Monitored by stack emission testing annually, based on the average of three tests (as a minimum.) Stack testing for lead and cadmium (using EPA Method 29) shall be as required at 40 CFR 60.58b(d) (1). [N.J.A.C. 22.16(o)] [40 CFR 60.39b(d) & (f)] & [40 CFR 62.14109(b)]	Recordkeeping by stack test results upon occurrence of event. All records shall be maintained onsite in either paper copy or computer-readable format. .... [N.J.A.C. 7:27-22.16(o)], [40 CFR 60.39b(d) & (f)] &. [40 CFR 62.14109(a)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. For all tests, the permittee must ...&. [40 CFR 62.14109(a)]	✔	
U1,OS Sum.	4	STACK TESTING REQUIREMENTS: Conduct annual stack tests on each municipal solid waste combustor to determine compliance with HCl emission limits. [N.J.A.C. 7:27-22.16 (e)], [40 CFR 60.39b(f)] & [40 CFR 62.14109(b)]	Monitored by stack emission testing annually, based on the average of three Department validated ..... [N.J.A.C. 7:27-22.16(e)], [40 CFR 60.39b(f), & [40 CFR 62.14109(b)	Recordkeeping by stack test results upon occurrence of event. All records shall be ..... [N.J.A.C. 7:27-22.16(o)], [40 CFR 60.39b(f)] &. [40 CFR 62.14109(a)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. For all tests, the permittee must ..... and. [40 CFR 62.14109(a)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1,OS Sum.	5	STACK TESTING REQUIREMENTS: Conduct annual stack tests for dioxins/furans. Total polychlorinated dibenzodioxins emissions and total ... & [40 CFR 62.14109(b)]	Monitored by stack emission testing annually, based on the average of three tests. Minumum sample time shall be 4 hours per . &. [40 CFR 62.14109(d)(1)]	Recordkeeping by stack test results upon occurrence of event. All records shall be maintained onsite in either paper copy or ... &. [40 CFR 62.14109(a)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. For all tests, the permittee must ... &. [40 CFR 62.14109(a)]	✔	
U1,OS Sum.	6	STACK TESTING REQUIREMENTS: Conduct annual stack tests on each municipal solid waste combustor to demonstrate compliance with the particulate ... & [40 CFR 62.14109(b)]	Monitored by stack emission testing annually, based on the average of three Department validated stack test runs conducted successively. Compliance with ... and. [40 CFR 62.14109(b)]	Recordkeeping by stack test results upon occurrence of event. All records shall be maintained onsite in either paper copy or ..... and. [40 CFR 62.14109(a)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. For all tests, the permittee must ... and. [40 CFR 62.14109(a)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS SUM	9	STACK TESTING REQUIREMENTS: The permittee shall conduct stack tests on each municipal solid waste combustor using an .... [N.J.A.C. 7:27-22.16(a)]	Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs using EPA Method 10 for CO and EPA ..... [N.J.A.C. 7:27-22.16(e)]	Recordkeeping by stack test results upon occurrence of event based on the preconstruction permit. [N.J.A.C. 7:27-22.16(e)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule (before one year prior to renewal of this operating permit.) Stack testing shall ...&. [N.J.A.C. 7:27-22.18(h)]	✔	
U1, OS SUM	27	SO2 <= 1.2 lb/MMBTU gross heat input determined as a 30-day rolling average. No person shall expand or reconstruct an existing .... including startup and shutdown. [N.J.A.C. 7:27-10.3(a)3]	SO2: Monitored by continuous emission monitoring system continuously, based on a 1 hour block average. .... [40 CFR 60.48Da(d)] &. [N.J.A.C. 7:27-10.3(b)]	SO2: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	63	Start-up Period: Any visible emissions caused by start-up shall not exceed an average of 10% opacity in any 6 minute block period. [N.J.A.C. 7:27-22.16(e)]	Start-up Period: Monitored by continuous opacity monitoring system continuously, based on 6 minute blocks , using USEPA referenced Method 9, or an equivalent method approved by USEPA and the Department. [N.J.A.C. 7:27-22.16(e)]	Start-up Period: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .... October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS SUM	64	The owner or operator shall develop a QA/QC plan for all CEMS/COMS required by this permit prepared in accordance with the NJDEP Technical Manual 1005 posted on the AQPP webpage at http://www.state.nj.us/dep/aqp	Other: The QA/QC coordinator shall be responsible for reviewing the QA/QC plan on an annual basis. [N.J.A.C. 7:27-22.16(o)].	Other: Maintain readily accessible records of the QA/QC plan including QA date and quarterly reports. [N.J.A.C. 7:27-22.16(o)].	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	67	Shutdown Period: Any visible emissions caused by shutdown shall not exceed an average of 10% opacity in any 6 minute block period. [N.J.A.C. 7:27-22.16(e)]	Shutdown Period: Monitored by continuous opacity monitoring system continuously, based on 6 ..... Referenced Method 9, or an equivalent method approved by USEPA and the Department. [N.J.A.C. 7:27-22.16(e)]	Shutdown Period: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit a report: As per the approved schedule. [N.J.A.C. 7:27-22.16(e)]	✔	
U1 OS SUM	68	Temperature in the Exit Gas Stream: Upon start-up of a unit, no solid waste may be introduced into the furnace unless the ..... recorded by the permanent thermocouples located at the 116' 4" elevation. [N.J.A.C. 7:27-22.16(e)]	Temperature in the Exit Gas Stream: Monitored by temperature instrument upon occurrence of event. [N.J.A.C. 7:27-22.16(e)	Temperature in the Exit Gas Stream: Monitored by temperature instrument upon occurrence of event. [N.J.A.C. 7:27-22.16(e)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	69	Temperature in the Exit Gas Stream: Within one hour after waste has been introduced into any furnace, the temperature one second ..... by the permanent thermocouples located at 116' 4" elevation. N.J.A.C. 7:27-22.16(e)]	Temperature in the Exit Gas Stream: Monitored by temperature instrument continuously. [N.J.A.C. 7:27-22.16(e)]	Temperature in the Exit Gas Stream: Recordkeeping by strip chart or data acquisition (DAS) system continuously or by manual logging.upon occurrence of event. [N.J.A.C. 7:27-22.16(e)]	None	✔	
U1 OS SUM	70	Temperature in the Exit Gas Stream >= 1,212 degrees F. The temperature one second downstream of secondary air .... as recorded by the permanent thermocouples located at the 116' 4" elevation. [N.J.A.C. 7:27-22.16(e)]	Temperature in the Exit Gas Stream: Monitored by temperature instrument continuously. Operator shall ensure ..... quarterly. [BOP090003.]. [N.J.A.C. 7:27-22.16(e)]	Temperature in the Exit Gas Stream: Recordkeeping by strip chart or data acquisition (DAS) system continuously or by manual logging.upon occurrence of event. [N.J.A.C. 7:27-22.16(e)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	78	Mercury Emissions<=28 ug/dscm, based on an annual average and with each test run corrected to seven percent oxygen, as tested ..... 28 ug/m3 or 95% control and also never exceed 464 lbs per [N.J.A.C. 7:27-27.4(a)]	Other: See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-27.4(c)].	Other: See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)].None	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-27.8(a)]	✔	
U1 OS SUM	79	The owner or operator of a MSW incinerator served by a control apparatus shall perform compliance testing every quarter to measure .....otherwise approved by the Department. [N.J.A.C. 7:27-27.4(b)]	Other: See stack testing requirements in U1 OS0. N.J.A.C. 7:27-27.4(d)].None	Other: See stack testing requirements in U1 OS0.[N.J.A.C. 7:27-27.4(d)].	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-27.4(a)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
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Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	95	SO2 <= 94 ppmvd corrected to 7% O2 concentration in the flue gas , average SO2 concentration in the stack gas or SO2 .... the average concentration of SO2 (ppmvd @ 7% O2) at the inlet to the acid gas control equipment. [N.J.A.C. 7:27-22..16(e)]	SO2: Monitored by continuous emission monitoring system continuously, based on a 1 hour block average , beginningSO2: Recordkeeping by strip chart or data acquisition (D and ending ..... is operating correctly. [N.J.A.C. 7:27-22.16(a)]	SO2: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .... October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS SUM	96	Hydrogen chloride <= 47 ppmvd @ 7% O2 , average HCl concentration in the stack gas or reduced to <= 10% of the HCl ..... average concentration of HCl (ppmvd @ 7% O2) at the inlet to the acid gas control equipment. [N.J.A.C. 7:27-22.16(a)]	Hydrogen chloride: Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	Hydrogen chloride: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	101	The temperature at the particulate controldevice inlet shall not exceed the maximum demonstrated particulate matter control .... This is based on the requirement at 40 CFR 60.53b(c). [40 CFR 60.39b(d)] & [40 CFR 62.14104(b)]	Monitored by temperature instrument continuously, based on a 1 hour block average which shall be used to calculate ..... [40 CFR 60.39b(d)] &. [40 CFR 62.14109(b)]	Recordkeeping by data acquisition system(DAS) / electronic data storage continuously ..... inspector. This is as stated at 40 CFR 60.59b(d)(2)(ii). [40 CFR 60.39b(d)] &. [40 CFR 62.14109(a)]	None	✔	
U1 OS SUM	102	BAGHOUSE SYSTEM Temperature of the flue gas at the inlet of the particulate control device, shall not .... stack emission tests. [40 CFR 60.51a] & [40 CFR 60.56a(c)]	Monitored by temperature instrument continuously, based on a 4 hour rolling average based on a 1 hour block average. [40 CFR 60.58a(h)(7)]	Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(o)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS SUM	111	Opacity <= 10 % (6-minute average), emission limit for opacity exhibited by the gases discharged to the atmosphere from a .... [40 CFR 60.33b(a)(1)(iii)] &. [40 CFR 62.14103(a)(1)]	Opacity: Monitored by continuous opacity monitoring system continuously, based on 6 minute blocks. The continuous opacity .... in U1 OS0. 40 CFR 60.58b(c)(11). [40 CFR 62.14109(b)]	Opacity: Recordkeeping by data acquisition system (DAS) / electronic data storage continuously. All 6-minute opacity levels ..... Recordkeeping for stack testing is as required at 40 CFR 60.59b(d)(9). [40 CFR 62.14109(a)]	None	✔	
U1 OS SUM	114	CO <= 100 ppmvd @ 7% O2 from each MWC except during periods of startup, shutdown, and malfunction. Startup, ... 40 CFR 62.14109(b), 40 CFR 60.34b(a) and 40 CFR 60.58b (a)(1). [40 CFR 62.14104(a)]	CO: Monitored by continuous emission monitoring system continuously, based on a 1 hour block average which shall be used to .... Monitoring is as specified at 40 CFR 60.58b(i)(1), 40 CFR 60.58b(i)(3), and 40 CFR 60.58b(i)(4). [40 CFR 62.14109(b)	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. All 1-hour average CO concentrations shall be .... [40 CFR 62.14109(a)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS SUM	112	Particulate Emissions <= 25 mg/dscm @ 7% O2 from each MWC on and after April 28, 2009, except .....specified by 40 CFR 62.14109(b). [40 CFR 60.33b(a)(1)(i)] &. [40 CFR 62.14103(a)(1)]	Particulate Emissions: Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. Monitoring is based on the requirements at 40 CFR 60.58b(c)(9). [40 CFR 62.14109(b)]	Particulate Emissions: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. Recordkeeping is based on the requirements at 40 CFR 60.59b(d)(9). [40 CFR 62.14109(a)]	None	✔	
U1,OS SUM	113	Nitrogen oxides (NOx) <= 205 ppmvd @ 7% O2 , 24-hour daily arithmetic average (midnight to ....specified by 40 CFR 62.14109(b). 40 CFR 60.33b(d) &. [40 CFR 62.14103(d)]	Nitrogen oxides (NOx): Monitored by continuous emission monitoring system continuously, based on a 1 .....the 24-hour daily arithmetic average nitrogen oxides emission concentration. [40 CFR 62.14109(b)]	Nitrogen oxides (NOx): Recordkeeping by strip chart or data acquisition (DAS) system ....inspector. This is as specified at 40 CFR 60.59b(d)(2)(i)(C). [40 CFR 62.15109(a)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS SUM	115	Lead Emissions <= 0.4 mg/dscm @ 7% O2 from each MWC on and after April 28, 2009, except ..... malfunction exception is specified by 40 CFR 62.14109(b). 40 CFR 60.33b(a)(4) &. [40 CFR 62.14103(a)(2)]	Lead Emissions: Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. Monitoring is based on the Method 29 requirements at 40 CFR 60.58b(d)(1). [40 CFR 62.14109(b)]	Lead Emissions: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. Recordkeeping is based on the requirements at 40 CFR 60.59b(d)(9). [40 CFR 62.14109(a)]	None	✔	
U1, OS SUM	116	Cadmium Emissions <= 0.035 mg/dscm @ 7% O2 from each MWC on and after April 28, 2009 except during periods of startup, shutdown, ...specified by 40 CFR 62.14109(b). [40 CFR 60.33b(a)(2)(i) &. [40 CFR 62.14103(a)(2)]	Cadmium Emissions: Monitored by stack emission testing annually, based on the average of three ..... requirements are based on the requirements at 40 CFR 60.58b(d)(1). [40 CFR 62.14109(b)]	Cadmium Emissions: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. Recordkeeping is based on the requirements at 40 CFR 60.59b(d)(9). [40 CFR 62.14109(a)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS SUM	117	Mercury Emissions <= 0.05 mg/dscm @ 7% O2 or 15 percent of the potential mercury emission concentration (85-percent reduction .....Startup, shutdown, and malfunction exception is specified by 40 CFR 62.14109(b). [40 CFR 60.33b(a)(3)]	Mercury Emissions: Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. Monitoring is based on the requirements of 40 CFR 60.58b(d)(2). [40 CFR 62.14109(b)]	Mercury Emissions: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0.. Recordkeeping is based on the requirements at 40 CFR 50.59b(d)(9)(i). [40 CFR 62.14109(a)]	None	✔	
U1, OS Sum.	118	SO2 <= 29 ppmvd @ 7% O2 , or 25% of the potential sulfur dioxide emission concentration (75 percent reduction by weight or volume) .....daily geometric mean. [40 CFR 60.33b(b)(3)(i)] &. [40 CFR 62.14103(b)(1)]	SO2: Monitored by continuous emission monitoring system continuously, based on a .....Method 19. This is based on the requirement at 40 CFR 60.58b(e)(4). [40 CFR 62.14109(b)]	SO2: Recordkeeping by strip chart or data acquisition (DAS) system continuously. The .....concentrations. This is as specified at 40 CFR 60.59b(d)(2)(i)(B). [40 CFR 61.14109(a)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS Sum.	119	HCl Emissions <= 29 ppmvd @ 7% O2 or 5% of the potential hydrogen chloride emission concentration (95 percent reduction by weight or .....emission limit is based on a 24-hour daily geometric mean. [40 CFR 60.33b(b)(3)(i)] &. [40 CFR 62.14103(b)(1)]	HCl Emissions: Monitored by stack emission testing annually, based on the average of three 1-hour tests. .....determining % reduction, is based on the requirements at 40 CFR 60.58b(f). [40 CFR 62.14109 (b)]	HCl Emissions: Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. Recordkeeping is based on the requirements at 40 CFR 60.59b(d)(9). [40 CFR 62.14109(a)]	None	✔	
U1, OS Sum.	120	Dioxins/Furans (Total) <= 35 ng/dscm @ 7% O2. On and after April 28, 2009, the emission limit for designated facilities that employ an .....meter (total mass), corrected to 7 percent oxygen. [40 CFR 60.33b(c)(1)(ii)]	Dioxins/Furans (Total): Monitored by stack emission testing annually, based on the average of three 1-hour.....40 CFR 62.14109(d)(1). [40 CFR 62.14109(b)] & [40 CFR 62.14109(d)(1)]	Dioxins/Furans (Total): Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. This is as specified at 40 CFR 60.59b(d)(9)(i). [40 CFR 62.14109(a)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
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Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS SUM	121	Dioxins/Furans (Total) <= 30 ng/dscm @ 7% O2, except during periods of start-up, shutdown, and malfunction. Startup .... & [40 CFR 62.14103(c)(2)]	Dioxins/Furans (Total): Monitored by stack emission testing annually, based on the average .....specified at 40 CFR 62.14109(d)(1). [40 CFR 62.14109(b)] & [40 CFR 62.14109(d)(1)]	Dioxins/Furans (Total): Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. This is as specified at 40 CFR 60.59b(d)(9)(i). [40 CFR 62.14109(a)]	None	✔	
U1, OS1, OS3, OS5	2	Maximum emission rate of Non-Methane hydrocarbons as Methane, VOC (Total) <= 6.3 lb/hr. [N.J.A.C. 7:27-22.16(e)]	VOC (Total): Monitored by stack emission testing prior to permit renewal, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	VOC (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test – Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
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Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	3	Maximum concentration of Non-Methane Hydrocarbons as Methane, VOC (Total) <= 66 ppmvd @ 7% O2. [N.J.A.C. 7:27-22.16(e)]	VOC (Total): Monitored by stack emission testing prior to permit renewal, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16 (o)]	VOC (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test – Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	4	NOx (Total) <= 95 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Monitored by stack emission testing every 5 years, based on the average of three 1-hour tests. Three test runs must be conducted on each unit, with ammonia injection, to determine compliance. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Recordkeeping by stack test results every 5 years. N.J.A.C. 7:27-22.16(e)]	Stack Test – Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
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Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	5	NOx (Total) <= 300 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Monitored by continuous emission monitor continuously, based on a 1 hour block average, beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit and Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before ..... EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS1, OS3, OS5	6	NOx (Total) <= 155 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Monitored by continuous emission monitor continuously, based on a 24 hour period block, beginning and ending at midnight. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit and Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before ..... EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	7	NOx (Total) <= 150 ppmvd @ 7% O2. The owner or operator of a MSW incinerator of any size shall cause it to emit NOx at a..... based on a calendar day average. [N.J.A.C. 7:27-19.12(a)1]	NOx (Total): Monitored by continuous emission monitoring system continuously, based on one calendar day based on 1-hour .....demonstrate compliance using the NOx CEM. [N.J.A.C. 7:27-19.12(c)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously and calculating the average each calendar day. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .... through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS1, OS3, OS5	8	CO <= 126 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	CO: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5,	9	CO <= 400 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by continuous emission monitor continuously, based on a 1 hour block average , beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July..... October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS1, OS3, OS5,	10	CO <= 100 ppmvd @ 7% O2. The emission limitation shall apply at all times when .....start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by continuous emission monitor continuously, based on a 96 hour rolling average based on a 1 hour block average beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	12	SO2 <= 75.8 lb/hr. [N.J.A.C. 7:27-22.16(e)]	SO2: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs [From BOP080001.]. [N.J.A.C.7:27-22.16(o)]	SO2: Recordkeeping by stack test results upon occurrence of event. [From BOP080001.]. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS1, OS3, OS5	13	SO3 and H2SO4, as converted and expressed as H2SO4 <= 4 lb/hr. [N.J.A.C. 7:27-22.16(e)]	SO3 and H2SO4, as converted and expressed as H2SO4: Monitored by stack emission testing prior to permit expiration date, based ..... stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	SO3 and H2SO4, as converted and expressed as H2SO4: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test – Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	14	Particulate Emissions <= 9.8 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	Particulate Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	15	Particulate Emissions <= 0.014 gr/dscf @ 7% O2. [N.J.A.C. 7:27-22.16(e)]	Particulate Emissions: Monitored by stack emission testing annually, ... equirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	16	Particulate Emissions <= 0.028 gr/dscf @ 7% O2 for each individual test run during which soot blowing is performed. [N.J.A.C. 7:27-22.16(e)]	Particulate Emissions: Monitored by stack emission testing annually based on a Department validated stack run. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	17	PM-10 (Total) <= 22.8 lb/hr Hourly emission rate established from stack test(s) results. [Modification BOP09 0001]. [N.J.A.C. 7:27-22.16(a)]	PM-10 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	PM-10 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C.7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	18	PM-2.5 (Total) <= 22.8 lb/hr Hourly emission rate established from stack test(s) results. PM-2.5 is assumed by the facility to be equal to PM-10. [Modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	PM-2.5 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	PM-2.5 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS1, OS3, OS5	19	Any visible emissions shall not exceed an average Opacity <= 10%. [N.J.A.C. 7:27-22.16 (e)]	Opacity: Monitored by continuous opacity monitoring system continuously, based on 6 minute blocks. The discrete block average will begin on the hour. [N.J.A.C. 7:27-22.16(e)]	Opacity: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....October 1) electronically through the NJDEP online EEMPR web portal.	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	20	Arsenic compounds <= 0.0051 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Arsenic compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Arsenic compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	21	Beryllium Compounds <= 0.00025 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Beryllium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in [N.J.A.C. 7:27-22.16(o)]	Beryllium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	22	Cadmium compounds <= 0.043 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Cadmium compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. N.J.A.C. 7:27-22.16(o)]	Cadmium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	23	Chromium compounds <= 0.012 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Chromium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in [N.J.A.C. 7:27-22.16(o)]	Chromium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	24	HCl Emissions <= 21.6 lb/hr. [N.J.A.C. 7:27-22.16(e)]	HCl Emissions: Monitored by stack emission testing annually, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	HCl Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	25	Hydrogen fluoride <= 0.82 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Hydrogen fluoride: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Hydrogen fluoride: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	26	Lead compounds <= 0.5 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Lead compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Lead compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	27	Mercury compounds <= 0.053 lb/hr in accordance with the July 27, 1997 preconstruction permit and confirming letter dated August 27, 2002. [N.J.A.C. 7:27-22.16(e)]	Mercury compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Mercury compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	28	Nickel compounds <= 0.0033 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Nickel compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Nickel compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	29	TCDD Emissions (2,3,7,8-) <= 0.00001 lb/hr. [N.J.A.C. 7:27-22.16(e)]	TCDD Emissions (2,3,7,8-): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	TCDD Emissions (2,3,7,8-): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	30	Polycyclic aromatic hydrocarbons, or Polycyclic organic matter <= 0.29 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Polycyclic organic matter: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Polycyclic organic matter: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	31	Emissions of benzo(a) pyrene, carbon tetrachloride, formaldehyde, perchloroethylene (tetrachloroethylene), ...measured using methods approved by DEP. [N.J.A.C. 7:27-22.16(e)]	Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	32	Ammonia <= 10.1 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Ammonia: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Ammonia: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]	✔	
U1, OS1, OS3, OS5	33	Operating Control Efficiency >= 70 % control. Permittee shall equip and operate the facility with a vapor control system that ....charged to the combustor. [N.J.A.C. 7:27-22.16(e)]	Operating Control Efficiency: Monitored by stack emission testing upon request of the Department, based on the average of three 1-hour tests. [N.J.A.C. 7:27-22.16(o)]	Operating Control Efficiency: Recordkeeping by stack test results upon occurrence of event. [N.J.A.C. 7:27-22.16(e)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. Refer to stack testing requirements specified in this permit. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	34	Scrubbing Medium Inlet Pressure <= 3,600 inches. [N.J.A.C. 7:27-22.16(a)]	Scrubbing Medium Inlet Pressure: Monitored by pressure measurement device each week during operation when in operation. [N.J.A.C. 7:27-22.16(o)]	Scrubbing Medium Inlet Pressure: Recordkeeping by manual logging of parameter daily. Records shall be kept in a permanently bound logbook or in readily available computer files. [N.J.A.C. 7:27-22.16(o)]	None	✔	
U1, OS1, OS3, OS5	35	SO2: monitor shall assure that acid gas absorber system is operating correctly. [N.J.A.C. 7:27-22.16(a)]	SO2: Monitored by continuous emission monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]	SO2: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
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Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS1, OS3, OS5	36	Particulate Emissions: Continuous opacity monitor shall assure that electrostatic precipitator system is operating correctly. [N.J.A.C. 7:27-22.16(a)]	Particulate Emissions: Monitored by continuous opacity monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1, OS2,OS4 ,OS6	5	EMERGENCY MALFUNCTION: The duration of emission excursions caused by malfunctions shall not exceed the .....NOx 180min 2%. [N.J.A.C. 7:27-22.16(e)]	Monitored by continuous emission monitor upon occurrence of event (and hour time monitor). [N.J.A.C. 7:27-22.16(e)]	Recordkeeping by data acquisition system (DAS) / electronic data storage upon occurrence of event. Data may be periodically printed and maintained reliably in a log book on site. [N.J.A.C. 7:27-22.16(o)]	None	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1, OS2,OS4 ,OS6	6	EMERGENCY MALFUNCTION: The duration of operating requirement excursions caused by malfunctions shall not .....Temperature 60min. 0.1% [N.J.A.C. 7:27-22.16(e)]	Monitored by parametric monitoring system upon occurrence of event (temperature monitor and hour time monitor). [N.J.A.C. 7:27-22.16(e)]	Recordkeeping by data acquisition system (DAS) / electronic data storage upon occurrence of event. Data may be ..... in a log book on site. [N.J.A.C. 7:27-22.16(o)]	None	✔	
U1, OS2,OS4 ,OS6	9	EMERGENCY MALFUNCTION: Any visible emission caused by a malfunction shall not exceed an average of .....as determined by the continuous emission monitoring equipment or USEPA Reference Method 9.	Monitored by continuous opacity monitor upon occurrence of event, based on 6 minute blocks. [N.J.A.C. 7:27-22.16(e)]	Recordkeeping by data acquisition system (DAS) / electronic data storage continuously. [N.J.A.C. 7:27-22.16(e)]	None	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	2	Maximum emission rate of Non-Methane Hydrocarbons as Methane, Non-Methane Hydrocarbons <= 6.3 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Non-Methane Hydrocarbons: Monitored by stack emission testing prior to permit ..... See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Non-Methane Hydrocarbons: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(e)]	✔	
U1 OS10, OS11, OS12	3	Maximum concentration of Non-Methane Hydrocarbons as Methane, VOC (Total) <= 66 ppmvd @ 7% O2. [N.J.A.C. 7:27-22.16(e)]	VOC (Total): Monitored by stack emission testing prior to permit expiration date, based on the average of three Department ....requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	VOC (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C.7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	4	NOx (Total) <= 95 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	NOx (Total): Monitored by stack emission testing prior to permit expiration date, based on the average of three 1-hour tests. Three ....See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	NOx (Total): Recordkeeping by stack test results prior to permit expiration date. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	5	NOx (Total) <= 300 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C.7;27-22.16 (e)	NOx (Total): Monitored by continuous emission monitoring system continuously, based on a 1 hour block average , beginning and ending on the hour. [N.J.A.C. 7:27-22.16(o)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	6	NOx (Total) <= 155 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. N.J.A.C. 7:27-22.16(e)]	NOx (Total): Monitored by continuous emission monitoring system continuously, based on a 24 hour period block, beginning and ending at midnight. [N.J.A.C. 7:27-22.16(o)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	7	NOx (Total) <= 150 ppmvd @ 7% O2. The owner or operator of a MSW incinerator of ...of 150 ppmvd at seven percent oxygen based on a calendar day average. [N.J.A.C. 7:27-19.12(a)1]	NOx (Total): Monitored by continuous emission monitoring system continuously, based on ....and shall demonstrate compliance using the NOx CEM. N.J.A.C. 7:27-19.12(c)]	NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously and calculating the average each calendar day. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	8	CO <= 126 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	CO: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	9	CO <= 400 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by continuous emission monitoring system continuously, based on a 1 hour block average , beginning and ending on the hour. [N.J.A.C. 7:27-22.16(o)]	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	10	CO <= 100 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by continuous emission monitoring system continuously, based on a 96 hour rolling average based on a 1 hour block average beginning and ending on the hour. [N.J.A.C. 7:27-22.16(o)]	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	12	SO2 <= 75.8 lb/hr. [N.J.A.C. 7:27-22.16(e)]	SO2: Monitored by stack emission testing prior to permit expiration date, based on the average of three ..... requirements in U1 OS Summary. [From BOP080001]. [N.J.A.C. 7:27-22.16(o)]	SO2: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [From BOP080001]. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	13	SO3 and H2SO4, as converted and expressed as H2SO4 <= 4 lb/hr. [N.J.A.C. 7:27-22.16(e)]	SO3 and H2SO4, as converted and expressed as H2SO4: Monitored by stack emission testing prior to permit expiration .....stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	SO3 and H2SO4, as converted and expressed as H2SO4: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	14	TSP <= 4.4 lb/hr from modification application BOP120003. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as ....operating permit. [N.J.A.C. 7:27-22.16(a)]	TSP: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	TSP: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	15	Particulate Emissions <= 12 mg/dscm @ 7% O2. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Particulate Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	16	Particulate Emissions <= 12 mg/dscm @ 7% O2 for average of 3 individual test runs when including a test run during which soot blowing is performed. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Particulate Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	17	PM-10 (Total) <= 17 lb/hr. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	PM-10 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	PM-10 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	18	PM-2.5 (Total) <= 17 lb/hr. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	PM-2.5 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. N.J.A.C. 7:27-22.16(o)]	PM-2.5 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	19	Any visible emissions shall not exceed an average Opacity <= 10 %. [N.J.A.C. 7:27-22.16(e)]	Opacity: Monitored by continuous opacity monitoring system continuously, based on 6 minute blocks. The discrete block average will begin on the hour. [N.J.A.C. 7:27-22.16(e)]	Opacity: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July .... through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	20	Arsenic compounds <= 0.0037 lb/hr. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Arsenic compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.1	Arsenic compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	21	Beryllium compounds <= 0.00025 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Beryllium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Beryllium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	22	Cadmium compounds <= 0.0037 lb/hr. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Cadmium compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Cadmium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	23	Chromium compounds <= 0.012 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Chromium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16 (o)	Chromium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	24	HCl Emissions <= 21.6 lb/hr. [N.J.A.C. 7:27-22.16(e)]	HCl Emissions: Monitored by stack emission testing annually, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	HCl Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	25	Hydrogen fluoride <= 0.82 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Hydrogen fluoride: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Hydrogen fluoride: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	26	Lead compounds <= 0.037 lb/hr. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Lead compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Lead compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	27	Mercury compounds <= 0.01 lb/hr based on concentration limit of 28 ugms/dscm. [From modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]	Mercury compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Mercury compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	28	Nickel compounds <= 0.0033 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Nickel compounds: Monitored by stack testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Nickel compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	29	Dioxins/Furans (Total) <= 0.000011 lb/hr from modification BOP090003, based on federal concentration limit of 30 ng/dscm @ 7% O2. [N.J.A.C. 7:27-22.16(a)]	Dioxins/Furans (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Dioxins/Furans (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	30	TCDD Emissions (2,3,7,8-) <= 0.00001 lb/hr. [N.J.A.C. 7:27-22.16(e)]	TCDD Emissions (2,3,7,8-): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	TCDD Emissions (2,3,7,8-): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	31	Polycyclic aromatic hydrocarbons, or Polycyclic organic matter <= 0.29 lb/hr. [N.J.A.C. 7:27-22.16(a)]	Polycyclic organic matter: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Polycyclic organic matter: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	
U1 OS10, OS11, OS12	32	Emissions of benzo(a) pyrene, carbon tetrachloride, formaldehyde, perchloroethylene (tetrachloroethylene), ...measured using methods approved by DEP. [N.J.A.C. 7:27-22.16(e)]	Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	✔	

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Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	33	Ammonia <= 10.1 lb/hr. [N.J.A.C. 7:27-22.16(e)]	Ammonia: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS Summary. N.J.A.C. 7:27-22.16(o)]	Ammonia: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)	✔	
U1 OS10, OS11, OS12	34	Operating Control Efficiency >= 70 % control. Permittee shall equip and operate the facility with a vapor control system that .....in operation at any time waste is being charged to the combustor. [N.J.A.C. 7:27-22.16(e)]	Operating Control Efficiency: Monitored by stack emission testing upon request of the Department, based on the average of three 1-hour tests. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Operating Control Efficiency: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS Summary. [N.J.A.C. 7:27-22.16(o)	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	35	Scrubbing Medium Inlet Pressure <= 3,600 inches. [N.J.A.C. 7:27-22.16(a)]	Scrubbing Medium Inlet Pressure: Monitored by pressure measurement device daily when in operation. [N.J.A.C. 7:27-22.16(o)]	Scrubbing Medium Inlet Pressure: Recordkeeping by manual logging of parameter or storing data in a computer data system daily. Records shall be kept in a logbook or in readily available computer files. [N.J.A.C. 7:27-22.16(o)]	None	✔	
U1 OS10, OS11, OS12	36	SO2: monitor shall assure that acid gas absorber system is operating correctly. [N.J.A.C. 7:27-22.16(a)]	SO2: Monitored by continuous emission monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]	SO2: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

Make additional copies of this form if needed.

Section 4
Summary of the results from Stack Testing and Monitoring

Instructions
Complete this form if the permit required stack emissions testing, continuous emissions monitors or continuous opacity monitors.

Subject Item U / BP	OS / Ref #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement	In Compliance?	
						Yes	No
U1 OS10, OS11, OS12	37	Particulate Emissions: Continuous opacity monitor shall assure that the baghouse is operating correctly. [N.J.A.C. 7:27-22.16(a)]	Particulate Emissions: Monitored by continuous opacity monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]	Particulate Emissions: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the .....NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]	✔	

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Please read these instructions prior to completing the following form.

1. Subject Item: List each subject item from Section D, Compliance Plan and Inventories, of the operating permit in this column. Subject items include Facility (FC), Group (GR), Non-Source Fugitive Emissions (FG), Insignificant Source (IS), Batch Process (BP), and Emission Unit (U). (Operating Scenario and Reference Numbers are required only for Non-Compliance permit requirements. See item 2 below).

2. Compliance Status: Provide compliance status for each subject item in this column. If all the permit requirements for a subject item (for example an emission unit) are in compliance, write "In Compliance". If one or more permit requirements are out of compliance for a particular subject item, provide the Operating Scenario and Reference Number for each out of compliance requirement in the first column and write "Non-Compliance" in the 2nd column. (Reference Numbers for each applicable requirement are located in the first column of Facility Specific Requirements, Section D of the permit).

3. Method Used to Determine Compliance: Describe how compliance was determined in this column. If all the permit requirements for a subject item (for example an emission unit) are in compliance, write "Consistent with all methods listed in monitoring and recordkeeping permit requirements". If one or more permit requirements are out of compliance for a particular subject item, provide the Operating Scenario and Reference Number for each out of compliance requirement in the first column and provide specific method used to determine compliance in the 3rd column.

4. Compliance Schedule: insert a "No" if there are no compliance schedules included in this application to address non-compliance issues for which "Non-Compliance" was inserted in the 2nd column. Insert a "Yes" if a compliance schedule is included in this renewal application to address non-compliance issues in the approved permit or non-compliance issues disclosed in this application.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item FC *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item IS1 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item IS2 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item GR1 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS Summary Ref. #72	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS Summary Ref. #95	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No

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Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS Summary Ref. #111	In Compliance	Intermittent non-compliance as measured by COMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS Summary Ref. #114	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS3, OS5 Ref. #5	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No

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Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS1, OS3, OS5, Ref. #9	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS3, OS5 Ref. #10	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS1, OS3, OS5, Ref. #19	In Compliance	Intermittent non-compliance as measured by COMS. See Appendix B for details of non-compliance events.	No

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS10, OS11 Ref. #9	In Compliance	Intermittent non-compliance as measured by CEMS. See Appendix B for details of non-compliance events.	No
Subject Item U1 (E1, E2, E3) *OS / Ref #* OS10, OS11, OS12, Ref. #19	In Compliance	Intermittent non-compliance as measured by COMS. See Appendix B for details of non-compliance events.	No
Subject Item U6 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U9 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item U10 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item U11 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U12 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item U13 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
Subject Item U14 *OS / Ref #*	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No

Make additional copies of this form if needed.

Section 5
Compliance Status

Instructions
Read the instructions on the previous page before completing this form.

Subject Item OS / Ref #	Compliance Status (In Compliance Non-Compliance)	Method Used to Determine Compliance	Is a Compliance Schedule Attached? (Yes/No)
Subject Item U15	In Compliance	Consistent with all methods listed in monitoring and recordkeeping permit requirements	No
OS / Ref #			
Subject Item			
OS / Ref #			
Subject Item			
OS / Ref #			

Make additional copies of this form if needed.

Section 5
Compliance Schedules

Instructions
Complete this form if the permit included any compliance schedules (Section D of the permit) or if there are any non-compliance issues at the time of completing this application form. Check the appropriate box to indicate whether the compliance schedule has been updated, removed, or added.

Subject Item OS / Ref #	Requirement	Compliance Schedule	Compliance Schedule		
			Updated	Removed	Added
Subject Item					
OS / Ref #					
Subject Item					
OS / Ref #					
Subject Item					
OS / Ref #					

Make additional copies of this form if needed.

APPENDIX A

Essex County Resource Recovery Facility
Compliance Assurance Monitoring (CAM) Plan and Applicability Analysis

Compliance Assurance Monitoring (CAM) regulations (40 CFR 64) are "intended to provide a reasonable assurance of compliance with applicable requirements under the Clean Air Act (CAA) for large emission units that rely on pollution control device equipment to achieve compliance." Pursuant to the CAM regulations, monitoring is conducted to determine that the control device used to achieve compliance is properly operated and maintained to ensure compliance with the applicable requirements.

Provided herein is the CAM applicability analysis for the Essex County Resource Recovery Facility. This analysis demonstrates that the ECRRF is not subject to any additional monitoring requirements pursuant to the CAM Regulations.

40 CFR 64.2(a) indicates that the CAM regulations apply to pollutant-specific emissions unit(s) at a major source that has a part 70 or 71 permit if the unit(s) satisfy the following criteria:

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of this section [40 CFR 64];

- The unit uses a control device to achieve compliance with any such emission limitation or standard; and

- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

40 CFR 64.2(b)(1) states that the requirements of 40 CFR 64 shall not apply to any of the following emission limitations or standards:

- Emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act.

- Stratospheric ozone protection requirements under title VI of the Act.

- Acid Rain Program requirements pursuant to sections 404, 405, 406, 407(a), 407(b), or 410 of the Act.

- Emission limitations or standards or other applicable requirements that apply solely under an emissions trading program approved or promulgated by the Administrator under the Act that allows for trading emissions within a source or between sources.

- An emissions cap that meets the requirements specified in §70.4(b)(12) or §71.6(a)(13)(iii) of this chapter.

- Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1.

ECRRF Emission Limitations/Standards to which CAM are not Applicable

The first step in evaluating CAM applicability is to determine the applicability of the program to each pollutant-specific emissions unit. The applicability determination is made on a pollutant-by-pollutant basis. The ECRRF Title V Permit contains emission limitations and standards for the facility's three municipal waste combustors (MWCs) for opacity, particulate matter, mercury, cadmium, lead, dioxins/furans, sulfur dioxides, hydrogen chloride, carbon monoxide, nitrogen oxides, sulfuric acid, hydrogen fluoride, volatile organic compounds, arsenic, beryllium, chromium, nickel, polycyclic organic matter and ammonia. The permit also contains operating limits for the MWCs for oxygen, combustion zone temperature, baghouse inlet temperature, steam flow and carbon injection rate. The residue handling system has a fugitive ash emission limit. The permit also contains emission limits for other source activities including the materials handling of carbon, scrubber lime, and the operation of the diesel fire pump and emergency generator engines.

The federally enforceable emission limitations/standards contained in the ECRRF's Title V Permit are summarized in Section 4 of the Title V renewal application. Section 4 also provides a summary of Title V-required monitoring methods for each emission limit/standard, as applicable.

When NJDEP issued Title V Permits, it elected to integrate its Title I New Source Review (NSR) preconstruction permits with the new Title V Permits. Preconstruction permit provisions and previously approved permit terms and conditions were incorporated into the Title V Permit. Limits such as 2000 ppmv, 1100 lb/hr, and 2200 lb/hr for SO_2 are design requirements contained in the Title V Permit (from N.J.A.C. 7:27-7) that have no associated monitoring, recordkeeping or submittal action requirements in the Title V permit. These requirements are maximum allowable emission rates that are addressed by the facility design specifications including flue gas exit velocity, stack height, and flue gas temperature, as well as fuel type. These maximum limits for SO_2 are significantly higher that *inlet* SO_2 values measured by the facility's SO_2 inlet CEMS. Inlet SO_2 values are typically in the range of 100 ppm corrected to 7% O_2 with occasional spikes of up to approximately 200 ppm. Therefore, control equipment is not necessary to achieve compliance with these design requirements, and, thus, these requirements are not subject to CAM.

The ECRRF pollutant limitation/standards that are not subject to CAM because a control device is *not* used to achieve compliance with these standards/limitations are those for: carbon monoxide, volatile organic compounds, polycyclic organic matter, dioxins/furans, ammonia, furnace temperature, oxygen, ash handling system fugitive emissions, diesel fire pump engine operations, and emergency diesel generator operations.

ECRRF pollutant limits/standards that are not subject to CAM because they have potential pre-control emissions below 100% of the applicable major source threshold are: mercury, cadmium,

lead, sulfuric acid mist, hydrogen fluoride, arsenic, beryllium, chromium, nickel, and PM and PM10 limits for carbon and lime silo filling, flyash conditioning, and ash and metal recovery.

ECRRF Emission Limits/Standards which are Exempt from CAM

Pursuant to 40 CFR 64.2(b)(1)(i), emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Clean Air Act are exempt from CAM because these limitations are already subject to the rigorous monitoring requirements established by these requirements. The ECRRF Title V permit contains post 1990 requirements contained primarily in 40 CFR 60, Subpart Cb for the following constituents/parameters that are exempt from CAM: opacity, particulate matter, mercury, cadmium, lead, PCDD/PCDF, sulfur dioxide, hydrogen chloride, carbon monoxide, nitrogen oxides, fugitive ash emission, baghouse inlet temperature, carbon injection rate, and steam flow.

A federally enforceable facility-wide emissions cap is exempt from CAM pursuant to 40 CFR 64.2(b)(1)(v). The ECRRF contains emissions caps (composite tons per year limits for all 3 units) for the following constituents that are exempt from CAM: particulate matter, SO_2, hydrogen chloride, VOC, CO, arsenic, beryllium, cadmium, chromium, HCl, hydrogen fluoride, lead, mercury, nickel, POM, 2,3,7,8-TCDD, ammonia, and NO_X.

Emission limitations or standards for which a Part 70 or 71 permit specifies a continuous compliance determination method (CCDM) are exempt from CAM pursuant to 40 CFR 64.2(b)(1)(vi). Essex Title V emissions standards and limitations exempt from CAM because the ECRRF Title V Permit specifies a CCDM are: SO_2, NOx, and CO.

ECRRF CAM Plan

All of the ECRRF's emission limits and standards listed in Section 4 are exempt from CAM as determined above due to one or more exemptions. This CAM analysis demonstrates that the facility's current monitoring requirements meet the CAM criteria and that the ECRRF is not subject to any additional monitoring requirements pursuant to the CAM Regulations.

APPENDIX B

Provided below is a summary of CEMS/COMS monitoring events for the period beginning on the issuance date of the current Title V permit of October 28, 2013 through September 29, 2017. These events were reported to NJDEP in accordance with notification requirements in a timely manner as well as in the appropriate quarterly, semi-annual, and annual reports.

Summary of Excess Emission Events For the Period from October 28, 2013 through September 29, 2017

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
10/30/13 Case # 13-10-30-0700-00	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	A waste change caused a boiler swing and draft shift on the ESP causing build up material on the collection plates to break free
12/28/13 Case #13-12-28-1207-45	2	SO_2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	Malfunction of the slurry flow control system
1/3/14 Case #14-01-03-1208-08	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Frozen instrument air supply line to the ID fan damper controller caused the damper to shut and the loss of the damper controls in the control room.
2/3/14 Case #s 14-02-03-0429-06 and 14-02-03-1032-44	2	Opacity	10% or less for a 6-minute block average	9	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Boiler had been experiencing electrical field issues with the ESP through the night then all secondary voltage in Field #1 of the ESP was lost.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
2/3/14 Case #14-02-03-0429-06	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Trip of breakers 901 and 904 caused by a ground fault on the C1355 line to the PSE&G Essex Switching Station caused a loss of the ID fan and all air controls for boiler #1 causing boiler #1 to trip offline.
2/3/14 Case #14-02-03-0429-06	3	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS5, Ref. #9	The loss of power from breaker 901 and 904 trip caused the Boiler 3 feedwater pump to go out of service causing Boiler 3 to trip offline due to low drum level.
	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
2/6/14 Case #14-02-06-1158-15	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	There was a loss of all secondary voltage due to grounding in Field 1-1 of the ESP caused by a malfunction of the rapping system due to a failed rapper motor.
2/27/14 Case #14-02-27-0703-24	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Corrosion of the ESP outer casing is believed to have caused a leak which resulted in an accumulation of material on the collector plates which then dislodged.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
3/6/14 Case #14-03-06-2239-44	3	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	While restoring Boiler #3 after a low drum level trip, the CRO could not re-start the primary air fan because there was a broken linkage to the limit switch which gives the primary air fan the permissive to start resulting in the inability to start the primary air fan in a timely fashion.
	3	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS5, Ref. #9	
	3	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
3/13/14 Case #14-03-13-2325-45	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	A rapper hammer in the ESP failed which weakened the secondary voltage in Field #3 of the ESP.
3/17/14 Case #14-03-17-1628-12	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	A previous turbine trip distracted the CRO from maintaining adequate fuel bed thickness.
3/23/14 Case #14-03-23-0455-05	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	An intermittent short in Field 3 of the ESP resulted in a sudden drop in secondary voltage causing the opacity exceedance.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
3/25/14 Case #14-03-25-1223-42	3	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	A piece of the ESP roof plate was found to have broken off and was resting on the top of a collector plate causing the field to be grounded resulting in the loss of secondary voltage.
3/31/14 Case #14-03-31-2203-03	1	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	An electrical short in Field 3 of the ESP resulted in a sudden drop in secondary voltage causing the field to trip
4/2/14 Case #14-04-02-1101-35	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Failure of the rapper gear box oil seal which caused oil to leak onto the rapper insulator for Field 3 causing the field to ground. This resulted in a loss of secondary voltage in Field 3 of the ESP.
4/9/14 Case #14-04-09-0340-17	1	Opacity	10% or less for a 6-minute block average	5	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	An internal short in Field 3 of the ESP grounded the field resulting in a loss of all secondary voltage in Field 3 of the ESP.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
4/20/14 Case #14-04-20-0408-06	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	The CRO was overly aggressive in the manipulation of air while reacting to low steam flow in an effort to avoid a low furnace temperature. He failed to restore secondary air in a timely manner.
5/26/14 Case #14-05-27-0012-59	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	Poor trash quality from the lower section of the refuse pit and fuel bed thickening.
	3	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
10/20/14 Case #14-10-20-0740-28	3	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Malfunction of the discharge electrode rapper drive for field 1 of the ESP.
11/10/14 Case #14-11-10-1557-26	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Contractor error in unauthorized cycling of ID fan damper controller air supply line valve.
	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
	1	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS1, Ref. #9	

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
11/17/14 Case #14-11-17-1443-04	3	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Boiler steam flow swing caused opacity spikes.
11/24/14 Case #14-11-24-0604-59	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Cold air and moisture infiltration through newly discovered holes in the ESP casing resulted in drop in voltage.
12/1/14 Case #14-12-01-0834-53	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Cold air and moisture infiltration through holes in the ESP casing resulted in drop in voltage. Note this event occurred before the previously scheduled repairs to the ESP were completed.
12/14/14 Case #14-12-14-2136-13	1	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Opacity spikes believed to be trash related due to the low volume in the refuse pit and poor trash quality.
12/16/14 14-12-16-1559-06	1	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
12/16/14 14-12-16-1559-06	2	Opacity	10% or less for a 6-minute block average	6	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
12/21/14 Case #14-12-21-1240-51	3	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
1/8/15 Case #15-01-08-1639-55	1	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS1, Ref. #9	Trip of Boiler 1 ID fan caused by a false reading by the ESP pressure transmitter due to slug of water in line after line was thawed.
	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
	1	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
1/26/15 Case #15-01-26-1851-04	1	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
1/26/15 Case #15-01-26-1851-04	2	Opacity	10% or less for a 6-minute block average	6	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
1/31/15 Case #15-01-31-1527-35	1	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Substance in MSW being combusted caused a spike in opacity.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
2/3/15 Case #15-02-03-0959-54	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Substance in MSW being combusted caused a spike in opacity.
2/10/15 Case #15-02-10-0102-57	3	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Insulation was sucked into the interior of the ESP through a rupture during boiler shutdown suppressing all three fields of the ESP.
2/14/15 Case #15-02-14-0620-11	3	Opacity	10% or less for a 6-minute block average	8	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	ESP Field 3 ground resulting in a loss of all voltage in Field 3 of the ESP. Upon inspection, a piece of aluminum backing for the insulation was found to have dislodged inside the ESP and was touching a Field 3 collector plate causing the grounding condition.
2/21/15 – 2/22/15 Case #15-02-22-1643-57	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Oil fire in Turbine Generator (TG) #2 resulted in boiler emergency trip.
	2	CO	400 ppm @7% O2 or less for 1-hour block average	2	U1, OS3, Ref. #9	

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
2/21/15 – 2/22/15 Case #15-02-22-1643-57	2	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	Oil fire in Turbine Generator (TG) #2 resulted in boiler emergency trip.
	2	CO	100 ppm @7% O2 or less for a 96-hour rolling average	87 (number of hours avg was above limit)	U1, OS3, Ref. #10	
	2	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	
	2	NOx	300 ppm @7% O2 or less for 1-hour block average	1	U1, OS3, Ref. #5	
2/21/15 – 2/22/15 Case #15-02-22-1643-57	3	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Oil fire in Turbine Generator (TG) #2 resulted in boiler emergency trip.
	3	CO	400 ppm @7% O2 or less for 1-hour block average	2	U1, OS3, Ref. #9	
	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
2/21/15 – 2/22/15 Case #15-02-22-1643-57	3	CO	100 ppm @7% O2 or less for a 96-hour rolling average	21 (number of hours avg was above limit)	U1, OS5, Ref. #10	Oil fire in Turbine Generator (TG) #2 resulted in boiler emergency trip.
	3	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	
	3	NOx	300 ppm @7% O2 or less for 1-hour block average	1	U1, OS5, Ref. #5	
4/3/15 Case #15-04-03-2157-43	1	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS1, Ref. #9	Failure of Bailey PCU Card resulted in loss of all boiler controls
4/25/15 Case #15-04-25-1650-10	2	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	Operator error resulting in low lime slurry flow and excess SO2 emissions
5/9/15 Case #15-05-09-0711-18	3	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	Material in the waste resulted in high SO2 inlet concentrations which corrective measures could not control in time to avoid the exceedance.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
6/21/15 Case #15-06-21-2153-10	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Material in the MSW being combusted resulted in a spike in opacity and suppression of primary and secondary voltages in all three fields of the ESP.
6/24/15 Case #15-06-24-0942-46	2	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Material in the MSW being combusted resulted in a spike in opacity and suppression of primary and secondary voltages in Field 3 of the ESP.
7/30/15 Case #15-07-30-1622-32	1	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
8/10/15 Case #15-08-10-1914-07	3	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	While repairing ESP conveyor stub shaft a rush of air occurred when the access plate was opened causing excess particulate emissions.
8/17/15 Case #15-08-17-1937-57	3	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS5, Ref. #9	Steam flow spike and low drum level caused primary and secondary air fans and ram feeder to trip resulting in CO spike.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
8/17/15 Case #15-08-17-1937-57	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	Steam flow spike and low drum level caused primary and secondary air fans and ram feeder to trip resulting in CO spike.
	3	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
8/30/15 Case #15-08-31-0039-26	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	Wet trash was fed to boiler resulting in drop in steam flow and furnace temperature and excess CO emissions.
9/2/15 Case #15-09-02-1724-26	1	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Opacity plume was caused by a substance in the MSW that was combusted.
10/4/15 Case #15-10-04-2335-40	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/6/15 Case #15-10-06-1639-57	2	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/6/15 Case #15-10-06-1639-57	3	Opacity	10% or less for a 6-minute block average	6	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
10/12/15 Case #15-10-12-0427-43	3	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/12/15 Case #15-10-12-0823-40	3	Opacity	10% or less for a 6-minute block average	5	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/14/15 Case #15-10-14-1640-45	3	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS5, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/23/15 Case #15-10-23-1934-36	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
11/10/15 Case #15-11-10-1944-13	2	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
11/15/15 Case #15-11-15-1915-16	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Material released during clearing of a scrubber pre-cyclone plug resulted in excess opacity.
11/18/15 Case #15-11-18-0210-55	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Excess material in scrubber was dislodged causing an increase in ESP draft and ID fan trip.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
11/18/15 Case #15-11-18-0210-55	1	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS1, Ref. #9	Excess material in scrubber was dislodged causing an increase in ESP draft and ID fan trip.
	1	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
12/20/15 Case #15-12-20-1022-14	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Substance in MSW being combusted caused a spike in opacity.
1/13/16 Case #16-01-13-0316-27	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Loose insulation contacting the fields of the ESP through a large hole found in ESP casing.
1/13/16 Case #16-01-13-1743-27	1	Opacity	10% or less for a 6-minute block average	6	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
1/20/16 Case #16-01-20-1234-55	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Loose insulation contacting the fields of the ESP through a large hole found in ESP casing.
2/13/16 Case #16-02-13-1737-34	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Release of loose material in ESP outlet duct to the stack.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
2/17/16 Case #16-02-17-0418-35	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Release of loose material in ESP outlet duct to the stack.
2/21/16 Case #16-02-21-1325-20	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Release of loose material in ESP outlet duct to the stack.
2/22/16 Case #16-02-22-0758-12	1	Opacity	10% or less for a 6-minute block average	2	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Release of loose material in ESP outlet duct to the stack.
2/22/16 Case #16-02-22-1312-21	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Release of loose material in ESP outlet duct to the stack.
2/28/16 Case #16-02-28-1502-49	1	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Opacity spike after loss of all primary and secondary current in Field 3 of the ESP.
3/3/16 Case #16-03-03-1125-38	1	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Opacity spike after loss of all primary voltage in Field 3 of the ESP.
4/10/16 Case #16-04-10-1508-46	2	Opacity	10% or less for a 6-minute block average	7	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Release of loose material in ESP outlet duct to the stack.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
4/21/16 Case #16-04-21-0906-28	2	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS3, Ref. #19	Furnace tube leak developed which caused opacity to spike.
4/24/16 Case #16-04-24-1448-25	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Equipment failure at PSE&G Essex St. station caused TG1 and Boiler 1 ID fan to trip.
5/6/16 Case #16-05-06-0213-39	2	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS3, Ref. #9	Operator error resulting in refuse hopper bridge and overfeeding of boiler.
5/6/16 Case #16-05-06-0418-55	2	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
5/23/16 Case #16-05-23-1842-28	3	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS12, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
6/8/16 Case #16-06-08-1558-56	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Loss of ESP Field 3 on primary undervoltage caused by moisture that got into the transformer after a heavy rain event.
6/9/16 Case #16-06-09-1552-39	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Contractor working in area hit the ESP vacuum transmitter switch tripping the Boiler 1 ID fan.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
7/1/16 Case #16-07-02-0136-16	1	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS1, Ref. #9	Rain water leaked into the transformer area which shorted out the power potential transformer (PPT) fuse section causing the TG1 exciter transformer to trip which tripped all the Boiler 1 fans.
	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
	1	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
7/14/16 Case #16-07-14-1706-56	2	CO	400 ppm @7% O2 or less for 1-hour block average	1	U1, OS11, Ref. #9	The ID fan controller arm linkage separated from the bolt which secures it in place. The ID fan tripped when restoring it to operation.
	2	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	
7/18/16 Case #16-07-18-1811-38	1	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
7/25/16 Case #16-07-25-2023-47	3	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	Water from damaged drain pipe leaked onto the TG1 PPT tripping TG1 and all 3 boilers offline.
	3	Oxygen	3% or greater for a 5-minute block average	1	U1, OS Summary, Ref. #72	

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
8/3/16 Case #16-08-03-1700-18	2	Opacity	10% or less for a 6-minute block average	5	U1, OS Summary, Ref. #111 U1, OS11, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
9/2/16 Case #16-09-02-0922-38	1	Opacity	10% or less for a 6-minute block average	24	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
10/19/16 Case #16-10-19-2216-22	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS1, Ref. #19	Internal ESP material contacted the ESP fields causing loss of secondary current and voltage.
12/23/16 Case #16-12-23-1757-29	3	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS12, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
12/23/16 Case #16-12-23-1757-29	2	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS11, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
1/4/17 Case #17-01-04-0249-45	2	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS11, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
3/30/17 Case #17-03-30-2103-15	3	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS12, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
4/25/17 Case #17-04-25-1813-53	1	Opacity	10% or less for a 6-minute block average	4	U1, OS Summary, Ref. #111 U1, OS10, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
7/5/17 Case #17-07-05-0403-10	1	CO	400 ppm @7% O2 or less for 1-hour block average	2	U1, OS10, Ref. #9	Substance in waste being combusted resulted in a hot CO condition in the boiler causing the exceedance.
	1	CO	100 ppm @7% O2 or less for 4-hour block average	1	U1, OS Summary, Ref. #114	
	1	Oxygen	3% or greater for a 5-minute block average	5	U1, OS Summary, Ref. #72	
9/6/17 Case #17-09-06-1926-47	1	Opacity	10% or less for a 6-minute block average	1	U1, OS Summary, Ref. #111 U1, OS10, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.
9/20/17 Case #17-09-20-2050-07	2	Opacity	10% or less for a 6-minute block average	3	U1, OS Summary, Ref. #111 U1, OS11, Ref. #19	Colored plume was caused by a substance in the MSW that was combusted.

Date/ Case Number	Unit #	Pollutant/ Parameter	Title V Permit Limit	Number of Periods Above Limit	Title V Permit Condition	Reason for Event
9/21/17 Case #17-09-26-1109-58	3	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	Operator error and loss of slurry flow resulting in exceedance.
9/22/17 Case #17-09-23-0313-27	3	SO2	94 ppm @7% O2 or less for 1-hour block average	1	U1, OS Summary, Ref. #95	Malfunction of the auxiliary contactor for the B line lime feed conveyor combined with the failure of the 3B slurry pump caused loss of slurry flow.

Air Pollution Control Operating Permit Operating Permit Renewal Cover Page

Proposed Change: Request to revise the Mailing Address information to reflect the new Facility Manager and Responsible Official for Covanta Essex Company, Carlos Ascencio.

Permit Activity Number: BOP090003 **Program Interest Number: 07736**

Mailing Address	Plant Location
~~JOSEPH F VOLPE~~ **CARLOS ASCENCIO** FACILITY MANAGER COVANTA ESSEX CO 183 RAYMOND BLVD NEWARK, NJ 07105	

Section C, Pollutant Emissions Summary

Proposed Change: Request to revise the HAP emissions summary table to reflect the maximum allowable emissions with the baghouse on MWC #1, #2, and #3.

Section C
Facility Name: COVANTA ESSEX CO
Program Interest Number: 07736
Permit Activity Number: BOP090003

POLLUTANT EMISSIONS SUMMARY

The following table shows the hazardous air pollutants (HAP) emissions summary[4]:

HAP	TPY
Arsenic	~~0.067~~ **0.044**
Beryllium	0.003
Cadmium	~~0.565~~ **0.044**
Chromium	~~0.158~~ **0.143**
Dioxin TCDD (2,3,7,8)	~~0.000131~~ **0.000119**
Hydrogen Fluoride	10.8
Lead	~~6.57~~ **0.44**
Mercury	~~0.14~~ **0.12**
Nickel	~~0.043~~ **0.039**
Polycyclic Organic Matter	3.81

The following table shows the "Other" air contaminants emissions summary:

Other Air Contaminant	TPY
Ammonia	133

Subject Item: **IS1 No. 2 Fuel Oil Tanks (<10,000 Gallons Capacity)**

Ref. #1

Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2014.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~1~~	~~Sulfur Content in Fuel <=2,000 ppmw (0.2% by weight) for Zone 4 (Essex County). Effective through June 30, 2014. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Ref. #2

Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~2~~	~~Sulfur Content in Fuel <=500 ppmw (0.05% by weight). Effective July 1, 2014 through June 30, 2016. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Subject Item: **IS2 Fuel Oil Tank (>10,000 Gallons Capacity)**

Ref. #1

Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2014.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~1~~	~~Sulfur Content in Fuel <=2,000 ppmw (0.2% by weight) for Zone 4 (Essex County). Effective through June 30, 2014. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Ref. #2

Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~2~~	~~Sulfur Content in Fuel <=500 ppmw (0.05% by weight). Effective July 1, 2014 through June 30, 2016. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Emission Unit: **U1 Municipal Waste Combustors (E1, E2 & E3) – Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF**
Operating Scenario: **OS Summary**

Ref. #40

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
40	~~TSP <= 129 tons/yr based on Preconstruction Permits (Total for three MWCs). Upon completion of the baghouse project,~~ TSP shall be less than or equal to 53 TPY (**Total for three MWCs,** from modification BOP090003), based on concentration limit of 12 mg/dscm @ 7% O2. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #41

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
41	~~PM-10 (Total) <= 299 tons/yr based on modification BOP090001 (Total for three MWCs). Upon completion of the baghouse project,~~ PM-10 shall be less than or equal to 203 TPY (**Total for three MWCs,** from modification BOP090003). [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #42

Proposed Change: Request eliminating reference to baghouse project and less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
42	PM-2.5 (Total) <= 203 tons/yr from renewal/modification BOP090003, total for three MWCs ~~upon completion of the baghouse project~~. PM-2.5 is assumed by the facility to be equal to PM-10. ~~PM-2.5 limit prior to completion shall be equal to PM-10 limit above.~~ [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #44

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
44	~~HAPs (Total) <= 306 tons/yr from Preconstruction Permits (Total for three MWCs). Upon completion of the baghouse project, modification BOP090003,~~ Total HAPs shall be <=299 TPY **(Total for three MWCs, from modification BOP090003)**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #45

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
45	~~Arsenic compounds <= 0.067 tons/yr from Preconstruction Permits (Total for three MWCs). Upon completion of the baghouse project, modification BOP090003,~~ Arsenic emissions shall be <=0.044 TPY **(Total for three MWCs, from modification BOP090003)**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #47

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
47	~~Cadmium compounds <= 0.565 tons/yr from Preconstruction Permits (Total for three MWCs). Upon completion of the baghouse project, modification BOP090003,~~ Cadmium emissions shall be <=0.044 TPY based on concentration limit of 10 ug/dscm @ 7% O2 **(Total for three MWCs, from modification BOP090003)**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #51

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
51	~~Lead compounds <= 6.57 tons/yr from Preconstruction Permits (Total for three MWCs). Upon completion of the baghouse project, modification BOP090003,~~ Lead emissions shall be <=0.44 TPY based on concentration limit of 100 ug/dscm @ 7% O2 **(Total for three MWCs, from modification BOP090003)**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #52

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016. Also request correction to error in formula for calculating Hg (tons per year) umder Monitoring Requirements.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
52	~~Mercury compounds <= 0.14 tons per calendar year (Total for three MWCs), or the facility shall have demonstrated during the calendar year that a minimum of 95% removal (revised by OP modification BOP090003) of mercury compounds had been achieved for each quarterly average of all stack tests conducted for each combustor required in this Subject Item U1, OS Summary. This limit is based on the concentration limit specified in N.J.A.C. 7:27-27.4(a). Upon completion of the baghouse project, modification BOP090003,~~ Mercury emissions shall be <=0.12 TPY based on concentration limit of 28 ug/dscm @ 7% O2 **(Total for three MWCs, from modification BOP090003) or the facility shall have demonstrated during the calendar year that a minimum of 95% removal of mercury compounds had been achieved for each quarterly average of all stack tests conducted for each combustor required in this Subject Item U1, OS Summary**. [N.J.A.C. 7:27-22.16(a)]	Mercury compounds: Monitored by calculations at the approved frequency using the following formula (using EPA F-Factor 14,389 dscf @ 7% O2): Hg (tons per year) = X times 1 m3/35.3 ft3 x 14389 dscf/MMBTU x 423 ~~10E6~~ **MM**Btu/hr/unit x 8760 hrs/yr x (1 gram/10E6 ug) x (1 lb/454 grams) x 1 ton/2000 lb x 3 (for 3 MWCs), where X equals the average of all stack test results for the calendar year expressed in ug/dscm. [N.J.A.C. 7:27-22.16(o)]	Mercury compounds: Recordkeeping by manual logging of parameter annually or quarterly (as appropriate.) Record calculations each quarter and/or annually, showing the running total for each calendar year. [N.J.A.C. 7:27-22.16(o)]	None.

Ref. #53

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
53	Nickel ~~compounds <= 0.043 tons/yr (Total for three MWCs.) Upon completion of the baghouse project, modification BOP090003, nickel~~ emissions shall be <= 0.039 TPY from modification BOP090003 **(Total for three MWCs)**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #55

Proposed Change: Request removing reference to the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
55	Dioxins/Furans (Total) <= 0.00013 tons/yr ~~upon completion of the baghouse project~~, modification BOP090003, for three MWCs based on ~~lower~~ federal concentration limit of 30 ng/dscm @ 7% O2 for a baghouse. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #56

Proposed Change: Request eliminating less stringent limit that no longer applies after completion of the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
56	TCDD Emissions (2,3,7,8-) <= ~~0.000131~~ **0.000119** tons/yr from ~~Preconstruction Permits~~ **modification BOP090003** (Total for three MWCs.) ~~Upon completion of the baghouse project, modification BOP090003, TCDD emissions shall be <= 0.000119 TPY.~~ [N.J.A.C. 7:27-22.16(e)]	None.	None.	None.

Ref. #75

Proposed Change: Request removal of references to ESP parameters due to their replacement with baghouses.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
75	Each unit shall be equipped with continuous monitors and continuous recorders which shall be operated to accurately maintain the following operating records: a. temperature at the top of radiation section (elevation 116' 4") b. scrubber slurry flow rate; ~~c. secondary voltage, secondary current and spark rate for each field of each electrostatic precipitator;~~ and ~~d~~**c**. steam prodution rate/flow, steam pressure and steam temperature of each boiler. [N.J.A.C. 7:27-22.16(e)]	None.	None.	None.

Ref. #76

Proposed Change: Request removal of references to ESP due to their replacement with baghouses.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
76	Operating Log: Log books shall be kept for each unit to accurately maintain records. [N.J.A.C. 7:27-22.16(e)]	None.	Recordkeeping by manual logging of parameter or storing data in a computer data system daily. For each unit, maintain the following records: a. the specific times of operation of each furnace; b. the specific times of operation of the auxiliary burners; c. incidents of low oxygen concentration (below 3%) as specified in this permit; d. incidents of malfunctions (failures) of ~~electrostatic precipitator~~**baghouse**, scrubber or SNCR system; e. failure to maintain at least 1136 degress F at the 116' 4" elevation, and f. exceedances of emission standards determined by continuous monitoring. [N.J.A.C. 7:27-22.16(a)]	None.

Ref. #97 through 100

Proposed Change: Request removal of these conditions which no longer apply due to the removal of all ESPs which were replaced with baghouses. The baghouse replacement project was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~97~~	~~ELECTROSTATIC PRECIPITATOR: The electrostatic precipitator shall be operated and maintained in accordance with the facility's Air Pollution Control Maintenance Plan and the manufacturer's recommendations. [N.J.A.C. 7:27-22.16(e)]~~	~~None.~~	~~None.~~	~~None.~~

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~98~~	~~The permittee shall continue to conduct performance improvement and maintenance activities on the electrostatic precipitators (ESPs) of each of the three Boiler/Incinerator Units during each calendar year and submit a report detailing actions taken and their results. This annual report shall include the information regarding the Electrostatic Precipitator Performance Activities detailed below. AIRFLOW PATTERNS 1) Inspect and verify the uniform and consistent gas flow through the ESP. 2) Inspect grids and plates to insure optimal functionality and that they are clean.~~	~~None.~~	~~Recordkeeping by manual logging of parameter or storing data in a computer data system upon occurrence of event. Keep records of all maintenance activities and include in the annual report. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

	~~3) Inspect grids and plates to insure no gaps were apparent that would allow gas flow to pass around the plates.~~ ~~4) Inspect and clean ducts leading to ESP to insure that material is not built up that could restrict airflow.~~ ~~5) Study gas flow into the ESP to minimize re-entrainment of particulate and to maximize adherence to the collector plates.~~ ~~[N.J.A.C. 7:27-22.16(a)]~~			

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~99~~	~~(Continued from previous requirement)~~ ~~MECHANICAL and ELECTRICAL SYSTEMS~~ ~~1) Inspect bolts (repair or replace) that secure the electrodes.~~ ~~2) Inspect bolts (repair or replace) that secure the collector plates.~~ ~~3) Inspect (repair or replace) worn rapper boots.~~ ~~4) Inspect (repair or replace) worn rapper insulators.~~ ~~5) Inspect (repair or replace) worn transformer-rectifier bushings.~~ ~~6) Review rapping and voltage regulation (controls collector plate rapper sequencing and field voltage).~~ ~~7) Review Automatic Voltage Controller for improvements during unsteady conditions when arcing co-occurs.~~	~~None.~~	~~None.~~	~~None.~~

	~~8) Study various different voltages and rapping sequences on ESP performance to find optimal combination to maximize ESPs removal efficiency.~~ ~~SEALS~~ ~~1) Inspect seals at all connection points along gas flow path and all access doors to the ESP.~~ ~~2) Repair, replace or adjust the seals that prevent infiltration of moisture and atmospheric air.~~ ~~PERIODIC MAINTENANCE~~ ~~Provide information on the periodic maintenance that is performed on the ESP to insure that their performance does not deteriorate.~~ ~~[N.J.A.C. 7:27-22.16(a)]~~			

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~100~~	~~The permittee shall continuously monitor and record the secondary voltage, secondary current and spark rate for each field of each ESP.~~ ~~[N.J.A.C. 7:27-22.16(e)]~~	~~None.~~	~~Recordkeeping by strip chart or data acquisition (DAS) system continuously.~~ ~~[N.J.A.C. 7:27-22.16(e)]~~	~~None.~~

Ref. #105

Proposed Change: Request removal of this condition which no longer applies to the baghouse construction project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~105~~	~~Baghouse construction schedule The proposed baghouses will be installed in accordance with a phased construction schedule as indicated in the modification application BOP090003, as follows: construction of the first baghouse to commence in 2014, and all three (3) baghouses shall be installed and operational by December 31, 2016. [N.J.A.C. 7:27-22.16(a)]~~	~~None.~~	~~Other: Maintain documentation of construction. [N.J.A.C. 7:27-22.16(o)].~~	~~None.~~

Ref. #106

Proposed Change: Request removal of reference to the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
106	~~Upon completion of the baghouse project, BOP090003,~~ Each unit shall be equipped with continuous monitors and continuous recorders which shall be operated to accurately maintain the following operating records: a. Scrubber slurry flow rate; b. Steam production rate/flow, steam pressure and steam temperature of each boiler; and c. Temperature at the baghouse inlet. [Modification BOP090003] [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Ref. #120

Proposed Change: Request removal of these conditions which no longer apply due to the removal of all ESPs which were replaced with baghouses. The baghouse replacement project was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~120~~	~~Dioxins/Furans (Total) <= 35 ng/dscm @ 7% O2. On and after April 28, 2009, the emission limit for designated facilities that employ an electrostatic precipitator-based emission control system is 35 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen. [40 CFR 60.33b(c)(1)(ii)]~~	~~Dioxins/Furans (Total): Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. Monitoring is as required at 40 CFR 60.58b(h)(5), except as specified at 40 CFR 62.14109(d)(1). [40 CFR 62.14109(b)] &. [40 CFR 62.14109(d)(1)]~~	~~Dioxins/Furans (Total): Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. This is as specified at 40 CFR 60.59b(d)(9)(i). [40 CFR 62.14109(a)]~~	~~None.~~

Ref. #121

Proposed Change: Request removal of reference to the baghouse project which was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
121	Dioxins/Furans (Total) <= 30 ng/dscm @ 7% O2 , except during periods of start-up, shutdown, and malfunction. Startup, shutdown, and malfunction exception is specified by 40 CFR 62.14109(b) and 40 CFR 60.58b(a)(1). ~~This limitation applies after completion of the baghouse project, modification BOP090003.~~ 40 CFR 60.39b(d), 40 CFR 60.53a(b) &. [40 CFR 62.14103(c)(2)]	Dioxins/Furans (Total): Monitored by stack emission testing annually, based on the average of three 1-hour tests. See stack testing requirements in U1 OS0. Monitoring is as required at 40 CFR 60.58b(h)(5), except as specified at 40 CFR 62.14109(d)(1). [40 CFR 62.14109(b)] & [40 CFR 62.14109(d)(1)]	Dioxins/Furans (Total): Recordkeeping by stack test results annually. See stack testing requirements in U1 OS0. This is as specified at 40 CFR 60.59b(d)(9)(i). [40 CFR 62.14109(a)]	None.

Ref. #126

Proposed Change: The requirements of this condition are taken from 40 CFR 60.54b(c)(2)(i) which states that when the certified chief facility operator and certified shift supervisor are both off site for 12 hours or less, and no other certified operator is on site, the provisionally certified control room operator may perform the duties of the certified chief facility operator or certified shift supervisor. Request correction to condition to change eight hours as currently listed to twelve hours to reflect the current rule.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
126	As further clarification to the preceding "Stand-in" Provisions, a provisionally certified control room operator can stand-in for a certified plant or shift supervisor when they are off site for periods of up to ~~eight~~ **twelve** hours without notification of EPA, for periods up to two weeks if EPA is notified in writing, and case by case with enforcement discretion for periods longer than two weeks if EPA is notified in writing with adequate detail of the reasons for the situation and if the MWC owner demonstrates to EPA that a good faith effort is being made to correct the problem. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Emission Unit: **U1 Municipal Waste Combustors (E1, E2 & E3) – Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF**
Operating Scenario: **OS1 Operation of MWC #1 at Maximum Input (423 MMBtu/hr), OS3 Operation of MWC #2 at Maximum Input (423 MMBtu/hr), OS5 Operation of MWC #3 at Maximum Input (423 MMBtu/hr)**

Ref. #1 through Ref. #36

Proposed Change: Request eliminating these operating scenarios which no longer apply due to the removal of all ESPs which were replaced with baghouses. The baghouse replacement project was completed in November, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~1~~	~~Unless otherwise specified, the emission limits specified under this operating scenario shall apply at all times, except for start-up and shutdown periods. These shall remain in force until the ESP has been replaced by a new control (Baghouse filter.) See operating scenario applicable to baghouse operation. [From modification BOP090003.] [N.J.A.C. 7:27-22.16(a)]~~	~~None.~~	~~None.~~	~~None.~~
~~2~~	~~Maximum emission rate of Non-Methane Hydrocarbons as Methane, VOC (Total) <=6.3 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~VOC (Total): Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~VOC (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~3~~	~~Maximum concentration of Non-Methane Hydrocarbons as Methane, VOC (Total) <=66 ppmvd @ 7% O2. [N.J.A.C. 7:27-22.16(e)]~~	~~VOC (Total): Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~VOC (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~4~~	~~NOx (Total) <= 95 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Monitored by stack emission testing prior to permit expiration date, based on the average of three 1-hour tests. Three test runs must be conducted on each unit, with ammonia injection, to determine compliance. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Recordkeeping by stack test results every 5 years. [N.J.A.C. 7:27-22.16(e)]~~	~~Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~5~~	~~NOx (Total) <= 300 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Monitored by continuous emission monitor continuously, based on a 1 hour block average, beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~
~~6~~	~~NOx (Total) <= 155 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Monitored by continuous emission monitor continuously, based on a 24 hour period block, beginning and ending at midnight. [N.J.A.C. 7:27-22.16(e)]~~	~~NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~

~~7~~	~~NOx (Total) <= 150 ppmvd @ 7% O2. The owner or operator of a MSW incinerator of any size shall cause it to emit NOx at a maximum allowable emission concentration of 150 ppmvd at seven percent oxygen based on a calendar day average. [N.J.A.C. 7:27-19.12(a)1]~~	~~NOx (Total): Monitored by continuous emission monitoring system continuously, based on one calendar day based on 1-hour block averages. The owner or operator shall install a NOx continuous emissions monitoring (CEM) system on the MSW incinerator satisfying the requirements of N.J.A.C. 7:27-19.18 and shall demonstrate compliance using the NOx CEM. [N.J.A.C. 7:27-19.12(c)]~~	~~NOx (Total): Recordkeeping by strip chart or data acquisition (DAS) system continuously and calculating the average each calendar day. [N.J.A.C. 7:27-22.16(o)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~
~~8~~	~~CO <= 126 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~CO: Monitored by stack emission testing prior to permit expiration date, based on each of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~CO: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~
~~9~~	~~CO <= 400 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~CO: Monitored by continuous emission monitor continuously, based on a 1 hour block average , beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]~~	~~CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(e)]~~

10	CO <= 100 ppmvd @ 7% O2. The emission limitation shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]	CO: Monitored by continuous emission monitor continuously, based on a 96 hour rolling average based on a 1 hour block average beginning and ending on the hour. [N.J.A.C. 7:27-22.16(e)]	CO: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]	Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]
11	The CO and NOx emission limits specified in permit condition, for normal steady state operation shall not apply during periods, including warm-up periods, when no waste is burned and fossil fuel is being combusted. Only auxiliary fuel (fuel oil) shall be combusted during warm-up periods, and no municipal solid waste shall combusted. The warm-up period begins upon initiation of auxiliary fuel (fuel oil) combustion in the furnace. The duration of exemption from emission limits during these periods shall not exceed 10 consecutive hours per warm-up period. [N.J.A.C. 7:27-22.16(e)]	None.	None.	None.
12	SO2 <= 75.8 lb/hr. [N.J.A.C. 7:27-22.16(e)]	SO2: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs [From BOP080001.]. [N.J.A.C. 7:27-22.16(o)]	SO2: Recordkeeping by stack test results upon occurrence of event [From BOP080001.]. [N.J.A.C. 7:27-22.16(o)]	Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]

~~13~~	~~SO3 and H2SO4, as converted and expressed as H2SO4 <= 4 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~SO3 and H2SO4, as converted and expressed as H2SO4: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~SO3 and H2SO4, as converted and expressed as H2SO4: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~14~~	~~Particulate Emissions <= 9.8 lb/hr from preconstruction permit. The emission limitations shall apply at all times when MSW is being combusted, except during start-up and shutdown as defined in this operating permit. [N.J.A.C. 7:27-22.16(e)]~~	~~Particulate Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~15~~	~~Particulate Emissions <= 0.014 gr/dscf @ 7% O2. [N.J.A.C. 7:27-22.16(e)]~~	~~Particulate Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~16~~	~~Particulate Emissions <= 0.028 gr/dscf @ 7% O2 for each individual test run during which soot blowing is performed. [N.J.A.C. 7:27-22.16(e)]~~	~~Particulate Emissions: Monitored by stack emission testing annually based on a Department validated stack run. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Particulate Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~17~~	~~PM-10 (Total) <= 22.8 lb/hr Hourly emission rate established from stack test(s) results. [Modification BOP090001]. [N.J.A.C. 7:27-22.16(a)]~~	~~PM-10 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~PM-10 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~
~~18~~	~~PM-2.5 (Total) <= 22.8 lb/hr Hourly emission rate established from stack test(s) results. PM-2.5 is assumed by the facility to be equal to PM-10. [Modification BOP090003]. [N.J.A.C. 7:27-22.16(a)]~~	~~PM-2.5 (Total): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~PM-2.5 (Total): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: As per the approved schedule. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~
~~19~~	~~Any visible emissions shall not exceed an average Opacity <= 10 %. [N.J.A.C. 7:27-22.16(e)]~~	~~Opacity: Monitored by continuous opacity monitoring system continuously, based on 6-minute blocks. The discrete block average will begin on the hour. [N.J.A.C. 7:27-22.16(e)]~~	~~Opacity: Recordkeeping by strip chart or data acquisition (DAS) system continuously. [N.J.A.C. 7:27-22.16(e)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~
~~20~~	~~Arsenic compounds <= 0.0051 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Arsenic compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Arsenic compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~21~~	~~Beryllium Compounds <= 0.00025 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Beryllium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Beryllium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~22~~	~~Cadmium compounds <= 0.043 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Cadmium compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Cadmium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~23~~	~~Chromium compounds <= 0.012 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Chromium compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Chromium compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~24~~	~~HCl Emissions <= 21.6 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~HCl Emissions: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~HCl Emissions: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~25~~	~~Hydrogen fluoride <= 0.82 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Hydrogen Fluoride: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Hydrogen Fluoride: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~26~~	~~Lead compounds <= 0.5 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Lead compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Lead compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~27~~	~~Mercury compounds <= 0.053 lb/hr in accordance with the July 27, 1997 preconstruction permit and confirming letter dated August 27, 2002. [N.J.A.C. 7:27-22.16(e)]~~	~~Mercury compounds: Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Mercury compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~28~~	~~Nickel compounds <= 0.0033 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Nickel compounds: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Nickel compounds: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~29~~	~~TCDD Emissions (2,3,7,8) <= 0.00001 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~TCDD Emissions (2,3,7,8): Monitored by stack emission testing annually, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~TCDD Emissions (2,3,7,8): Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~30~~	~~Polycyclic aromatic hydrocarbons, or Polycyclic organic matter <= 0.29 lb/hr. [N.J.A.C. 7:27-22.16(a)]~~	~~Polycyclic organic matter: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Polycyclic organic matter: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~31~~	~~Emissions of benzo(a) pyrene, carbon tetrachloride, formaldehyde, perchloroethylene (tetrachloroethylene), trichloroethylene and vinyl chloride shall be below the reporting threshold of N.J.A.C. 7:27-22, Tables A & B and must be measured using methods approved by DEP. [N.J.A.C. 7:27-22.16(e)]~~	~~Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~32~~	~~Ammonia <= 10.1 lb/hr. [N.J.A.C. 7:27-22.16(e)]~~	~~Ammonia: Monitored by stack emission testing prior to permit expiration date, based on the average of three Department validated stack test runs. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Ammonia: Recordkeeping by stack test results upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(o)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~
~~33~~	~~Operating Control Efficiency >= 70 % control. Permittee shall equip and operate the facility with a vapor control system that reduces the total acid gas emissions to the outdoor atmosphere by no less than 70 percent by weight. This equipment shall be in operation at any time waste is being charged to the combustor. [N.J.A.C. 7:27-22.16(e)]~~	~~Operating Control Efficiency: Monitored by stack emission testing upon request of the Department, based on the average of three 1-hour tests. [N.J.A.C. 7:27-22.16(o)]~~	~~Operating Control Efficiency: Recordkeeping by stack test results upon occurrence of event. [N.J.A.C. 7:27-22.16(e)]~~	~~Stack Test - Submit protocol, conduct test and submit results: Upon occurrence of event. See stack testing requirements in U1 OS0. [N.J.A.C. 7:27-22.16(e)]~~

~~34~~	~~Scrubbing Medium Inlet Pressure <= 3,600 inches. [N.J.A.C. 7:27-22.16(a)]~~	~~Scrubbing Medium Inlet Pressure: Monitored by pressure measurement device each week during operation when in operation. [N.J.A.C. 7:27-22.16(o)]~~	~~Scrubbing Medium Inlet Pressure: Recordkeeping by manual logging of parameter daily. Records shall be kept in a permanently bound logbook or in readily available computer files. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~
~~35~~	~~SO2: monitor shall assure that acid gas absorber system is operating correctly. [N.J.A.C. 7:27-22.16(a)]~~	~~SO2: Monitored by continuous emission monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]~~	~~SO2: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~
~~36~~	~~Particulate Emissions: Continuous opacity monitor shall assure that electrostatic precipitator system is operating correctly. [N.J.A.C. 7:27-22.16(a)]~~	~~Particulate Emissions: Monitored by continuous opacity monitoring system continuously. [N.J.A.C. 7:27-22.16(o)]~~	~~Particulate Emissions: Recordkeeping by manual logging of parameter or storing data in a computer data system each week during operation. [N.J.A.C. 7:27-22.16(o)]~~	~~Submit an Excess Emissions and Monitoring Systems Performance Report (EEMPR): On or before every April 30, July 30, October 30, and January 30 for the preceding quarter year (the quarter years begin on January 1, April 1, July 1, and October 1) electronically through the NJDEP online EEMPR web portal. [N.J.A.C. 7:27-22.16(o)]~~

Emission Unit: **U1 Municipal Waste Combustors (E1, E2 & E3) – Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF**
Operating Scenario: **OS10 Operation of MWC #1 at Maximum Input (423 MMBtu/hr) with Baghouse, OS11 Operation of MWC #2 at Maximum Input (423 MMBtu/hr) with Baghouse, OS12 Operation of MWC #3 at Maximum Input (423 MMBtu/hr) with Baghouse**

Ref. #1
Proposed Change: Request removal of references in this condition to the baghouse project which no longer apply after the completion of the baghouse project which was completed in November, 2016. Re-number remaining conditions.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Unless otherwise specified, the emission limits specified under this operating scenario shall apply at all times, except for start-up and shutdown periods. ~~Requirements in this operating scenario are applicable after installation of the baghouse controlling this emission unit (MWC) [From modification BOP090003, Construction period 2014 to 2016.]~~ [N.J.A.C.7:27-22.16(a)]	None.	None.	~~Submit the required air permit application(s): Upon occurrence of event (i.e., after installation of baghouse for this emission unit.) Application shall request removal of conditions in the operating scenarios for which use of ESPs is required and removal of all inventory data related to them. From modification BOP090003. [N.J.A.C. 7:27-22.16(o)]~~ **None.**

Emission Unit: **U13 7.4 MMBtu/hr, 740 KW Diesel Engine-driven Emergency Generator (E7)**
Operating Scenario: **OS Summary**

Ref. #3
Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2014.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~3~~	~~Sulfur Content in Fuel <=2,000 ppmw (0.2% by weight) for Zone 4 (Essex County). Effective through June 30, 2014. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Ref. #4
Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
4	~~Sulfur Content in Fuel <=500 ppmw (0.05% by weight). Effective July 1, 2014 through June 30, 2016. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Emission Unit: **U14 1.59 MMBtu/hr, 240 BHP Diesel Engine-driven Emergency Fire Pump (E8)**
Operating Scenario: **OS Summary**

Ref. #3
Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2014.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
~~3~~	~~Sulfur Content in Fuel <=2,000 ppmw (0.2% by weight) for Zone 4 (Essex County). Effective through June 30, 2014. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Ref. #4
Proposed Change: Request eliminating the condition as the requirement is no longer effective as of June 30, 2016.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
4	~~Sulfur Content in Fuel <=500 ppmw (0.05% by weight). Effective July 1, 2014 through June 30, 2016. [N.J.A.C. 7:27-9.2(b)]~~	~~Sulfur Content in Fuel: Monitored by review of fuel delivery records per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~Sulfur Content in Fuel: Recordkeeping by invoices / bills of lading / certificate of analysis per delivery showing fuel sulfur content. [N.J.A.C. 7:27-22.16(o)]~~	~~None.~~

Emission Unit: U15 Ash and Metals Recovery System (E16, E17 & E21-E32), controlled by particulate filter CD1022
Operating Scenario: OS Summary

Emission Unit Description
Proposed Change: Please remove reference to E31 and E32 in the emission unit description. These units, E31, Re-Feed Chute and E32, Feeder were permanently removed from the facility because re-feeding of combined ash for metal recovery is prohibited by condition 126 of the Solid Waste Facility Permit for the Essex County Resource Recovery Facility issued by NJDEP Division of Solid and Hazardous Waste.

Emission Unit: U15 Ash and Metals Recovery System (E16, E17 & E21~~-E32~~**E30**), controlled by particulate filter CD1022

Ref. #7
Proposed Change: Request revision to condition to remove reference to re-feed ash flow which is no longer permitted to occur as stated above.

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
7	Total Material Transferred <= 25.5 tons/hr of bottom ash to metals recovery (Design capacity) for this scenario. ~~This includes re-feed ash flow.~~ Similarly, combined design capacity for both fly ash and bottom ash = 31 tons per hour. [Modification BOP120001]. [N.J.A.C. 7:27-22.16(a)]	Total Material Transferred: Monitored by documentation of construction once initially. [N.J.A.C. 7:27-22.16(o)]	Total Material Transferred: Recordkeeping by manual logging of parameter or storing data in a computer data system once initially. Retain original design specifications and emission calculations in file. From Minor Modification BOP120001. [N.J.A.C. 7:27-22.16(o)]	None.

AECOM Imagine it. Delivered.

Air Quality Evaluation and Modeling Report

Hazardous Air Pollutants Risk Assessment

Covanta Essex Co

Project number: 60563449

March 1, 2019

Prepared for:

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Table of Contents

Figures

Tables

1. Report Overview

Covanta Essex Company (Covanta Essex), a wholly owned subsidiary of Covanta Energy Corporation (Covanta Energy), operates the Essex County Resource Recovery Facility (the ECRRF or the facility), under Program Interest Number 07736. To support the Operating Permit renewal, Permit Activity Number: BOP170001, the New Jersey Department of Environmental Protection (NJDEP) has determined that a facility-wide risk assessment is required in order to continue their review of the renewal application, in accordance with N.J.A.C. 7:27-22.3(cc) given the operating permit contains air toxics emission limits above reporting thresholds.

Covanta is submitting this report to document the dispersion modeling and second-level facility-wide risk screening assessment as requested by NJDEP (November 6, 2017 email). This second-level risk screening assessment was conducted consistent with the methodology outlined in the *Air Quality Evaluation and Modeling Protocol, Revision #3, July 26, 2018.* The July 26, 2018 modeling protocol was revised based on comments received from NJDEP on a revised protocol submitted February 27, 2018 and the incorporation of recent stack testing. The approval of the modeling protocol was received in the August 24, 2018 letter from the NJDEP (see **Appendix D**), and was conditional pending comments to be addressed in the modeling report. This report has addressed those comments. The analysis was also conducted in accordance with the requirements in NJDEP's *Technical Manual 1003 - Guidance on Risk Assessment for Air Contaminant Emissions (November 18, 2009)* and NJDEP's *Technical Manual 1002 - Guideline on Air Quality Impact Modeling Analysis (November, 2009)*. Details of this modeling are provided in the following sections of this report. The electronic modeling files, including the risk calculation spreadsheet, are provided in **Appendix C** on compact disc (CD) to facilitate NJDEPs review of the analysis.

1.1 Organization of the Report

This report addresses the requirements applicable to the air dispersion modeling and health risk analysis. Specific sections of the application include:

Section 2 – Regulatory Review describes the New Jersey state regulations that may influence dispersion modeling requirements and the standards applicable to the modeled sources.

Section 3 – Source Description provides descriptions of site location, evaluated sources, applicable air pollution controls, and emission rates.

Section 4 – Modeling Approach describes the modeling approach and model selection.

Section 5 – Modeling Results provides the modeling results.

Section 6 – References.

Appendix A – Facility Plot Plan.

Appendix B – Risk Calculation Spreadsheet.

Appendix C – Modeling File Archive CD.

Appendix D – NJDEP Approval of the Modeling Protocol.

2. Regulatory Review

In accordance with N.J.A.C. 7:27-22.3(cc), given the operating permit for the ECRRF contains air toxics emission limits above reporting thresholds, NJDEP requires a facility-wide health risk assessment to support the renewal application. The Health Risk Evaluation requirements are detailed in Technical Manual 1003 and are briefly discussed below.

2.1 Health Risk Evaluation

The NJDEP requires applicants to address potential inhalation-based health risks for sources of hazardous air pollutants (HAPs) for which potential emissions exceed the HAP-specific reporting thresholds stated in Subchapter 22, *Operating Permits*. The first step is typically a risk screening procedure to conservatively estimate health risk where ambient concentrations for annual and short-term averaging periods are conservatively estimated using emission rates and dispersion look-up tables combined within the NJDEP's risk screening spreadsheet. Impacts of HAPs can also be predicted through air quality dispersion modeling, and the predicted impacts can be incorporated into the NJDEP's risk screening spreadsheet.

The first-level risk screening is designed to evaluate a calculated risk below the "negligible" threshold which is defined as cancer risk less than or equal to ten in a million (Table 5.2 of Technical Manual 1003) and a hazard quotient of less than or equal to one for non-carcinogenic risk (Table 5.3 of Technical Manual 1003) for a facility-wide assessment. If the conservatively calculated risk is above negligible thresholds, second tier analysis is required.

A second-level risk screening assessment was conducted for the ECRRF that utilized dispersion modeling results obtained from application of the U.S Environmental Protection Agency's (USEPA) AERMOD model. The short-term and annual AERMOD results were incorporated into the NJDEP's risk screening spreadsheet which carries out the proper calculations to estimate cancer and non-cancer health risk based on the facility permitted emission rates. Health risk results were also assessed for actual emissions for informational purposes.

3. Source Description

3.1 Site Description and Location

3.1.1 Description

Covanta Essex's ECRRF is an energy-from-waste (EfW) facility with three (3) large, identically sized independent municipal waste combustion units (MWC units). The three (3) MWC units each vent out of their own flue from a single stack structure that is 279 feet in height. The ECRRF is a major source subject to air permitting under N.J.A.C. 7:27-22, Operating Permits, as well as a major source of HAPs.

The ECRRF produces high temperature, high-pressure steam from the combustion of solid waste. The steam is utilized to generate electricity at the facility for sale to Public Service Electric and Gas and for in-plant use. Municipal solid waste (MSW) delivery hours are twenty-four (24) hours per day, Monday through Saturday. The Facility is permitted to combust MSW twenty-four (24) hours per day, 7 days per week, up to a maximum of 985,500 tons of solid waste per year.

The site plot plan of the ECRRF is provided in **Appendix A**. The various system operations are housed predominately in one main building structure consisting of: the tipping hall, the refuse storage bunker, the boiler building, the turbine- generator building, the residue processing facility, the residue bunker, and ferrous and non-ferrous metal storage areas, and the facility administrative offices. Auxiliary support buildings and equipment located separate from the main building structure include: the maintenance building, the induced draft fan control building, the air-cooled condensers, the air quality control systems, the scalehouse, the electrical switchyard, the activated carbon and lime storage silos, the aqueous ammonia storage tank, the raw water storage tank, the wastewater storage tank, the demineralized water storage tank, the condensate storage tank, and the No.2 fuel oil storage tank.

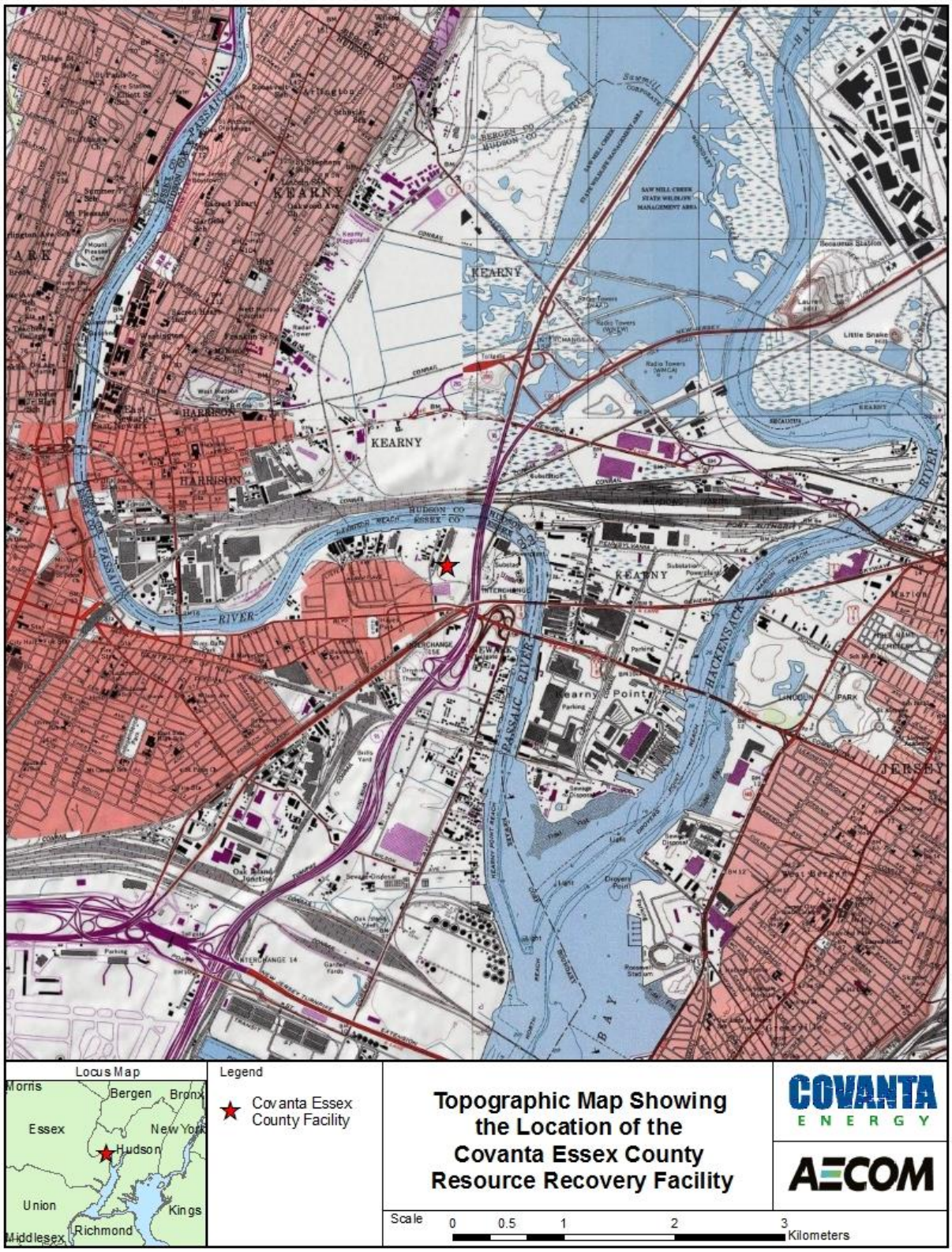
The three (3) MWC units for the combustion of waste, the generation of steam, and the handling of ash generated by the combustion process are the sources of HAPs at the facility. Each of three (3) MWC units contains the following combustion equipment: a charging hopper which is loaded from the waste storage pit by overhead cranes, a feed chute, a ram feeder, roller grates, primary, secondary, and low NOx air systems, auxiliary fuel oil burners, and flues and ducts. Each MWC unit also includes the following steam generation equipment: economizer, main steam drum, the waterwalls (water-filled tubes that line the combustion chamber), a bank evaporator, a superheater, a spray attemperator, safety valves and blowdown tanks. The superheated steam produced at the facility is passed through two (2) turbine-generators to produce electricity. Each turbine-generator is rated at 36 megawatts ("MW"), for a total generating capacity of approximately 72 MW.

In 2012, Covanta Essex entered into an agreement with NJDEP to replace the existing electrostatic precipitator (ESP) on each of the three (3) MWC units with its own fabric filter baghouse to enhance the reduction of particulate matter and HAP metal emissions from the facility. Toxic modeling was conducted at the time as part of the application for this Fabric Filter Upgrade project. The results of that modeling predicted acceptable concentrations. These units are the focus of the requested second tier risk assessment as part of the Title V renewal process.

3.1.2 Location

The ECRRF is located at 183 Raymond Boulevard in Newark, Essex County, NJ, as shown on **Figure 3-1**. As shown in **Figure 3-1**, the ECRRF is located off of U.S. Routes 1/9 and the New Jersey Turnpike.

Figure 3-1 Location of the Covanta Essex County Resource Recovery Facility



3.2 Emission Points Evaluated

As noted, the ECRRF stack contains three (3) flues, one for each MWC unit, that are housed in a single stack structure that is 279 feet in height. The stack parameters summarized in **Table 3-1** were obtained from both the 2012 Fabric Filter Upgrade project application and the 2013 operating permit. Modeling was conducted for both the annual and short-term averaging periods. The annual flue gas flow rate and exhaust temperature are based on average operation of each MWC unit. The short-term flue gas flow rate and exhaust temperature are based on the minimum operation of each MWC unit.

Table 3-1 Stack Parameters

Parameter	Units	Short-Term[5]	Annual[5]
Stack Height	feet	279	
Base Elevation	feet	11	
Flue Diameter	feet	7.54	
Number of Flues	N/A	3	
Effective Stack Diameter [1]	feet	13.06	
Stack Coordinates X [2]	meters	573,748.954	
Stack Coordinates Y [2]	meters	4,510,051.448	
Stack Flue Gas Rate [3]	acfm	140,000	212,000
Stack Velocity [4]	ft/sec	52.23	79.10
Stack Gas Temperature	°F	270	295

(1) Equivalent diameter of three flues.
(2) Based on NAD83, Zone 18.
(3) Values are per MWC unit.
(4) Based on sum of flue gas volumes for all three MWC units and equivalent diameter of three flues (i.e., merged flue gas rates).
(5) Short-term exhaust flow rate and temperature are minimum values, and annual exhaust flow rate and temperature are average values from the operating permit.

3.3 Potential to Emit

Covanta Essex's Title V permit (BOP090003) contains limits on emissions of select HAPs. These limits, included within Facility Specific Requirements portion of the permit, along with the NJDEP reporting thresholds, are presented in **Table 3-2**. Emission limits in the existing operating permit were established based on reporting thresholds for the following compounds: benzo (a) pyrene, carbon tetrachloride, formaldehyde, tetrachloroethylene, trichloroethylene and vinyl chloride. Emissions data derived from recent stack testing (conducted in 2018, and subsequent to installation of the fabric filter) for these compounds were used in the analysis and are listed in **Table 3-2**. The proposed emission rates for carbon tetrachloride, formaldehyde, trichloroethylene and vinyl chloride are based on the 2018 stack test results with a 10% safety factor as approved by NJDEP (February 22, 2019 email from Ted Chleboski). Emissions of benzo (a) pyrene and tetrachloroethylene will remain below the reporting thresholds.

The reporting thresholds in **Table 3-2** represent the updates made official on January 16, 2018, listed in N.J.A.C. 7:27-17.9.

For informational purposes, emission rates based on stack tests performed in 2016 and 2017 for select pollutants are also presented in **Table 3-3**.

Table 3-2 Potential to Emit

Pollutant	Potential to Emit [per MWC unit]		Reporting Thresholds[1]		Report?
	lb/hr	ton/yr	lb/yr	ton/yr	
Ammonia	10.1	44.33	---	---	---
Arsenic	0.0037	0.015	0.01	5.0x10-6	Yes
Beryllium	0.00025	0.001	0.02	1.0x10-5	Yes
Cadmium	0.0037	0.015	0.01	5.0x10-6	Yes
Chromium	0.012	0.048	1,000	0.5	No
Chromium VI[2]	0.0012	0.0048	0.004	2.0x10-6	Yes
Dioxin (TCDD 2,3,7,8)	0.00001	0.000040	0.0000012	6.0x10-10	Yes
Dioxins/Furans (total)	0.000011	0.000043	0.00012	6.0x10-8	Yes
Hydrogen Chloride	21.6	94.67	900	0.45	Yes
Hydrogen Fluoride	0.82	3.60	600	0.3	Yes
Lead	0.037	0.15	2	0.001	Yes
Mercury	0.01	0.040	2	0.001	Yes
Nickel	0.0033	0.013	0.6	3.0x10-4	Yes
Polycyclic Organic Matter	0.29	1.27	2	0.001	Yes
Benzo(a)pyrene[3]	(3)	(3)	0.04	2.0x10-5	No
Carbon tetrachloride[4]	0.007	0.03	8	0.004	Yes
Formaldehyde[4]	0.082	0.359	3.5	0.00175	Yes
Perchloroethylene (tetrachloroethylene) [3]	(3)	(3)	180	0.09	No
Trichloroethylene[4]	0.006	0.026	8	0.004	Yes
Vinyl chloride[4]	0.003	0.012	5	0.0025	Yes

Note(s):

1. Reporting thresholds found in N.J.A.C. 7:27-17.9(b) Table 2. Thresholds are compared to the per unit emission rates.
2. Chromium VI is assumed to be 10% of Chromium emissions (consistent with the Fabric Filter project application).
3. Emission rate will be below reporting threshold.
4. Emission rates based on proposed limits derived from 2018 stack test results with applied 10% safety factor.

Table 3-3 Emission Rates from Stack Testing (values are per unit)

Pollutant	2016 MWC Unit 3 (lb/hr)	2016 MWC Unit 2 (lb/hr)	2017 MWC Unit 1 (lb/hr)	2017 MWC Unit 2 (lb/hr)	2017 MWC Unit 3 (lb/hr)
Cadmium	<0.000042	0.000033	0.0000584	0.0000388	0.0000326
Dioxin (TCDD 2,3,7,8)	2.56E-11	0.000	<3.79E-10	0.000	---
Dioxins/Furans (total)	4.22E-08	7.37E-08	1.18E-07	4.87E-08	---
Hydrogen Chloride	2.7	0.5	0.284	2.76	1.56
Lead	0.00024	0.0005	0.000728	0.000774	0.000829
Mercury	0.001	<0.00043	<0.000428	<0.000459	<0.000457

4. Modeling Approach

The USEPA's AERMOD dispersion model (version 18081) was used for the evaluation to predict concentrations ($\mu g/m^3$) from the emission rates detailed in **Section 3.3**.

The suitability of an air quality dispersion model for a particular application is dependent upon several factors. For this study, four selection criteria were evaluated. The selection of AERMOD was based upon analysis of the following criteria:

- stack height relative to nearby structures;
- dispersion environment;
- local terrain; and
- representative meteorological data.

4.1 Good Engineering Practice (GEP) Stack Height Analysis

Good engineering practice (GEP) stack height is defined as the stack height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes or eddy effects created by the source, nearby structures or terrain features. A GEP stack height analysis was conducted with the USEPA's Building Profile Input Processor (BPIP) in accordance with USEPA's guidelines (USEPA, 1985). The location of the stack and buildings layout are shown in **Figure 4-1**. Given the height of the stack (279 feet, 85.04 meters), the size of the structures off-site, buildings of downwash influence are limited to those structures on site. The GEP height for the modeled stack, H_{GEP}, is determined from the dimensions of all buildings which are within the region of influence:

$$H_{GEP} = H + 1.5L$$

where:

H = height of the structure within 5L of the stack which maximizes Hg, and

L = lesser dimension (height or projected width) of the structure.

For a squat structure, i.e., height less than projected width, the formula reduces to:

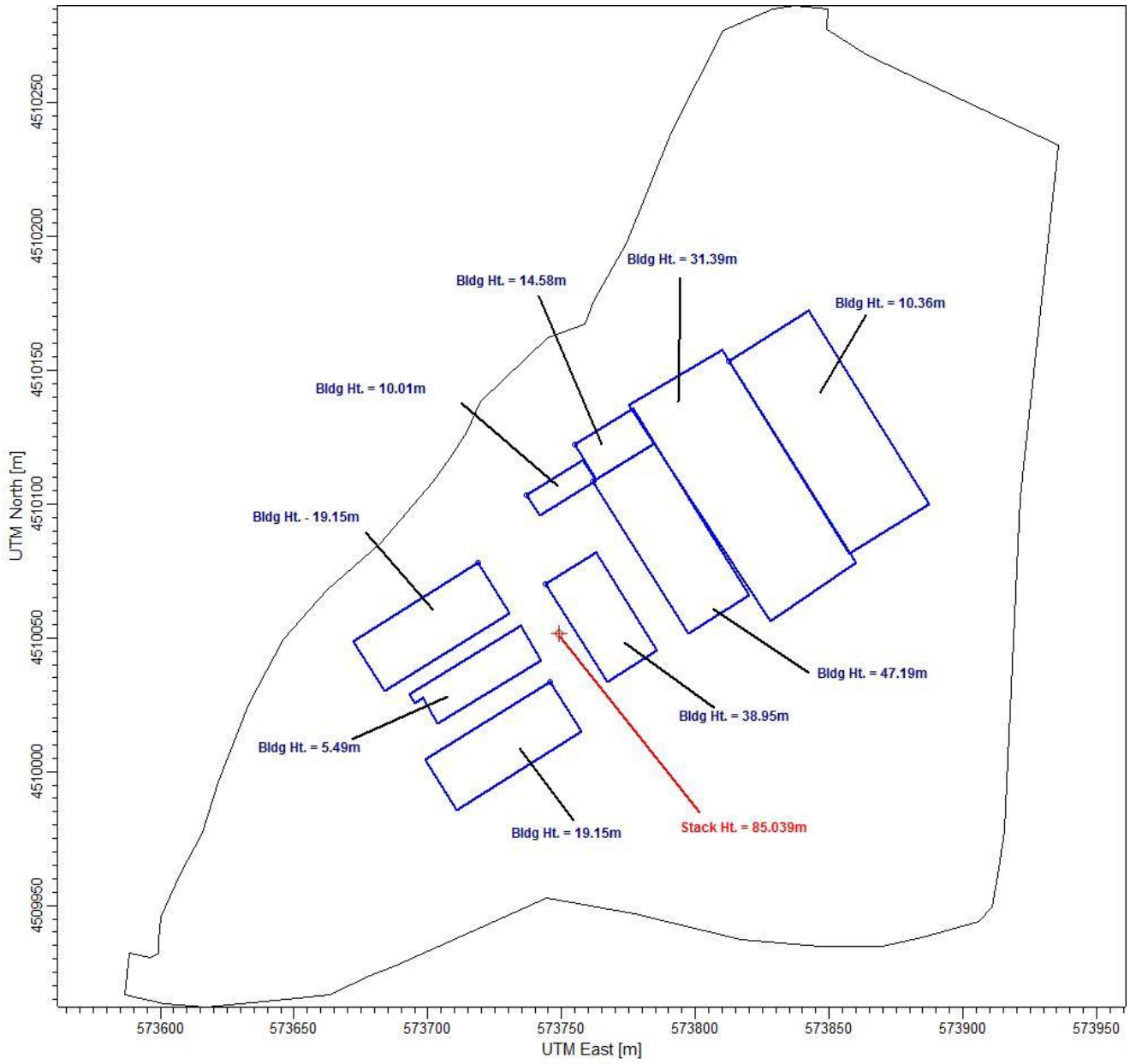
$$H_{GEP} = 2.5H$$

As required by AERMOD, the PRIME version of the BPIP program was employed. The direction-specific building dimensions generated by BPIP-PRIME were input to AERMOD. **Table 4-1** details the overall GEP summary.

Table 4-1 GEP Summary

Stack	Stack Height (m)	Building Height (m)	Maximum Projected Building Width (m)	Distance from Stack (m)	5L Distance (m)	Calculated Formula GEP Stack Height (m)
Combined 3 MWC Units	85.04	47.19 (Boiler Building)	66.48	41.0	235.5	118.02

Figure 4-1 GEP Figure



4.2 Dispersion Environment and Local Topography

The application of the AERMOD model requires characterization of the local (within 3 kilometers) dispersion environment as either urban or rural based on prevalent land use. According to USEPA modeling guidelines, if more than 50 percent of an area within a 3 kilometer radius of the proposed project is classified as rural, then rural dispersion coefficients are to be used in the dispersion modeling analysis.

Based on land-use information provided on United States Geological Survey (USGS) topographic maps and recent aerial photography, the area within 3 kilometers of the ECRRF is considered urban. Therefore, the urban option was used in the application of AERMOD. The urban option was also used in the toxics modeling conducted in support of the Fabric Filter Upgrade project. The population value used in AERMOD was the 2016 population for Newark, NJ of 281,764.

4.3 Meteorological Data

The meteorological data used in the analysis was processed by NJDEP and provided to Covanta Essex for the risk modeling. The meteorological database consists of five years (2010-2014) of surface data from the National Weather Service (NWS) at Newark International Airport, NJ, and concurrent mixing heights from Brookhaven, NY.

4.4 AERMOD Receptors

A Cartesian receptor grid was generated for use in the AERMOD modeling. The grid consisted of the following receptors:

- Along the property boundary with 20 meters spacing;
- From the property boundary to 1 km with 70 meters spacing;
- From 1 km to 2 km with 100 meters spacing;
- From 2 km to 3 km with 250 meters spacing;
- From 3 km to 5 km with 500 meters spacing;
- From 5 km to 10 km with 1,000 meters spacing; and
- From 10 km to 20 km with 2,000 meters spacing.

Receptor height scales at each receptor location (used in AERMOD) was developed by AERMAP (version 18081), the terrain preprocessor for AERMOD, which requires processing of terrain data files. The current version of AERMAP has the ability to process USGS National Elevation Dataset (NED) data in place of digital elevation model (DEM) data. The appropriate file for 1/3-arc-second, or 10-meters, NED data was obtained. NED data files contain profiles of terrain elevations, which in conjunction with receptor data are used to generate receptor height scales. The height scale is the terrain elevation in the vicinity of a receptor that has the greatest influence on dispersion at that location and is used in AERMOD's predictions in complex terrain areas. The receptor coordinates are referenced to North American Datum (NAD) 1983. The receptor grid used in the modeling analysis is shown in **Figures 4-2** and **4-3**.

4.4.1 Sensitive Receptors

Technical Manual 1003 guidance indicates that special attention should be allotted to areas that are considered to be sensitive. Examples of sensitive receptor locations are nearby residences, hospitals, schools and parks. For this analysis all areas outside of the property line of the facility were considered sensitive receptors.

Figure 4-2 Near-Field Receptor Grid

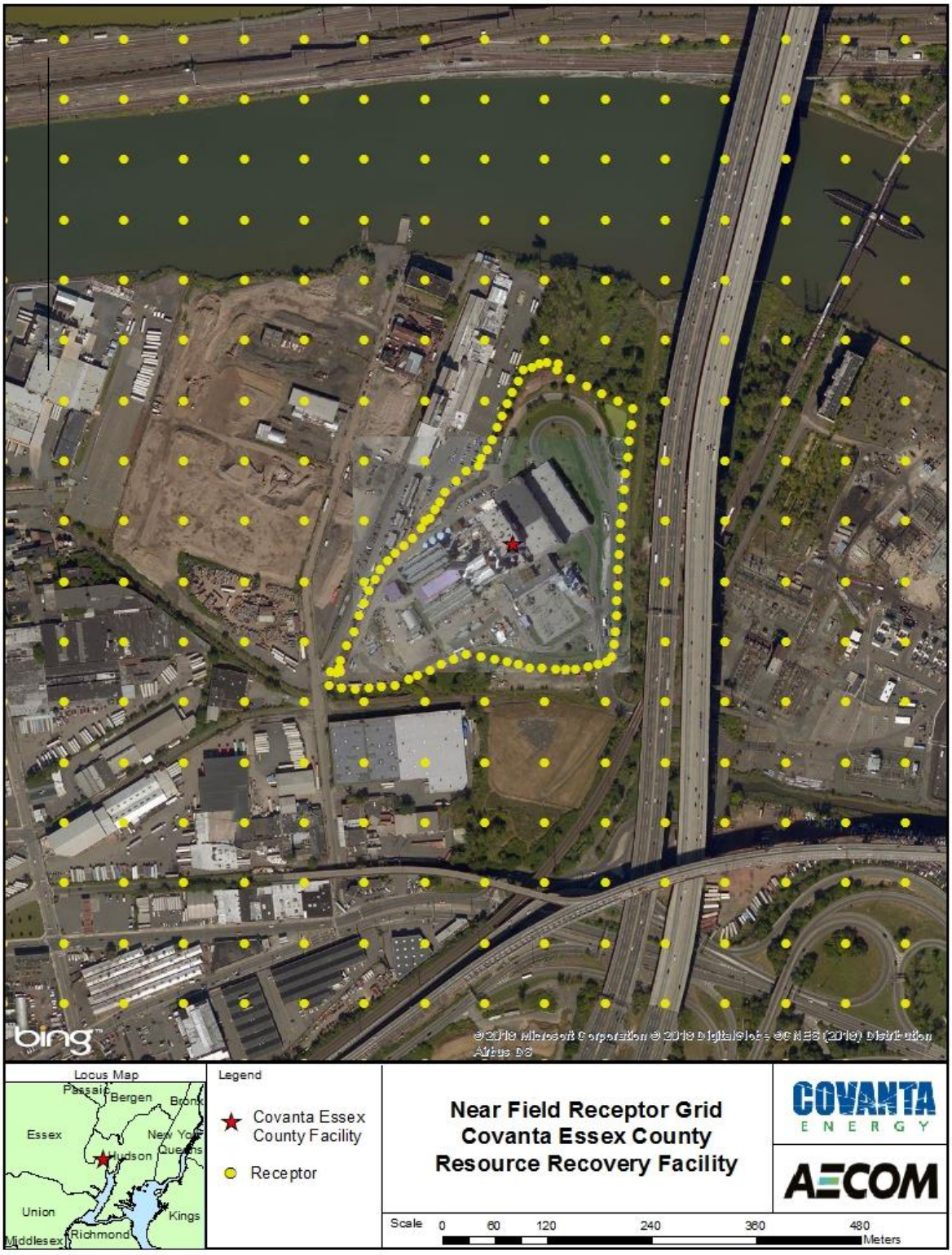
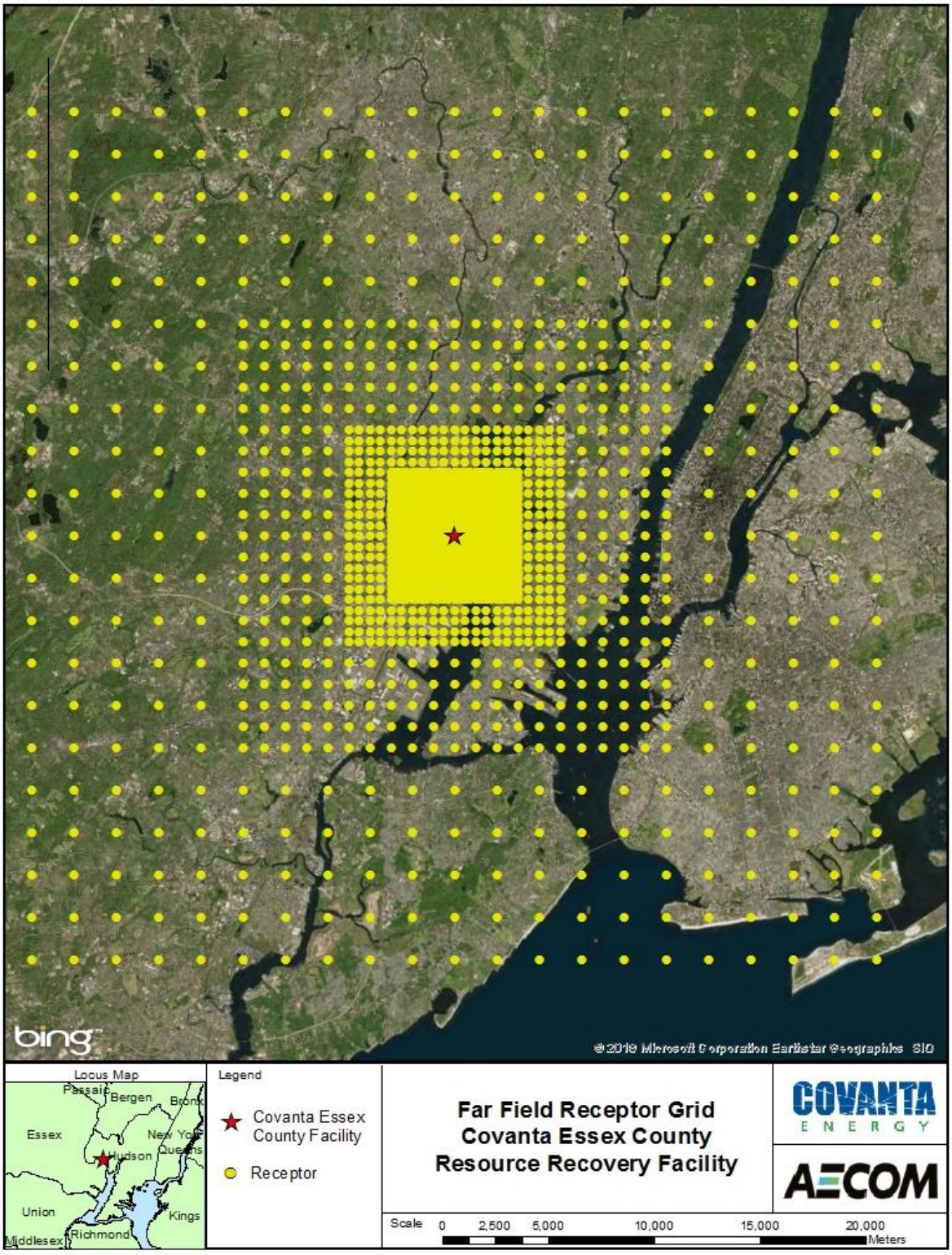


Figure 4-3 Far-Field Receptor Grid



4.5 Source Parameters and Emission Rates

Facility-wide modeling was conducted for compounds over the reporting thresholds as noted in **Table 3-2**, for both the annual and short-term averaging periods. Stack parameters for both short-term and annual modeling periods were presented previously in **Table 3-1**. The emission rates for the second-level risk screening analysis are shown in **Table 4-2**. These rates are based on all three MWCs. The annual emission rates are based on each MWC unit operating at maximum continuous rating (MCR) and short term emission rates assume 110 percent of MCR.

Additionally, the risk screening assessment considered actual emissions determined from stack testing (**Table 4-3**) for informational purposes. These rates are based on maximum stack test results between the 2016 and 2017 tests shown in **Table 3-3**.

Table 4-2 Emission Rates - Potential to Emit

Pollutant	STACK[1]	
	Short Term (g/s)	Annual (g/s)
Ammonia	3.82E+00	3.83E+00
Arsenic	1.40E-03	1.27E-03
Beryllium	9.45E-05	8.63E-05
Cadmium	1.40E-03	1.27E-03
Chromium VI	4.54E-04	4.11E-04
Dioxin (TCDD 2,3,7,8)	3.78E-06	3.42E-06
Dioxins/Furans (total)	4.16E-06	3.74E-06
Hydrogen Chloride	8.16E+00	8.17E+00
Hydrogen Fluoride	3.10E-01	3.11E-01
Lead	1.40E-02	1.27E-02
Mercury	3.78E-03	3.45E-03
Nickel	1.25E-03	1.12E-03
Polycyclic Organic Matter	1.10E-01	1.10E-01
Carbon Tetrachloride	2.65E-03	2.59E-03
Formaldehyde	3.10E-02	3.10E-02
Trichloroethylene	2.27E-03	2.24E-03
Vinyl Chloride	1.13E-03	1.13E-03

Note(s):

1. Total emission rate for all three MWCs.

Table 4-3 Emission Rates Based on Stack Testing

Pollutant	STACK			
	Short Term[1]		Annual[2]	
	(lb/hr)	(g/s)	(tpy)	(g/s)
Cadmium	1.75E-04	2.21E-05	7.67E-04	2.21E-05
Dioxin (TCDD 2,3,7,8)	1.14E-09	1.43E-10	4.98E-09	1.43E-10
Dioxins/Furans (total)	3.54E-07	4.46E-08	1.55E-06	4.46E-08
Hydrogen Chloride	8.28E+00	1.04E+00	3.63E+01	1.04E+00
Lead	2.49E-03	3.13E-04	1.09E-02	3.13E-04
Mercury	3.00E-03	3.78E-04	1.31E-02	3.78E-04

Note(s):

1. Based on the maximum stack test result for all units and the 2 years of data.
2. Based on the maximum short-term rate and 8760 hours operation assumed for all three units.

4.6 Comprehensive Risk Assessment Steps

The following provides details on methodology conducted for the risk assessment organized in steps outlined in NJDEP's Guidance on Risk Assessment for Air Contaminant Emissions (Technical Manual 1003, November 18, 2009).

4.6.1 Hazard Identification

The existing operating permit contains air toxics emission limits above reporting thresholds. In accordance with N.J.A.C. 7:27-22.3(cc), the NJDEP determined that a Facility-Wide Risk Assessment is required in order to continue with the review of the permit application. These pollutants are listed in **Table 3-2**.

4.6.2 Dose-Response Assessment

Applicable unit risk factors (URFs) for long-term (chronic) exposure and reference concentrations (RfCs) for long-term and short term exposures were used as provided in the latest NJDEP screening spreadsheet (updated October 2017). These factors have been determined by NJDEP using inhalation information from USEPA Integrated Risk Information System (IRIS), California Office of Environmental Health Hazard Assessment (OEHHA) and other appropriate sources. See detailed spreadsheet in **Appendix B**.

For dioxins and furans, URF and RfC for 2,3,7,8-tetrachlorodibenzo-p-dioxin was used and compared against total dioxin and furans concentrations.

For total polycyclic aromatic hydrocarbons (PAHs), URF benzo(a)pyrene was used.

4.6.3 Exposure Assessment

Dispersion modeling was conducted based on the specifications previously noted in **Section 4.1** through **Section 4.5**. AERMOD was executed with a unit emission rate of one (1) grams per second to determine the maximum normalized concentrations for annual, 1-hour and 24-hour averaging periods. Resultant maximum normalized concentrations per averaging period were then multiplied by the specific HAP emission rate noted in **Table 4-2** to determine the maximum concentration for each individual HAP required to be evaluated. See detailed spreadsheet in **Appendix B**.

4.6.4 Risk Characterization

For carcinogens, human health risks estimates in terms of cancer risk were based on the following equation:

Cancer Risk = C x URF

Where:

C = maximum annual/short-term average ambient air concentration ($\mu g/m^3$) [concentration determined during Exposure Assessment step]

URF = pollutant-specific inhalation risk factor $(\mu g/m^3)^{-1}$

For noncarcinogens, human health risks in terms of hazard quotient were based on the following equation:

Hazard Quotient = C/RfC

Where:

C = maximum annual average ambient air concentration ($\mu g/m^3$) [concentration determined during Exposure Assessment step]

RfC = pollutant-specific reference concentration ($\mu g/m^3$)

See detailed spreadsheet in **Appendix B**.

5. Modeling Results

The maximum annual and maximum hourly average pollutant concentrations at all offsite receptors (sensitive and non-sensitive locations) are presented below in **Table 5-1**. As described in **Section 4.6**, the maximum predicted annual concentration was multiplied by the URF for carcinogenic risk for each pollutant above reporting threshold to calculate the carcinogenic incremental risk. Resultant risks for each compound were then compared to the cancer risk threshold. Facility-wide cancer risk less than or equal to ten in a million are considered negligible, and values greater than 100 in a million are deemed unacceptable per NJDEP Technical Manual 1003. For both the short-term and long-term non-carcinogenic effects, the predicted impacts were divided by the reference concentration to derive the hazard quotient. Hazard quotients less than or equal to 1 indicate that the risk is negligible. As shown in **Table 5-1**, facility-wide cancer risks and non-carcinogenic risks are negligible for all compounds at the maximally impacted receptor. For informational purposes, **Table 5-2** depicts the facility-wide results for actual emissions. As the actual, stack-tested emission rates (see **Tables 3-3** and **4-3**), are lower than potential emissions, the calculated cancer and non-cancer risks are even further below the risk thresholds.

The modeling files and risk calculation spreadsheet are provided on the CD in **Appendix C**.

Table 5-1 Second-Level Risk Screening Assessment Results – PTE Emissions

	LONG-TERM EFFECTS								SHORT-TERM EFFECTS					
Air Toxic	Annual Maximum Emission Rate[4] (g/s)	Concentration (C)[1] (µg/m^3)	Inhalation Risk Factor (URF) (µg/m^3)-1	Cancer Risk (IR)[2]	> IR Negligible Threshold (10E^6)?	Reference Concentration (RfC) (µg/m^3)	Hazard Quotient (HQ)[3]	> Hazard Quotient/Index Negligible Threshold (1)?	Hourly Maximum Emission Rate[4] (g/s)	Exposure Period (hr)	Concentration (C)[1] (µg/m^3)	RfCst (µg/m^3)	Hazard Quotient (HQ)[3]	> Hazard Quotient/Index Negligible Threshold (1)?
Ammonia	3.83E+00	8.92E-02	--	--	--	100	8.92E-04	N	3.82E+00	1	4.52E+00	3200	1.41E-03	N
Arsenic (inorganic)	1.27E-03	2.95E-05	4.30E-03	1.27E-07	N	0.015	1.97E-03	N	1.40E-03	1	1.66E-03	0.2	8.29E-03	N
Beryllium	8.63E-05	2.01E-06	2.40E-03	4.83E-09	N	0.02	1.01E-04	N	9.45E-05	1	1.12E-04	--	--	--
Cadmium	1.27E-03	2.95E-05	4.20E-03	1.24E-07	N	0.02	1.48E-03	N	1.40E-03	1	1.66E-03	--	--	--
Carbon Tetrachloride	2.59E-03	6.04E-05	6.00E-06	3.62E-10	N	40	1.51E-06	N	2.65E-03	1	3.14E-03	1900	1.65E-06	N
Chromium VI (total)	4.11E-04	9.59E-06	1.20E-02	1.15E-07	N	--	--	--	4.54E-04	1	5.37E-04	--	--	--
Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	3.74E-06	8.72E-08	3.80E+01	3.31E-06	N	0.00004	2.18E-03	N	4.16E-06	1	4.93E-06	--	--	--
Formaldehyde	3.10E-02	7.22E-04	1.30E-05	9.39E-09	N	9	8.03E-05	N	3.10E-02	1	3.67E-02	55	6.68E-04	N
Hydrogen Chloride	8.17E+00	1.91E-01	--	--	--	20	9.53E-03	N	8.16E+00	1	9.67E+00	2100	4.61E-03	N
Hydrogen Fluoride	3.11E-01	7.25E-03	--	--	--	14	5.18E-04	N	3.10E-01	1	3.67E-01	240	1.53E-03	N
Lead	1.27E-02	2.95E-04	1.20E-05	3.54E-09	N	--	--	--	1.40E-02	24	5.42E-03	0.1	5.42E-02	N
Mercury (elemental)	3.45E-03	8.05E-05	--	--	--	0.3	2.68E-04	N	3.78E-03	1	4.48E-03	--	--	--
Nickel and Compounds	1.12E-03	2.62E-05	2.40E-04	6.28E-09	N	0.014	1.87E-03	N	1.25E-03	1	1.48E-03	0.2	7.39E-03	N
[Polycyclic Organic Matter] Benzo(a)pyrene	1.10E-01	2.56E-03	1.10E-03	2.81E-06	N	--	--	--	1.10E-01	1	1.30E-01	--	--	--
Trichloroethylene	2.24E-03	5.23E-05	4.80E-06	2.51E-10	N	2	2.62E-05	N	2.27E-03	24	8.78E-04	2	4.39E-04	N
Vinyl chloride	1.13E-03	2.64E-05	8.80E-06	2.33E-10	N	100	2.64E-07	N	1.13E-03	1	1.34E-03	180000	7.47E-09	N

1. Concentration = Modeled air impact value ((µg/m^3)/(g/s)) x Maximum Emission Rate (g/s) [for short term, multiply by appropriate 1-hr or 24-hr modeled concentration]
2. Cancer Risk = Concentration (µg/m^3) x URF ((µg/m^3)-1)
3. Hazard Quotient = Concentration (µg/m^3) / RfC(µg/m^3)
4. Emissions for all three units.

Table 5-2 Second-Level Risk Screening Assessment Results – Actual Emissions

	LONG-TERM EFFECTS								SHORT-TERM EFFECTS					
Air Toxic	**Annual Maximum Emission Rate[4]** (g/s)	**Concentration (C)[1]** (µg/m^3)	**Inhalation Risk Factor (URF)** (µg/m^3)-1	**Cancer Risk (IR)[2]**	**> IR Negligible Threshold (10E^6)?**	**Reference Concentration (RfC)** (µg/m^3)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**	**Hourly Maximum Emission Rate[4]** (g/s)	**Exposure Period** (hr)	**Concentration (C)[1]** (µg/m^3)	**RfCst** (µg/m^3)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**
Cadmium	2.21E-05	5.15E-07	4.20E-03	2.16E-09	N	0.02	2.57E-05	N	2.21E-05	1	2.62E-05	--	--	--
Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	4.46E-08	1.04E-09	3.80E+01	3.95E-08	N	0.00004	2.60E-05	N	4.46E-08	1	5.29E-08			
Hydrogen Chloride	1.04E+00	2.43E-02	--	--	--	20	1.22E-03	N	1.04E+00	1	1.24E+00	2100	5.9E-04	N
Lead	3.13E-04	7.31E-06	1.20E-05	8.77E-11	N	--	--	--	3.13E-04	24	1.21E-04	0.1	1.2E-03	N
Mercury (elemental)	3.78E-04	8.81E-06	--	--	--	0.3	2.94E-05	N	3.78E-04	1	4.48E-04	--	--	--

1. Concentration = Modeled air impact value ((µg/m^3)/(g/s)) x Maximum Emission Rate (g/s) [for short term, multiply by appropriate 1-hr or 24-hr modeled concentration]
2. Cancer Risk = Concentration (µg/m^3) x URF ((µg/m^3)-1)
3. Hazard Quotient = Concentration (µg/m^3) / RfC(µg/m^3)
4. Emissions for all three units.

6. References

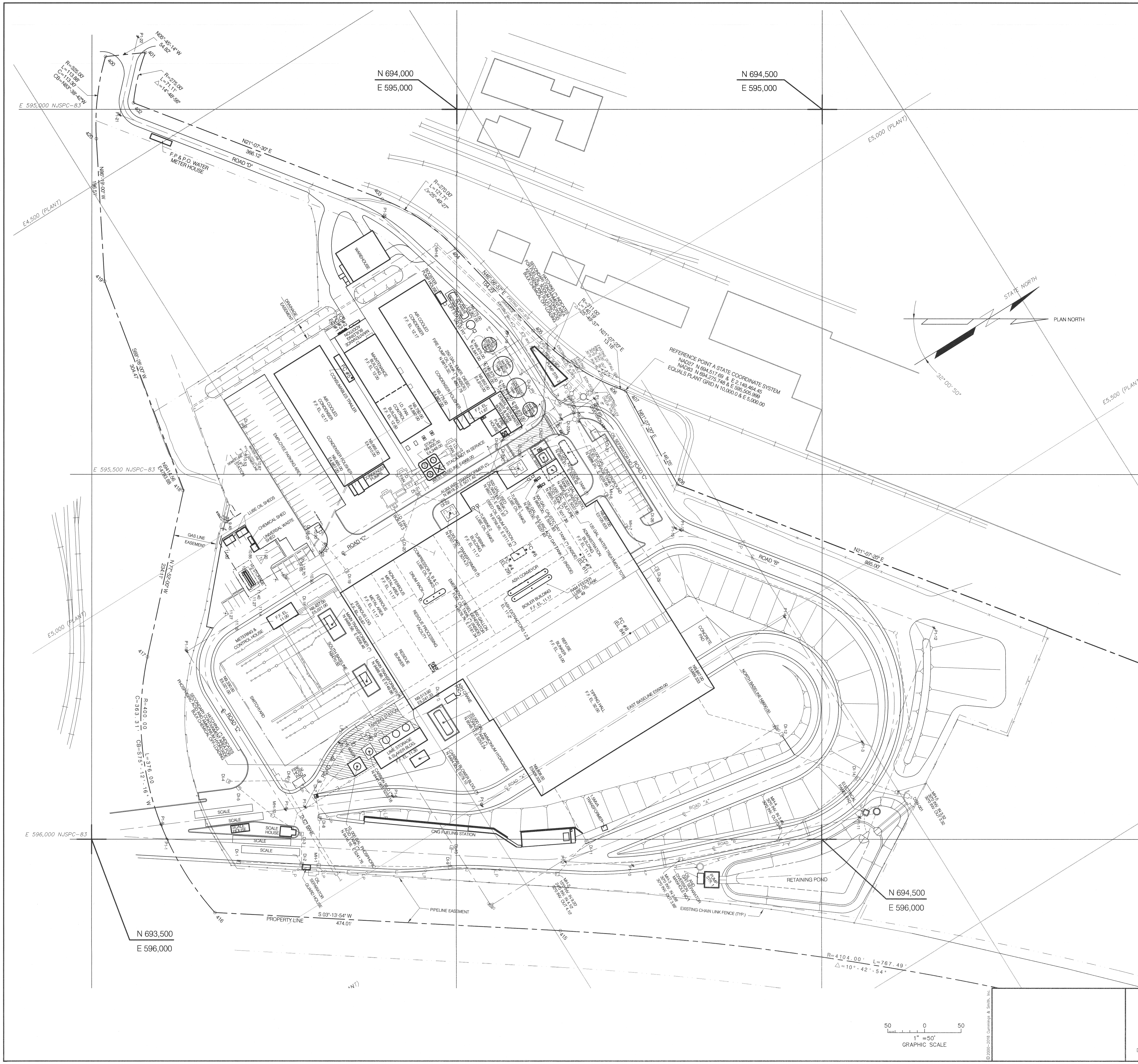
NJDEP 2009. Technical Manual 1002. Guideline on Air Quality Impact Modeling Analysis. New Jersey Department of Environmental Protection. Bureau of Air Quality. . November 2009.

NJDEP 2009. Technical Manual 1003 - Guidance on Risk Assessment for Air Contaminant Emissions. New Jersey Department of Environmental Protection. Bureau of Air Quality. November 18, 2009.

USEPA 1985. Guideline for Determination of Good Engineering Practice Stack Height. EPA Document No. EPA-450/4-80-023R. Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC. June 1985.

USEPA 2017. Guideline on Air Quality Models (Revised). Codified in the Appendix W to 40 CFR Part 51. Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC. January 2017.

Appendix A - Plot Plan



POINT NO.	COORDINATES NORTH	EAST	R	Δ	T	L
PI-0	9048.538	5121.610				
PI-1	9142.027	5187.670				
PI-2	9588.000	5502.801	212.00'	25°-14'-44"	47.476	93.411
PI-3	10,020.000	5578.975	92.00'	100°-00'-00"	109.641	160.570
PI-4	10,020.000	5377.333	92.00'	90°-00'-00"	92.000	144.513
PI-5	9532.000	5377.333	112.00'	38°-00'-00"	38.565	74.281
PI-6	9435.863	5302.223	212.00'	13°-00'-00"	24.154	48.101
PI-7	9325.923	5250.957				
PI-8	9301.000	5239.335				
PI-9	9145.374	5166.766				
PI-10	9633.990	5556.497	488.00'	15°-14'-44"	63.311	129.849
PI-11	9962.284	5665.064	178.00'	56°-51'-50"	96.372	176.658
PI-12	10,185.000	5498.064	182.00'	90°-00'-00"	182.000	285.885
PI-13	9962.251	5201.000	76.00'	53°-08'-10"	38.005	70.482
PI-14	9412.452	5201.000	116.00'	30°-00'-00"	31.082	60.737
PI-15	9958.000	5195.331	90.00'	36°-51'-50"	29.995	57.906
PI-16	9958.000	4986.000	50.00'	90°-00'-00"	50.000	78.540
PI-17	9905.000	4986.000				
PI-18	9301.000	4984.000	66.00'	90°-00'-00"	66.000	103.673
PI-19	9905.000	4845.000	256.00'	15°-00'-00"	33.703	67.021
PI-20	9845.213	4621.871	256.00'	21°-51'-40"	49.439	97.676
PI-21	9612.760	4311.835	30.00'	81°-51'-40"	26.016	42.862
PI-22	9690.54±	4234.054±				

POINT NO.	COORDINATES NORTH	EAST
400	9638.74	4233.70
401	9687.90	4257.96
402	9637.49	4307.83
403	9857.12	4600.76
404	9906.10	4711.03
405	9935.63	4862.41
406	9992.05	4989.45
407	10000.00	5000.00
408	9992.00	5146.01
409	10522.93	5854.07
410	10470.47	5932.15
411	10320.03	6104.53
412	10368.42	6149.89
413	10275.96	6248.52
414	10113.23	6080.25
415	9531.37	5581.48
416	9144.26	5307.91
417	9251.50	4961.87
418	9414.56	4793.88
419	9475.16	4495.50
420	9568.41	4322.53

LEGEND

SECONDARY CONTAINMENT AREAS FOR CHEMICAL OFF-LOADING

● FC #2 — FLAMMABLE MATERIALS CABINET

NOTES:

1. THIS DRAWING HAS BEEN CREATED WITH THE USE OF A COMPUTER FILE OF GIBBS & HILL DRAWING ECSC-0111 (BASE DRAWING), TITLED "SITE PLOT PLAN", AS PERIODICALLY UPDATED BY AMERICAN REF-FUEL COMPANY OF ESSEX COUNTY THROUGH REV. N DATED 5-11-99. THESE PERIODIC UPDATES TO THE BASE DRAWING INCLUDE INFORMATION OBTAINED FROM PREVIOUS SURVEYS AND SITE MODIFICATIONS CONDUCTED BY KILLAM ASSOCIATES AND OTHERS.
2. THE GRID AND ALL COORDINATES SHOWN ON THIS DRAWING ARE BASED ON THE PLANT GRID SYSTEM. ALL PROPERTY LINE BEARINGS SHOWN (BASE DRAWING) ARE BASED ON THE NJ STATE PLANE COORDINATE SYSTEM.
3. THE BASE DRAWING HAS BEEN AMENDED TO INCLUDE THE RESULTS OF A FIELD SURVEY BY CUMMINGS AND SMITH, INC. IN SEPTEMBER 2000 TO INCLUDE THE LOCATIONS OF VARIOUS FACILITIES IDENTIFIED WITH AN ASTERISK (i.e.: LUBE OIL SHED (*))
4. THIS DRAWING HAS BEEN PREPARED BY CUMMINGS AND SMITH, INC. FOR THE SOLE PURPOSE OF FULFILLING THE REQUIREMENT OF N.J.A.C. 7:1E-4.2, "DISCHARGE PREVENTION, CONTAINMENT AND COUNTERMEASURE PLANS" (DPCC PLANS) FOR THE ESSEX COUNTY RESOURCE RECOVERY FACILITY, AND IN 2018 FOR THE RENEWAL OF THE FACILITY'S TITLE V AIR QUALITY PERMIT. THIS DRAWING SHALL NOT BE USED FOR ANY CONSTRUCTION ACTIVITY. CUMMINGS & SMITH, INC. ASSUMES NO RESPONSIBILITY OR LIABILITY FOR ANY USE OF THIS DRAWING, OTHER THAN FOR THE SPECIFIC PURPOSE OF COMPLYING WITH THE REQUIREMENTS FOR THE DPCC PLANS.
5. THIS REV. E DRAWING HAS BEEN PREPARED BY CUMMINGS AND SMITH, INC. BY TRANSLATING AND ROTATING THE FACILITIES SHOWN BASED ON REFERENCE POINT A AND THE NORTH AZIMUTH RELATIONSHIP SHOWN ON THE ORIGINAL GIBBS & HILL PLAN REFERENCED IN NOTE 1. ABOVE. NO FIELD SURVEY VERIFICATION OF NJ STATE PLANE COORDINATES WAS PERFORMED AND THE ORIGINAL GIBBS & HILL COORDINATE CONVERSION WAS NOT CHECKED. THIS DRAWING SHALL BE USED FOR NO PURPOSE OTHER THAN FOR THE DPCC PLAN RENEWAL SUBMISSION TO NJ DEP.
6. THIS REV. E DRAWING HAS BEEN PREPARED BY CUMMINGS AND SMITH, INC. BY TRANSLATING AND ROTATING THE FACILITIES SHOWN FROM NAD27 TO NAD83. REV. C WAS PREPARED BY CONVERTING GIBBS & HILL POINT A NJSPC27 COORDINATES TO NJSPC 83 COORDINATES.
7. ON MARCH 3, 2011, THE UNDERSIGNED GARY L. SMITH, PE VISITED THE SITE AND VERIFIED THE LOCATIONS OF THE EXISTING FACILITIES SHOWN ON THIS DRAWING.
8. ELEVATIONS OF ITEMS INSIDE BUILDINGS ARE 11'-2" UNLESS OTHERWISE NOTED.
9. ON AUGUST 14, 2014, THE UNDERSIGNED GARY L. SMITH, PE VISITED THE SITE AND VERIFIED THE LOCATIONS OF THE EXISTING FACILITIES SHOWN ON THIS DRAWING.
10. ON MAY 31, 2018 THE UNDERSIGNED GARY L. SMITH, PE VISITED THE SITE AND VERIFIED THE LOCATIONS OF THE ID FANS, AND FLAMMABLE MATERIALS STORAGE CABINETS FC-1 THROUGH FC-8 AND THE LUBE OIL AND UNIVERSAL WASTE STORAGE CABINETS.

NO.	DATE	DESCRIPTION	MADE	CHKD.	APPVD.
F	5-31-18	REV. TO 2018 CONDITIONS	GLS	GLS	GLS
E	8-4-14	REV. TO 2014 CONDITIONS	CJS	GLS	GLS
D	3-09-11	REV. TO 3/3/11 CONDITIONS	CJS	GLS	GLS
C	3-26-04	REV. NJ SPC-NAD83 POSITIONS	GLS	GLS	GLS
B	3-25-04	CONVERT TO NJ SPC - NAD83	GLS	GLS	GLS
A	3-24-04	ROTATE & TRANSLATE DRAWING TO NJ STATE PLANE COORD.	GLS	GLS	GLS

REVISIONS

COVANTA ESSEX COMPANY
183 RAYMOND BLVD. NEWARK, NJ 07105-4798

ESSEX COUNTY RESOURCE RECOVERY FACILITY
NEWARK, NEW JERSEY

Cummings & Smith Inc.
Consulting Engineers
214 Little Falls Road Fairfield, NJ 07004 973-744-3353

Gary L. Smith, P.E.
New Jersey Professional Engineer No. 28113
Date 5/31/18 Signature [signature]

SITE PLAN

DRAWN	CHECK	APPROVAL	FILE / PLOT SCALE / PM	DATE
GJB	GLS	GLS	FILE: AR-C001-D.DWG; PLOT SCALE: 1 = 80; PM: 9310-05	8-14-2014

SIZE	PROJECT	SUBJ.	NUMBER	REV.	SHEET
E–	21005.00	C	001	F	– OF –

Appendix B – Risk Calculation Spreadsheet

	LONG-TERM EFFECTS								SHORT-TERM EFFECTS					
Air Toxic	**Annual Maximum Emission Rate[4]** (g/s)	**Concentration (C)[1]** ($\mu g/m^3$)	**Inhalation Risk Factor (URF)** ($\mu g/m^3$)-1	**Cancer Risk (IR)[2]**	**> IR Negligible Threshold ($10E^6$)?**	**Reference Concentration (RfC)** ($\mu g/m^3$)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**	**Hourly Maximum Emission Rate[4]** (g/s)	**Exposure Period** (hr)	**Concentration (C)[1]** ($\mu g/m^3$)	**RfCst** ($\mu g/m^3$)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**
Ammonia	3.83E+00	8.92E-02				100	8.92E-04	N	3.82E+00	1	4.52E+00	3200	1.41E-03	N
Arsenic (inorganic)	1.27E-03	2.95E-05	4.30E-03	1.27E-07	N	0.015	1.97E-03	N	1.40E-03	1	1.66E-03	0.2	8.29E-03	N
Beryllium	8.63E-05	2.01E-06	2.40E-03	4.83E-09	N	0.02	1.01E-04	N	9.45E-05	1	1.12E-04			
Cadmium	1.27E-03	2.95E-05	4.20E-03	1.24E-07	N	0.02	1.48E-03	N	1.40E-03	1	1.66E-03			
Carbon Tetrachloride	2.59E-03	6.04E-05	6.00E-06	3.62E-10	N	40	1.51E-06	N	2.65E-03	1	3.14E-03	1900	1.65E-06	N
Chromium VI (total)	4.11E-04	9.59E-06	1.20E-02	1.15E-07	N				4.54E-04	1	5.37E-04			
Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	3.74E-06	8.72E-08	3.80E+01	3.31E-06	N	0.00004	2.18E-03	N	4.16E-06	1	4.93E-06			
Formaldehyde	3.10E-02	7.22E-04	1.30E-05	9.39E-09	N	9	8.03E-05	N	3.10E-02	1	3.67E-02	55	6.68E-04	N
Hydrogen Chloride	8.17E+00	1.91E-01				20	9.53E-03	N	8.16E+00	1	9.67E+00	2100	4.61E-03	N
Hydrogen Fluoride	3.11E-01	7.25E-03				14	5.18E-04	N	3.10E-01	1	3.67E-01	240	1.53E-03	N
Lead	1.27E-02	2.95E-04	1.20E-05	3.54E-09	N				1.40E-02	24	5.42E-03	0.1	5.42E-02	N
Mercury (elemental)	3.45E-03	8.05E-05				0.3	2.68E-04	N	3.78E-03	1	4.48E-03			
Nickel and Compounds	1.12E-03	2.62E-05	2.40E-04	6.28E-09	N	0.014	1.87E-03	N	1.25E-03	1	1.48E-03	0.2	7.39E-03	N
[Polycyclic Organic Matter] Benzo(a)pyrene	1.10E-01	2.56E-03	1.10E-03	2.81E-06	N				1.10E-01	1	1.30E-01			
Trichloroethylene	2.24E-03	5.23E-05	4.80E-06	2.51E-10	N	2	2.62E-05	N	2.27E-03	24	8.78E-04	2	4.39E-04	N
Vinyl chloride	1.13E-03	2.64E-05	8.80E-06	2.33E-10	N	100	2.64E-07	N	1.13E-03	1	1.34E-03	180000	7.47E-09	N

1. Concentration = Modeled air impact value (($\mu g/m^3$)/(g/s)) x Maximum Emission Rate (g/s) [for short term, multiply by appropriate 1-hr or 24-hr modeled concentration]
2. Cancer Risk = Concentration ($\mu g/m^3$) x URF (($\mu g/m^3$)-1)
3. Hazard Quotient = Concentration ($\mu g/m^3$) / RfC($\mu g/m^3$)
4. Emissions for all three units.

Maximum modeled **annual** air impact value	0.02332	($\mu g/m^3$)/(g/s)
Maximum modeled **24-hour** air impact value	0.3873	($\mu g/m^3$)/(g/s)
Maximum modeled **1-hour** air impact value	1.18498	($\mu g/m^3$)/(g/s)

	LONG-TERM EFFECTS								SHORT-TERM EFFECTS					
Air Toxic	**Annual Maximum Emission Rate[4]** (g/s)	**Concentration (C)[1]** ($\mu g/m^3$)	**Inhalation Risk Factor (URF)** ($\mu g/m^3$)-1	**Cancer Risk (IR)[2]**	**> IR Negligible Threshold ($10E^6$)?**	**Reference Concentration (RfC)** ($\mu g/m^3$)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**	**Hourly Maximum Emission Rate[4]** (g/s)	**Exposure Period** (hr)	**Concentration (C)[1]** ($\mu g/m^3$)	**RfCst** ($\mu g/m^3$)	**Hazard Quotient (HQ)[3]**	**> Hazard Quotient/Index Negligible Threshold (1)?**
Cadmium	2.21E-05	5.15E-07	4.20E-03	2.16E-09	N	0.02	2.57E-05	N	2.21E-05	1	2.62E-05			
Tetrachlorodibenzo(p)dioxin (2,3,7,8-)	4.46E-08	1.04E-09	3.80E+01	3.95E-08	N	0.00004	2.60E-05	N	4.46E-08	1	5.29E-08			
Hydrogen Chloride	1.04E+00	2.43E-02				20	1.22E-03	N	1.04E+00	1	1.24E+00	2100	5.9E-04	N
Lead	3.13E-04	7.31E-06	1.20E-05	8.77E-11	N				3.13E-04	24	1.21E-04	0.1	1.2E-03	N
Mercury (elemental)	3.78E-04	8.81E-06				0.3	2.94E-05	N	3.78E-04	1	4.48E-04			

1. Concentration = Modeled air impact value (($\mu g/m^3$)/(g/s)) x Maximum Emission Rate (g/s) [for short term, multiply by appropriate 1-hr or 24-hr modeled concentration]
2. Cancer Risk = Concentration ($\mu g/m^3$) x URF (($\mu g/m^3$)-1)
3. Hazard Quotient = Concentration ($\mu g/m^3$) / RfC($\mu g/m^3$)
4. Emissions for all three units.

Maximum modeled **annual** air impact value	0.02332	($\mu g/m^3$)/(g/s)
Maximum modeled **24-hour** air impact value	0.3873	($\mu g/m^3$)/(g/s)
Maximum modeled **1-hour** air impact value	1.18498	($\mu g/m^3$)/(g/s)

	Modeled Concentration (µg/m^3)					
Averaging Period	**2010**	**2011**	**2012**	**2013**	**2014**	**Max**
Annual	0.02332	0.01868	0.01772	0.0213	0.01754	**0.02332**
24	0.3873	0.33423	0.34051	0.33477	0.34281	**0.38730**
1	1.11737	1.11957	1.0956	1.13037	1.18498	**1.18498**

Air Toxic	Facility Emissions				
	Short Term			Annual	
	(lb/hr) per unit	(lb/hr) three units	(g/s) three units	(tons/yr) three units	(g/s) three units
Ammonia	10.1	3.03E+01	3.82E+00	133	3.83E+00
Arsenic	0.0037	1.11E-02	1.40E-03	0.044	1.27E-03
Beryllium	0.00025	7.50E-04	9.45E-05	0.003	8.63E-05
Cadmium	0.0037	1.11E-02	1.40E-03	0.044	1.27E-03
Chromium	0.012	3.60E-02	4.54E-03	0.143	4.11E-03
Chromium VI			4.54E-04		4.11E-04
Dioxin (TCDD 2,3,7,8)	0.00001	3.00E-05	3.78E-06	0.00012	3.42E-06
Dioxins/Furans (total)	0.000011	3.30E-05	4.16E-06	0.00013	3.74E-06
Hydrogen Chloride	21.6	6.48E+01	8.16E+00	284.0	8.17E+00
Hydrogen Fluoride	0.82	2.46E+00	3.10E-01	10.8	3.11E-01
Lead	0.037	1.11E-01	1.40E-02	0.44	1.27E-02
Mercury	0.01	3.00E-02	3.78E-03	0.12	3.45E-03
Nickel	0.0033	9.90E-03	1.25E-03	0.039	1.12E-03
Polycyclic Organic Matter	0.29	8.70E-01	1.10E-01	3.81	1.10E-01
benzo (a) pyrene[1]					
carbon tetrachloride[2]		2.10E-02	2.65E-03	0.0900	2.59E-03
formaldehyde[2]		2.46E-01	3.10E-02	1.0770	3.10E-02
perchloroethylene (tetrachloroethylene)[1]					
trichloroethylene[2]		1.80E-02	2.27E-03	0.0780	2.24E-03
vinyl chloride[2]		9.00E-03	1.13E-03	0.0360	1.13E-03

Note (1) - Emission rate will be below reporting threshold

Note (2) - based on proposed limits derived from 2018 stack test results with applied 10% safety factor.

Cr VI as a % of Cr:	10%

Air Toxic	Emission Rates - Stack Test			
	Short Term		Annual	
	(lb/hr) three units	(g/s) three units	(tons/yr) three units	(g/s) three units
Cadmium	1.75E-04	2.21E-05	7.67E-04	2.21E-05
Dioxin (TCDD 2,3,7,8)	1.14E-09	1.43E-10	4.98E-09	1.43E-10
Dioxins/Furans (total)	3.54E-07	4.46E-08	1.55E-06	4.46E-08
Hydrogen Chloride	8.28E+00	1.04E+00	3.63E+01	1.04E+00
Lead	2.49E-03	3.13E-04	1.09E-02	3.13E-04
Mercury	3.00E-03	3.78E-04	1.31E-02	3.78E-04

Appendix C – Modeling File Archive CD

Appendix D – NJDEP Approval of Modeling Protocol

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CLIMATE AND ENVIRONMENTAL MANAGEMENT
DIVISION OF AIR QUALITY
P.O. Box 420 Mailcode 401-02
TRENTON, NJ 08625-0420
609 - 984 - 1484

PHILIP D. MURPHY
Governor

SHEILA OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

August 24, 2018

Ms. Kimberly Zuk
AECOM
250 Apollo Drive
Chelmsford, MA 01824

SUBJECT: Air Quality Evaluation and Modeling Protocol; Covanta Essex Co.; Newark, Essex County; Program Interest # 07736, Permit Activity # BOP170001

The Bureau of Evaluation and Planning (BEP) has reviewed the Air Quality Evaluation and Modeling Protocol for the facility-wide risk assessment of HAPs emissions as part of Covanta Essex Co. (Covanta) operating permit renewal application. The protocol is conditionally approved, provided the following comments are properly addressed in the air dispersion modeling and risk assessment report.

Protocol Overview

1. Paragraph 2 of this section referred to a NJDEP email of November 6, 2017. Please correct the email date.

Section 3.1.2 Location

2. This section referred Figure 3-1 twice as Figure 2-1.

Section 3.2 Emission Points Evaluated

3. This section lists stack discharge information for each of the three municipal waste combustors (MWC). For annual and short-term impact, Covanta proposes to use each MWC's maximum continuous rating (MCR) and 110% MCR, respectively. For annual impacts, average exhaust temperature and flow rate can be used; and, for short-term impact, the minimum temperature and minimum flow rate should be used for assessing health impacts.

Section 4 Modeling Approach

4. The protocol states that AERMOD model version 16216r will be used to perform air dispersion modeling. The current version is v18081. Please make sure this latest version is used in modeling.

Section 4.3 Meteorological Data

5. The most recent meteorological data processed by NJDEP for the Newark International Airport has been emailed to Kimberly Zuk and Brian Stormwind on August 20, 2018. Please use this data for AERMOD modeling.

Section 4.4 AERMOD Receptors

6. The current version of AERMAP is V18081. Please make sure this version is used in the modeling.

Section 4.5 Source Parameters and Emission Rates

7. The first paragraph referred to Table 2-1. It should be Table 3-1.

Table 4-2 Emission Rates – PTEs

8. Please change "Chromium IV" to "Chromium VI".

Section 4.6.1 Hazard Identification

9. This section referred to Table 2-2. It is assumed the reference was meant to be Table 3-2; please revise.

Section 4.6.4 Risk Characterization

10. For concentration C definition, please change "annual average" to "annual/short-term average".

Section 4.7 Modeling Results

11. In accordance with the NJDEP risk assessment policy, incremental cancer risk of each carcinogen, instead of all carcinogens, is compared to the facility-wide negligible threshold of 10 in a million. Therefore, please take out the sentence "Resultant risks for all compounds will be summed together for comparison to the cancer and non-cancer risk thresholds."

12. In accordance with the NJDEP risk assessment policy, long-term and short-term hazard quotient of each toxic air pollutant, instead of combined hazard quotient, is compared to the facility-wide negligible threshold of 1.0. Please revise the sentence "Combined hazard quotients less than or equal to 1 indicate that the risk is negligible."

Sincerely,

Yiling Zhang

CC: T. Chleboski, BSS; Y. Sivaganesh, BSS; G. John, BEP; Y. Zhang, BEP

Covanta Essex Company
Comments on Draft Compliance Plan for U2 received from NJDEP on July 13, 2018

1. Proposed U2, OS Summary, Ref. #20 – CO emissions are limited to <= 195 tons/yr from each MWC.

   The Essex Facility (the Facility) potential to emit (PTE) calculations that were provided to the Department on May 9, 2018 to provide a more accurate potential to emit for SO2, CO and NOx than what is reflected in the current Title V permit have been revised further. The emissions are now based on the combustion calculations used for the design of the retrofitted fabric filter air pollution control systems. A summary of those combustion calculations is included in **Attachment B**. The steady-state emission rate for CO is now calculated using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable concentration limit of 100 ppmdv7 for CO. As a result, the CO emissions should now be limited to 172.5 tons/year per MWC. The revised Facility PTE emission calculations are included as **Attachment D**.

2. Proposed U2, OS Summary, Ref. #28 - Cadmium compounds are limited to 0.01 mg/dscm@7% O2 from each MWC.

   The original permit has a limit of 0.035 mg/dscm@7% O2 from each MWC except during startup, shutdown, and malfunction under U1, OS Summary, Ref. #116. It appears that the new proposed limit referenced above took the original limit which applied to each MWC and divided it by 3 incorrectly assuming the original limit was a facility wide limit. The limit on cadmium compounds should remain at 0.035 mg/dscm@7% O2 for each MWC.

3. Proposed U2, OS Summary, Ref. #33 – Lead compounds are limited to 0.1 mg/dscm@7% O2 from each MWC.

   The original permit has a limit of 0.4 mg/dscm@7% O2 from each MWC except during startup, shutdown, and malfunction under U1, OS Summary, Ref. #115. It appears that the new proposed limit referenced above took the original limit which applied to each MWC and divided it by 3 incorrectly assuming the original limit was a facility wide limit. The limit on lead compounds should remain at 0.4 mg/dscm@7% O2 for each MWC.

4. Proposed U2, OS Summary, Ref. #42 – Waste Processing Rate <= 900 tons/day and 328,500 tons per year of municipal solid waste with a High Heating Value (HHV) of 5,120 Btu/lb.

   Covanta requests that NJDEP remove the waste throughput limit from the Title V permit and put back the 4-hour steam flow limit. Steam provides the most reliable thermal processing mechanism for MSW combustion.

   There are 2 operating limits which are applicable to the design and operation of a municipal waste combustor, a thermal limit and a mass limit. The thermal limit is the amount of heat that can be released into the boiler and is a value calculated and expressed in units of millions of BTUs per hour. Operation of the combustor at a given heat rate input will result in a proportional rate of steam

generation in units of lbs/hr. The amount of MSW required to reach a given rate of heat release and associated stem production rate is determined by the heating value of the MSW (BTU/lb). In that the heating value of the MSW does vary somewhat, to reach a given heat release rate more MSW needs to be combusted with lower heating value waste and less MSW needs to be combusted with higher heating value waste. Given that the emissions of many pollutants are correlated with the heat release rate, operating at a consistent steam generation rate is a good indicator of consistent emissions.

In considering the best way to regulate the throughput of waste-to-energy facilities, the USEPA recognized that there is no way to determine the exact heat release rate of a combustor during a given hour for an amount of waste charged to the boiler. That is because the precise heating value of the waste charged during that hour cannot be exactly determined. Also, although the cranes used to charge a combustion unit along with pit measurement provide a relatively accurate means of determining charging rate over long periods of time, they do not provide an accurate means of measuring charging rate in the short- term. For these reasons, in the agency's Emission Guidelines, USEPA established a 4-hour average steam production rate limit of 110% of the rate monitored during the most recent dioxin compliance test as being the appropriate means of regulating load level for waste-to energy facilities.

In addition to the 4-hour average steam production limit established during dioxin compliance testing in accordance with the Emission Guidelines, in 1997 NJDEP established a 4-hour average steam limit of 247,500 lbs/hr for each combustor in the Operating Permit for the Essex Facility. This steam limit was based on American RefFuel's predicted steam production rate for a unit combusting 900 tons per day of waste having a higher heating value 5,300 BTU pound (a heat input rate of 397,500,000 BTU/hr). In its 2012 application to retrofit the Essex Facility with fabric filters, Covanta based its design of the new air pollution control systems on a maximum continuous rating (MCR) of each of the 3 combustors based on the combustion of 933 tons per day of waste having a heating value of 5,120 BTU/lb (a heat input rate of 398,080,000 BTU/hr). This heat input rate is essentially identical to the basis of the 1997 approval but reflected a reduction in the heating value of the waste between 1995 and 2012. In the 2012 retrofit application, annual emissions in tons per year were based on operating at MCR 24 hrs/day, 365 days/year. Short-term maximum hourly emission rates were based on using an operating condition which was 110% of MCR, or 437,880,000 BTU/hr. The heat input rates which served as the basis for the American RefFuel and Covanta permits are within rounding and are predicted to produce approximately the same amount of steam per hour. Covanta has been operating the Essex Facility within the existing 4-hour average steam limit of 247,500 lbs/hour/unit and the 4-hour average steam limit based on the steam production rate established during dioxin compliance testing, whichever 4-hour average limit is more restrictive.

In terms of a mass rate limit, the Solid Waste Permit for the Facility issued by NJDEP in 1997 contains an <u>annual</u> waste tonnage limit of 985,500 tons per year (3 units x 900 tpd x 365 days/yr). As noted above, compliance with short-term mass production limits (tons/day) cannot be accurately determined. The amount of waste combusted to operate a combustor at its steam limit is a function of the heating value of the waste which varies and cannot be accurately measured in the short-term. Nor can the precise quantity of waste combusted in the short-term be accurately

determined. Covanta has been operating the Facility within NJDEP's annual mass processing rate limit of 985,500 tons per year contained in the existing Solid Waste Permit. Covanta requests that NJDEP not introduce mass rate limits into the Operating Permit as well because they are not an accurate mechanism for regulating air emission rates from the Facility and it is not possible to determine compliance with short-term mass rate limits or heating values on a short-term basis. The Solid Waste Permit for the Facility contains an annual mass rate limit which regulates the total quantity of waste processed.

5. Proposed U2, OS Summary, Ref. #87, Minimum carbon usage >= 17 lb/hr

   Per a prior telephone conversation with Ted Chleboski, the following additional information was requested related to the requested change to the minimum required carbon feed rate:

   - Correlate the optimization test data with the waste feed rate.
   - Confirm that actual mercury emissions will remain the same or decrease with the new carbon level.

   Please see the table in **Attachment A** which includes the waste feed rates that occurred during the optimization test runs correlated to the carbon feed rate during those test runs. Also, included in **Attachment A** are a table and chart with additional information including stack test results for mercury between 2012 and 2018 showing the reduction in mercury emissions since the baghouse replacement project was completed. An additional chart showing stack test results for mercury along with carbon usage between 2012 and 2018 is also included in **Attachment A**. A third chart is included in **Attachment A** shows the mercury emission results and carbon usage rates from the annual stack tests after the baghouse project was completed and from the carbon optimization testing done using Method 29.

   As the results show, mercury emissions have been significantly reduced due to the installation of the baghouses and have not increased with the lower carbon usage during the optimization testing. This reinforces the fact that the use of the baghouses for metals and particulate control has a much more significant impact on actual mercury emissions than carbon usage and mercury emissions will not increase with the new carbon usage rate.

6. Proposed U2, OS1, Ref. #25 – Emissions of benzo(a)pyrene, carbon tetrachloride, formaldehyde, perchloroethylene, trichloroethylene, and vinyl chloride shall be below the reporting thresholds.

   The current Title V permit limits the emissions of the above air toxics to below the reporting thresholds that were previously listed under 7:27-22, Tables A and B. Earlier this year these reporting thresholds were replaced with lower reporting thresholds that are now listed under 7:27-22.17.9(b). Because of this change, emissions of formaldehyde, carbon tetrachloride, trichloroethylene, and vinyl chloride based on previous stack test results are no longer below the new reporting threshold based on the latest stack test results for each unit. Therefore, we are requesting that new limits be included for these air toxics. Covanta is considering revised limits for these substances and will advise the Department accordingly.

7. Proposed U2, OS2, Ref. #1 – The proposed condition limits the number of start-up events to 3 per year with a duration of 3 hours for each event.

   Emission estimates provided for emissions during SU/SD/W events were based on CEMS data measured during scheduled events that occurred for scheduled maintenance outages on the boilers. They are not intended to include emergency periods when a malfunction or upset condition may require an immediate boiler shutdown and then subsequent warmup and startup periods to restore boiler to operation. Any excess emissions that may result from a shutdown or subsequent startup due to a malfunction would be covered under the malfunction provisions. Therefore, we request that either the limit on the number of events be removed or the condition be revised to define the start-up events as "scheduled start up events for maintenance purposes".

8. Proposed U2, OS2, Ref. #3 – The proposed condition limits NOx emissions to <=109 lb/hr during startup.

   Using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable NOx RACT concentration limit of 150 ppmdv, the NOx limit during normal operation would be equal to 96.6 lb/hr. The NOx RACT limit of 150 ppmvd is a 24-hour average limit based on steady state operation and not an hourly limit. Therefore, since the NOx RACT limit is a 24-hour average limit, it should not be used to calculate the maximum hourly limit during startup. Therefore, it is proposed that the short-term NOx emission limit of 300 ppmvd, which is a 1-hour average limit, be used to calculate the corresponding lb/hr emission limit during startup. Using the combustion calculation flow rate of 89,877 dscfm7, the revised NOx limit during startup should be 193.3 lb/hr.

9. Proposed U2, OS2, Ref. #4 – The proposed condition limits CO emissions to <=177 lb/hr during startup.

   Using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable 1-hour CO concentration limit of 400 ppmdv, the CO limit during startup should be revised to 156.9 lb/hr.

10. Proposed U2, OS2, Ref. #22 - Emissions of benzo(a)pyrene, carbon tetrachloride, formaldehyde, perchloroethylene, trichloroethylene, and vinyl chloride shall be below the reporting thresholds.

    See comment No. 6 above. Covanta is considering revised limits for these substances and will advise the Department accordingly.

11. Proposed U2, OS3, Ref. #1 – The proposed condition limits the number of shutdown events to 3 per year with a duration of 3 hours for each event.

    See comment No. 7 above. Covanta requests that either the limit on the number of events be removed or the condition be revised to define the shutdown events as "scheduled shutdown events for maintenance purposes".

12. Proposed U2, OS3, Ref. #3 - The proposed condition limits NOx emissions to <=109 lb/hr during shutdown.

    Using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable NOx RACT concentration limit of 150 ppmdv, the NOx limit during normal operation would be equal to 96.6 lb/hr. The NOx RACT limit of 150 ppmvd is a 24-hour average limit based on steady state operation and not an hourly limit. Therefore, since the NOx RACT limit is a 24-hour average limit, it should not be used to calculate the maximum hourly limit during shutdown. Therefore, it is proposed that the short-term NOx emission limit of 300 ppmvd, which is a 1-hour average limit, be used to calculate the corresponding lb/hr emission limit during shutdown. Using the combustion calculation flow rate of 89,877 dscfm7, the revised NOx limit during shutdown should be 193.3 lb/hr.

13. Proposed U2, OS3, Ref. #4 – The proposed condition limits CO emissions to <=177 lb/hr during shutdown.

    Using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable 1-hour CO concentration limit of 400 ppmdv, the CO limit during shutdown should be revised to 156.9 lb/hr.

14. Proposed U2, OS3, Ref. #22 - Emissions of benzo(a)pyrene, carbon tetrachloride, formaldehyde, perchloroethylene, trichloroethylene, and vinyl chloride shall be below the reporting thresholds.

    See comment no. 6 above. Covanta is considering revised limits for these substances and will advise the Department accordingly.

15. Proposed U2, OS4, Ref. #1 – The proposed condition limits the number of warmup events to 3 per year with a duration of 7 hours for each event.

    See comment no. 7 above. Covanta requests that either the limit on the number of events be removed or the condition be revised to define the warmup events as “scheduled warmup events for maintenance purposes”.

Responses to Request for Additional Information received from Ted Chleboski in August 7, 2018 email to Covanta

1. Request to provide confirmation of the basis of the short-term NOx, CO, and SO2 lb/hr emission rates for the steady state operating scenarios.

   Attachment B contains a summary of Covanta’s combustion calculations used for the design of the retrofitted fabric filter air pollution control systems. In the 2012 retrofit application, annual emissions in tons per year were based on operating at MCR 24 hrs/day, 365 days/year. Short-term maximum hourly emission rates were based on using an operating condition which was 110% of MCR, or 437,880,000 BTU/hr.

Attachment C contains revised calculations of the steady-state emission rates for NOx, CO, and SO2. The steady-state emission rates are calculated using the predicted MCR maximum flow rate of 89,877 dscfm7 and the permitted allowable concentration limits of 150ppmdv for NOx and 100 ppmdv7 for CO. A value of 29 ppmdv7 was chosen for the SO2 steady-state emission rate calculation although a higher concentration limit is allowable depending upon the inlet SO2 concentration at the inlet to the air pollution control system. It should be note that the permit contains an hourly NOX emission rate limit of 95 lbs/hr which is slightly less than the 96.6 lbs/hr calculated using 150 ppmdv7. Also, the calculated emission rates are not maximum hourly emission rates in that they are based on allowable emission concentrations which apply over 4-hour and 24-hour averaging times.

2. Request to provide documentation to support the 9,570 dscf/mmBTU f-factor used for the NOx and CO emission calculations for the SU, WU, and SD operating scenarios.

   The F-factor of 9,570 dscf/mmBTU used for the NOx and CO emission calculations for the SU, WU, and SD operating scenarios was obtained from 40 CFR Part 60, Appendix A-7, Method 19, Table 19-2, F Factors for Various Fuels. The listed F-Factor for MSW is 9,570 dscf/mmBTU.

   Note that **Attachment D** contains revised WU, SU and SD calculations. The revised calculations are based on stack flow rate contained in the combustion calculations (89,877 dscfm7) which served as the basis for the design of the fabric filter air pollution control systems installed at the Facility instead of the predicted flow rate using the F Factor for MSW combustion 9,570 dscf/mmBTU at 0% O2.

3. Request to identify the maximum flow for emission unit U1, U2, and U3 for steady state, SU, WU, and SD operating scenarios - the current permit indicates 220,000 acfm for each emission unit; the Risk Protocol revision #3 (dated July 26, 2018) indicates 233,500 acfm (short-term). For consistency, the applicable document will be revised accordingly.

   The Title V permit modification application submitted on September 20, 2012 included predicted flue gas flow rates of 89,877 dscfm at 7% O2 from each boiler at the maximum continuous rating (MCR) and 98,835 dscfm @7% O2 from each boiler at 110% of MCR. The maximum stack flue gas flow rate of 98,835 dscfm @7% O2 equates to a maximum flow rate of 233,500 acfm. The short term hourly mass emission rates from each unit were determined using the flow rate at 110% of MCR. The maximum flow rate included in the RADIUS application submitted for the modification was 234,000 acfm (rounded up from 233,500) but was not updated in the NJEMS system by the Department. Therefore, the flow rate used in the Risk Protocol is correct. The flow rates for each unit should be as follows:

   Average: 212,000 acfm
   Minimum: 140,000 acfm
   Maximum: 233,500 acfm

Attachment A

Carbon Optimization Information

Waste Throughput during Carbon Optimization Testing on Boiler 2 - January, 2018

Test Date	Waste Processed Boiler 2 (tons/day)	Hours Online	Waste Processed (tons/hr)	Carbon Usage (lb/hr)	Carbon Usage (lb/ton waste processed)	Mercury Emissions (ug/DSCM @7% O2)	EPA Test Method Used
1/8/2018	872	24	36.3	20	0.55	0.175	Method 30B
1/9/2018	926	24	38.6	10	0.26	0.302	Method 30B
1/10/2018	941	24	39.2	5	0.13	0.348	Method 30B
1/10/2018	941	24	39.2	0	0.00	0.211	Method 30B
1/11/2018	944	24	39.3	0	0.00	0.78	Method 29
1/11/2018	944	24	39.3	10	0.25	2.3	Method 29

Waste Throughput during Carbon Optimization Testing on Boiler 2 - March, 2018

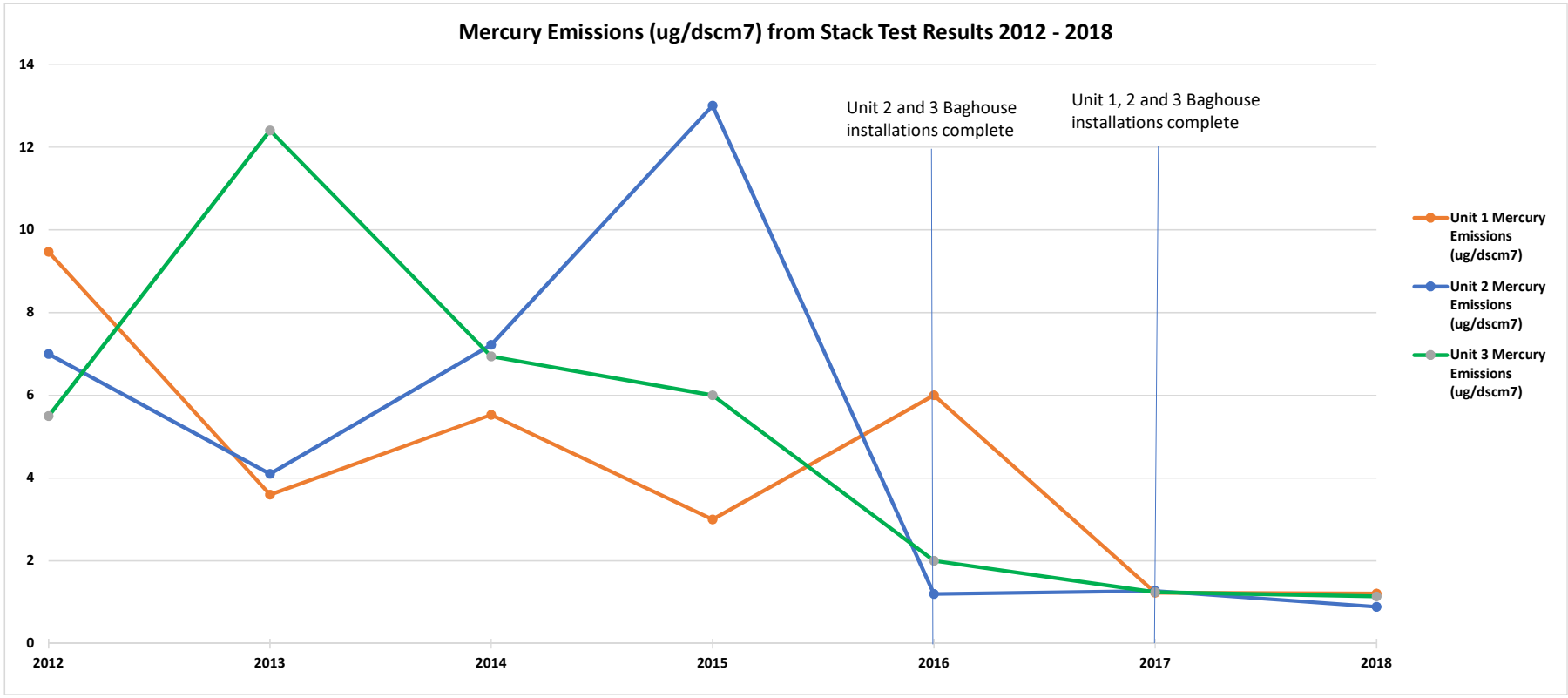
Test Date	Waste Processed Boiler 2 (tons/day)	Hours Online	Waste Processed (tons/hr)	Carbon Usage (lb/hr)	Carbon Usage (lb/ton waste processed)	Mercury Emissions (ug/DSCM @7% O2)[1]	EPA Test Method Used
3/13/2018	896	24	37.3	17	0.46	1.23	Method 29
3/14/2018	903	24	37.6	17	0.45		

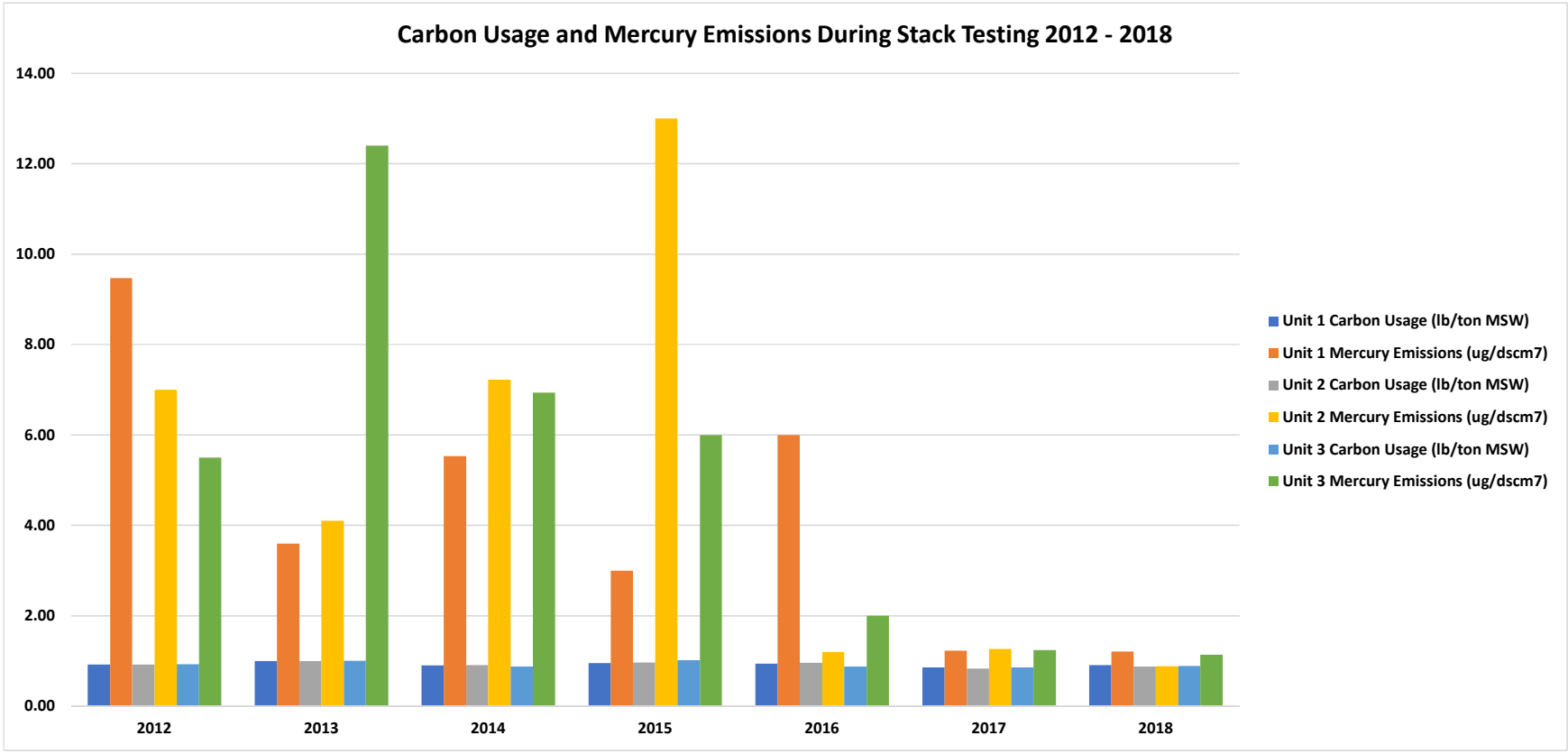
Note 1 - Mercury emissions represent the average of the three test runs conducted between March 13 and March 14, 2018

Covanta Essex Stack Test Results 2012 through 2018

Test Date	Unit #	Particulate Matter Control Device	Carbon Usage (lb/hr)	MSW Processed (tons/day)	Carbon Usage (lb/ton waste processed)	Mercury Emissions (ug/DSCM @7% O2)	EPA Test Method Used
5/21/2012	1	ESP	36	938	0.92	9.47	Method 29
5/13/2013	1	ESP	36	864	1.00	3.6	Method 29
5/20/2014	1	ESP	36	961	0.90	5.53	Method 29
5/19/2015	1	ESP	36	907	0.95	3.0	Method 29
4/27/16 & 4/28/16[1]	1	ESP	36	917.5	0.94	6.0	Method 29
2/21/17 & 2/22/17[1]	1	Baghouse	34	950	0.86	<1.23	Method 29
5/15/2018	1	Baghouse	34	894.0	0.91	<1.21	Method 29
5/22/2012	2	ESP	36	938	0.92	7.00	Method 29
5/14/2013	2	ESP	36	863	1.00	4.1	Method 29
5/19/2014	2	ESP	36	948	0.91	7.22	Method 29
5/18/15 & 5/20/15[1]	2	ESP	36	893.5	0.97	13.0	Method 29
7/13/16, 7/14/16, & 7/15/16[1]	2	Baghouse	34	847.3	0.96	<1.2	Method 29
7/31/2017	2	Baghouse	34	979	0.83	<1.27	Method 29
7/9/18 & 7/13/18[1]	2	Baghouse	34	928	0.88	<0.887	Method 29
5/23/2012	3	ESP	36	932	0.93	5.50	Method 29
5/15/2013	3	ESP	36	859	1.01	12.4	Method 29
5/21/2014	3	ESP	36	979	0.88	6.94	Method 29
5/20/15 & 5/21/15[1]	3	ESP	36	849	1.02	6.0	Method 29
4/26/16 & 4/27/16[1]	3	Baghouse	34	925.5	0.88	2.0	Method 29
8/1/2017	3	Baghouse	34	950.0	0.86	<1.24	Method 29
7/10/2018	3	Baghouse	34	915	0.89	<1.14	Method 29

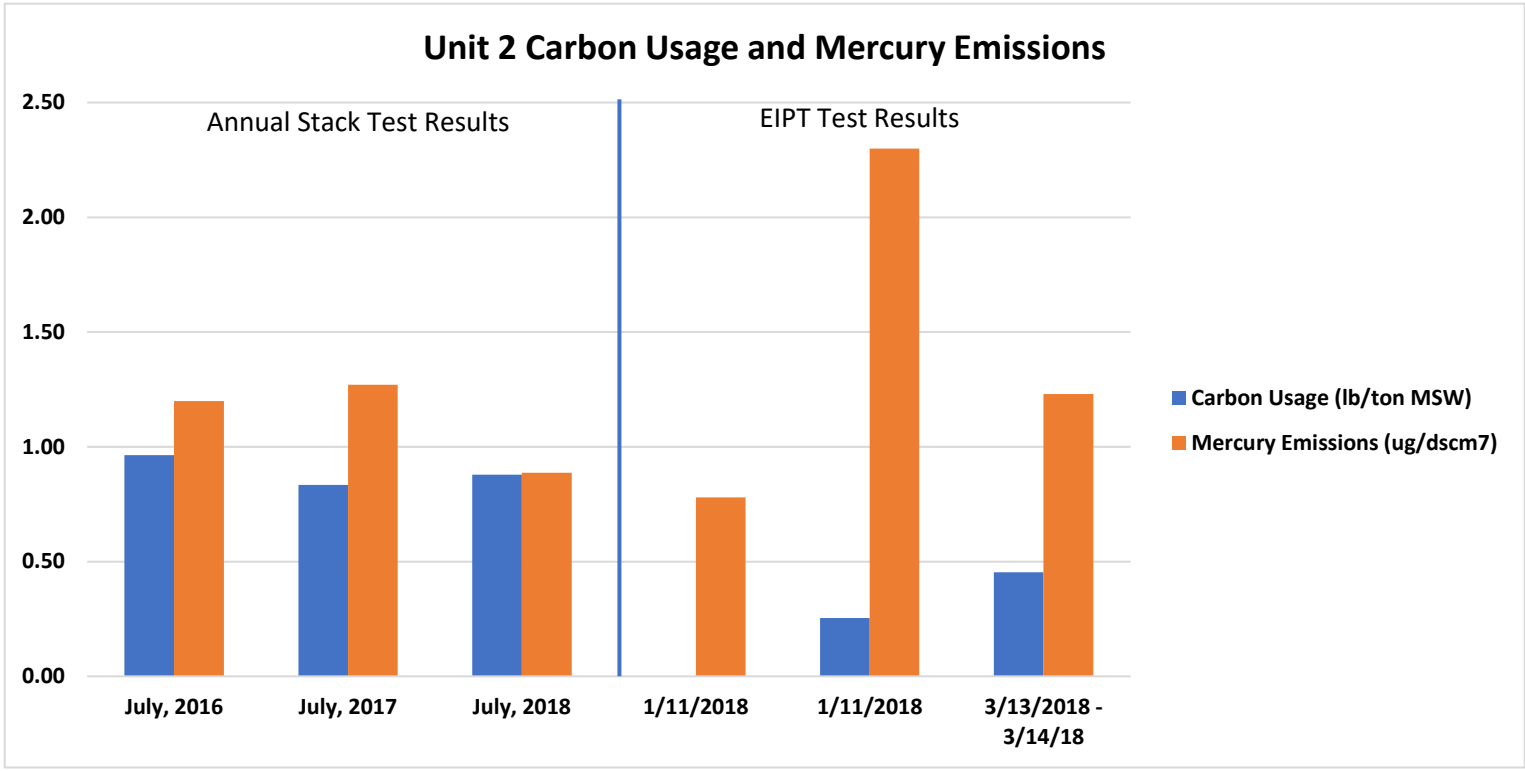
Note 1 - MSW Processed (tons/day) is the average of waste processed on all dates of testing.


Mercury Emissions (ug/dscm7) from Stack Test Results 2012 - 2018
14
12
10
8
6
4
2
0
2012
2013
2014
2015
2016
2017
2018
Unit 2 and 3 Baghouse installations complete
Unit 1, 2 and 3 Baghouse installations complete
Unit 1 Mercury Emissions (ug/dscm7)
Unit 2 Mercury Emissions (ug/dscm7)
Unit 3 Mercury Emissions (ug/dscm7)


Carbon Usage and Mercury Emissions During Stack Testing 2012 - 2018
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2012
2013
2014
2015
2016
2017
2018
Unit 1 Carbon Usage (lb/ton MSW)
Unit 1 Mercury Emissions (ug/dscm7)
Unit 2 Carbon Usage (lb/ton MSW)
Unit 2 Mercury Emissions (ug/dscm7)
Unit 3 Carbon Usage (lb/ton MSW)
Unit 3 Mercury Emissions (ug/dscm7)

Carbon Usage with Optimization Test Results and Post Baghouse Annual Test Results

Test Date	Carbon Usage (lb/hr)	Carbon Usage (lb/ton waste processed)	Mercury Emissions (ug/DSCM @7% O2)	EPA Test Method Used
July, 2016	34	0.96	1.2	Method 29
July, 2017	34	0.83	1.27	Method 29
July, 2018	34	0.88	0.887	Method 29
1/11/2018	0	0.00	0.78	Method 29
1/11/2018	10	0.25	2.3	Method 29
3/13/2018 - 3/14/18	17	0.45	1.23	Method 29


Unit 2 Carbon Usage and Mercury Emissions
Annual Stack Test Results
EIPT Test Results
2.50
2.00
1.50
1.00
0.50
0.00
July, 2016
July, 2017
July, 2018
1/11/2018
1/11/2018
3/13/2018 - 3/14/18
Carbon Usage (lb/ton MSW)
Mercury Emissions (ug/dscm7)

Attachment B

Summary of 2012 Combustion Calculations

At 100% of MCR

Stack Exit	°F	Inches WC_g									
Flue Gas Temperature	295	0.1	Wet				Dry				
	lb/hr	% by Wt	mole/hr	% by Vol	ACFM	SCFM	% by Vol	ACFM	lb/hr	SCFM	SCFM@7% O_2
Air In-Leakage	17,583										
Scrubber Water Added	32,038										
CO_2	76,408	12.00%	787,369	7.50%			9.46%				
O_2	60,452	9.50%	856,780	8.17%			10.30%				
N_2	412,143	64.80%	6,672,245	63.59%			80.18%				
H_2O	86,241	13.60%	2,171,022	20.69%	43,941						
SO_2	149	0.00%	1,054	0.01%			0.01%				
HCl	322	0.10%	4,003	0.04%			0.05%				
HF	-	0.00%	-	0.00%			0.00%				
Total	635,714		10,492,473		212,364	148,551		168,423	549,473	117,814	89,877

At 110% of MCR

Stack Exit	°F	Inches WC_g									
Flue Gas Temperature	295	0.1	Wet				Dry				
	lb/hr	% by Wt	mole/hr	% by Vol	ACFM	SCFM	% by Vol	ACFM	lb/hr	SCFM	SCFM@7% O_2
Air In-Leakage	19,334										
Scrubber Water Added	35,229										
CO_2	84,024	12.00%	865,856	7.51%			9.46%				
O_2	66,478	9.50%	942,182	8.17%			10.30%				
N_2	453,223	64.80%	7,337,306	63.60%			80.18%				
H_2O	94,776	13.60%	2,385,881	20.68%	48,289						
SO_2	164	0.00%	1,159	0.01%			0.01%				
HCl	354	0.10%	4,402	0.04%			0.05%				
HF	-	0.00%	-	0.00%			0.00%				
Total	699,019		11,536,786		233,500	163,335		185,211	604,243	129,557	98,835

Attachment C

Steady-State Emission Rate Calculations

Steady-State Emission Rate Calculations

Steady-state NOx Emission Rate (lbs/hr)

NOx Emission Rate (based on 150 ppmdv7, 24-hr average)

$$= \frac{(150\ \text{pt})(89{,}877\ \text{dscfm7})(46\ \text{lb NOx/mole NOx})(60\ \text{min/hr})}{(1{,}000{,}000\ \text{pt})(385\ \text{dscfm7/mole})}$$

$$= (96.6\ \text{lb/hr})$$

Steady-state CO Emission Rate (lbs/hr)

CO Emission Rate (based on 100 ppmdv7, 4-hr average)

$$= \frac{(100\ \text{pt})(89{,}877\ \text{dscfm7})(28\ \text{lb CO/mole CO})(60\ \text{min/hr})}{(1{,}000{,}000\ \text{pt})(385\ \text{dscfm7/mole})}$$

$$= (39.2\ \text{lb/hr})$$

Steady-state SO2 Emission Rate (lbs/hr)

SO2 Emission Rate (based on 29 ppmdv7, 24-hr geometric average)

$$= \frac{(29\ \text{pt})(89{,}877\ \text{dscfm7})(64\ \text{lb SO2/mole SO2})(60\ \text{min/hr})}{(1{,}000{,}000\ \text{pt})(385\ \text{dscfm7/mole})}$$

$$= (26.0\ \text{lb/hr})$$

Attachment D

WU, SU, SD Emission Calculations

Acronyms used:
WU: Warm Up
SU: Start Up
SD: Shut Down

During WU/SU/SD, hourly mass and potential to emit (PTE) emissions are expected to impact CEMS pollutants only.
Impact to other pollutants is estimated to be negligible since APC equipment is operational during WU/SU/SD
and MSW load is less than full.
No changes to SO2 24-hr and NOx 24-hr RACT permit limits are requested.

Step 1. PTE Adjustment to correct existing PTE

Existing permitted PTE calculations were corrected due to errors in the current permit. Basis of correction is as shown below (existing permitted emissions limits)

Given:

# of Units	3	
Heat Input Boiler Rating	398.08	mmBTU/hr
Flow Rate	89877	dscfm7
M.W. CO	28	lb/mole
M.W. NOx	46	lb/mole
Molar Volume	385	cubic feet/mole
Hours of Operation	8760	hr/yr
Conversion Factor	2000	lb/ton

Potential To Emit Calculations	PTE, Existing Permit (tons/yr)	Emission Limit, Existing Permit	Units	PTE, Corrected (tons/yr)	Formula
SO2	996	75.8	lb/hr	996.0	=(3*75.8*8760/2000)
CO	1660	100	ppmdv7	515.3	=(89877*60*100*28*3*8760)/(1000000*385*2000)
NOx	1269	95	lb/hr	1248.3	=(3*95*8760/2000)

Step 2. Estimate WU Emissions

During WU, only ultra low sulfur diesel is combusted. Emissions were estimated using AP-42 factors.

Scheduled # of WUs	3	WUs / unit / yr	7	hrs / event

Aux. Burner Heat Input	Maximum fuel oil sulfur content	Conversion
109 mmBTU/hr	0.0015% S #2 oil	140,000 BTU/gal

	Sect. 1.3 AP-42 Factor (lb/1000 gal)	Proposed WU Emission Rate (lb/hr)
SO2	142*0.0015% S	0.166
CO	5	3.9
NOx	24	18.7

Step 3. Estimate SU/SD Emissions

# of Scheduled SUs	3	SUs / unit / yr	3	hrs / event
# of Scheduled SDs	3	SUs / unit / yr	3	hrs / event

Based on CEMS data from 2013-2017, SU/SD emissions are expected to be less than the existing permitted 1-hour mass emission rate for SO2 and corresponding hourly mass emission rate for the existing permitted 1-hour maximum concentration limits for CO and NOx.

	Basis (Existing 1-Hr Permit Limit)	Units	Proposed SU/SD Hourly Mass Emission Rate, lb/hr	Formula
SO2	75.8	lb/hr	75.8	75.8
CO	400	ppmdv7	156.9	=(89877*400*28*60)/(1000000*385)
NOx	300	ppmdv7	193.3	=(89877*300*46*60)/(1000000*385)

Step 4. Adjust Corrected PTE using proposed WU/SU/SD emissions

	PTE, Corrected	Proposed WU Emission Rate	Proposed SU/SD Hourly Mass Emission Rate	Normal Rate	WU Adjustment	SU Adjustment	SD Adjustment	Total Adjustment	Adjusted PTE
	(tons/yr)	(lb/hr)	(lb/hr)	(lb/hr/unit)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(ton/yr)
SO2	996.0	0.166	75.8	75.8	-4765.0	0.0	0.0	-4765.0	993.6
CO	515.3	3.893	156.9	39.2	-2225.6	3176.7	3176.7	4127.9	517.4
NOx	1248.3	18.686	193.3	95.0	-4807.8	2654.1	2654.1	500.4	1248.6

Covanta Essex Company
Comments on Pre-Draft Compliance Plan received from NJDEP on November 28, 2018

1. Proposed FC, Ref. #8 – Prevention of Air Pollution from Consumer Products and Architectural Coatings requiring the facility to comply with all applicable provisions of N.J.A.C. 7:27-24 and N.J.A.C. 7:27-23.

   As stated under N.J.A.C. 7:27-23.1(c), "Except as provided in (d) and (e) below, this subchapter is applicable to any person who:
   1. Manufactures, blends, repackages, supplies or distributes an architectural coating for sale within the State of New Jersey;
   2. Sells or offers for sale an architectural coating within the State of New Jersey; and
   3. Applies an architectural coating for compensation within the State of New Jersey."

   Paragraphs (d) and (e) include additional exemptions for manufacturers or sellers of architectural coatings and for persons who apply architectural coatings for compensation. Covanta Essex Company does not engage in the manufacturing, blending, repackaging, supply, distribution, sale or application of architectural coatings for compensation and therefore would not be subject to N.J.A.C. 7:27-23.

   As stated under N.J.A.C. 7:27-24.2(a), "This subchapter applies to any person who sells, offers for sale, holds for sale, distributes, supplies, or manufactures for sale in New Jersey any consumer product in (b) or (c) below and that is for use in New Jersey by a consumer or by a person who uses the product in providing a service. This subchapter also applies to any person who advertises any portable fuel container or spout for sale in New Jersey.
   (b) This subchapter applies to the following consumer products, unless the product is excluded under (d) or (e) below:
   1. A chemically formulated consumer product which belongs to any of the chemically formulated consumer products categories listed in Table 24A at N.J.A.C. 7:27-24.4(a); and
   2. A portable fuel container and spout."

   Covanta Essex Company does not sell, offer for sale, distribute, supply or manufacture for sale any consumer products including those listed in N.J.A.C. 7:27-24.2(b) or (c) and therefore would not be subject to N.J.A.C. 7:27-24.

   Ref. #8 should be deleted as these requirements do not apply to Covanta Essex Company.

2. Proposed U1, U2, U3, OS Summary, Ref. #21 – CO emissions are limited to less than or equal to 195 tons/yr from each MWC.

   Updated facility wide emissions of SO2, CO and NOx were previously submitted so that the facility PTE is based on more accurate information and includes emissions during startup, shutdown and warm up periods. Covanta believes it is more accurate to base the CO emissions from each MWC on

the 4-hour average limit of 100 ppmdv@7% O2 and the updated stack flow rates that were included in the baghouse Title V permit modification. Based on this information, the equivalent lb/hr limit during normal operation is 39.2 lb/hr which is equivalent to a tons/yr emission limit of 173.4 tons/yr for each MWC after adjusting for emissions during the startup, shutdown and warmup periods. Therefore, we would propose that the tons per year limit for CO in OS Summary, Ref #21 for U1, U2, and U3 be revised to 173.4 tons/yr to reflect the corrected potential to emit calculations. These calculations are attached with this submittal as Attachment A. The emissions were revised slightly since the previous submittal based on additional changes to the estimated number of startup, shutdown and warmup events per year for each unit. We would be happy to discuss the revised PTE calculations further if necessary.

3. Proposed U1, U2, U3, OS Summary, Ref. #22 – SO2 emissions are limited to less than or equal to 331 tons/yr from each MWC.

   As stated in the previous comment, SO2 emissions for each unit were adjusted to account for emissions during the startup, shutdown, and warmup periods. They were revised again slightly since the previous submittal based on additional changes to the estimated number of startup, shutdown and warmup events. We are requesting that the SO2 emission limit for each boiler be changed to 330 tons/yr based on the latest potential to emit calculations which are included as Attachment A.

4. Proposed U1, U2, U3, OS Summary, Ref. #40 - 45 – Formaldehyde emissions limited to <= 0.287 tons/yr based on stack test results, Benzo(a)pyrene emissions limited to <=5.08E-07 tons/yr, Carbon tetrachloride emissions limited to <=0.003 tons/yr, Tetrafluoroethylene emissions limited to <=0.0032 tons/yr, trichloroethylene emissions limited to <=0.0025 tons/yr and vinyl chloride emissions limited to <=0.0012 tons/yr from each MWC.

   The emission limits in the current draft permit do not reflect the most recent potential to emit information included in the facility wide risk assessment submitted to the Department. After reviewing the emission estimates used in the risk assessment based on recent stack testing which will now become limits in the Title V renewal permit, we have slightly adjusted these emissions to higher numbers that represent the three times the worst case emissions from all stack test runs performed on all 3 units in 2018. Most of the results were below the detection limit. For formaldehyde, we would like to propose a new limit of 0.223 lb/hr which is equivalent to 0.976 tons/yr based on 8,760 hours of operation per year. For Benzo(a)pyrene, we would like to propose a new limit of 6.03E-07 lb/hr which is equivalent to 2.6E-06 tons/yr based on 8,760 hours of operation per year. For carbon tetrachloride, we would like to propose a new limit of 0.019 lb/hr which is equivalent to 0.083 tons/yr based on 8,760 hours of operation per year. For tetrachloroethylene, we would like to propose a new limit of 0.02 lb/hr which is equivalent to 0.088 tons/yr based on 8,760 hours of operation per year. Note that the draft permit contains a typographical error in Ref #43 and has a limit on tetra<u>fluoro</u>ethylene but based on the current permit limit, this should be tetra<u>chloro</u>ethylene. For trichloroethylene, we would like to propose a new limit of 0.016 lb/hr which is equivalent to 0.07 tons/yr based on 8,760 hours of operation per year. For vinyl chloride, we would like to propose a new limit of 0.008 lb/hr which is equivalent to

0.153 tons/yr based on 8,760 hours of operation per year. Based on the cancer risk results in the facility wide risk assessment report, the revised emission rates listed above will have a negligible effect on the cancer risk results.

5. Proposed U1, U2, U3, OS Summary, Ref. #57 – Minimum carbon usage >= 17 lb/hr

   The condition states that the waste charging to the furnace's hopper shall cease if this rate falls below the minimum. The current Title V permit (BOP090003) has two additional conditions related to carbon usage. U1, OS Summary Ref. #89 of the current permit allows hopper fills to be used to demonstrate compliance with the continuous carbon feed requirement if the augur or M-drive malfunctions where carbon is not being recorded by the DCS. Also, U1, OS Summary, Ref. #90 states that operation below the minimum allowable carbon feed rate as indicated by the auger speed is a permit violation unless within 3 hours the condition that causes the excursion is corrected, the proper rate is restored, or the waste charging to the hopper of the affected furnace must cease until carbon feed is again at the minimum allowable rate. We would request that the additional provisions allowing us to use hopper fills as an alternate way of demonstrating compliance with the carbon feed requirement if the auger or M-drive malfunctions and giving us 3 hours to fix any conditions that cause the loss of carbon flow before it is a permit violation be put back in the Title V permit.

6. Proposed U1, OS1, U2, OS1, U3, OS1, Ref. #4 – CO emissions limited to <=126 lb/hr.

   See comment #2 above. Based on the updated facility potential to emit calculations the lb/hr limit during normal operation should be revised to 39.2 lb/hr.

7. Proposed U1, OS1, U2, OS1, U3, OS1, Ref. #27 through #32 – Formaldehyde emissions limited to <= 0.0653 lb/hr based on stack test results, Benzo(a)pyrene emissions limited to <=1.16E-07 lb/hr, Carbon tetrachloride emissions limited to <=0.0007 lb/hr, Tetrachloroethylene emissions limited to <=0.0007 lb/hr, trichloroethylene emissions limited to <=0.0006 lb/hr and vinyl chloride emissions limited to <=0.0003 lb/hr from each MWC.

   See comment #4 above. Please revise the limits to reflect the new worst case emission limits of 0.223 lb/hr for formaldehyde, 6.03E-07 lb/hr for benzo(a)pyrene, 0.019 lb/hr for carbon tetrachloride, 0.02 lb/hr for tetrachloroethylene, 0.016 lb/hr for trichloroethylene, and 0.008 lb/hr for vinyl chloride during normal operation.

8. Proposed U1, OS2, U2, OS2, U3, OS2, Ref. #1 – Defines the start-up period and limits the number of scheduled start-up events for maintenance purposes to 3 per year.

   To reflect that there can be additional unscheduled start-up events which occur after the boiler is shutdown following malfunctions, we updated the facility potential to emit calculations to include 4 additional unscheduled start-up events for each unit based on a review of all unscheduled start-up events in the last two years. We would like clarification that the emission limits in OS2 also apply to unscheduled start-up events which are not subject to the limits in OS1. We would also request that

there not be a limit on the number of unscheduled startup events as these can't be predicted with certainty.

9. Proposed U1, OS2, U2, OS2, U3, OS2, Ref. #24 through #29 – Formaldehyde emissions limited to <= 0.0653 lb/hr based on stack test results, Benzo(a)pyrene emissions limited to <=1.16E-07 lb/hr, Carbon tetrachloride emissions limited to <=0.0007 lb/hr, Tetrachloroethylene emissions limited to <=0.0007 lb/hr, trichloroethylene emissions limited to <=0.0006 lb/hr and vinyl chloride emissions limited to <=0.0003 lb/hr from each MWC during start-up.

   Same as comment #7 above. We request the lb/hr emission limits be revised as requested in comment #7.

10. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #1 - Defines the shutdown period and limits the number of scheduled shutdown events for maintenance purposes to 3 per year.

    The definition of the shutdown period states that the shutdown period commences when the feeding of municipal solid waste to the hopper is terminated as a result of a scheduled shutdown. This implies that the shutdown definition only applies to scheduled shutdown events and not unscheduled shutdowns which can occur after a malfunction of equipment. We would like the definition revised to reflect the current definition of the shutdown period in the current Title V permit by removing the portion of the definition which reads "as a result of a scheduled shutdown" from the first sentence.

    To reflect that there can be additional unscheduled shutdown events which occur following malfunctions, we updated the facility potential to emit calculations to include 4 additional unscheduled shutdown events for each unit based on a review of all unscheduled shudown events in the last two years. We would like clarification that the emission limits in OS3 also apply to unscheduled shutdown events which are not subject to the limits in OS1. We would also request that there not be a limit on the number of unscheduled shutdown events as these can't be predicted with certainty.

11. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #24 through 29 – Formaldehyde emissions limited to <= 0.0653 lb/hr based on stack test results, Benzo(a)pyrene emissions limited to <=1.16E-07 lb/hr, Carbon tetrachloride emissions limited to <=0.0007 lb/hr, Tetrachloroethylene emissions limited to <=0.0007 lb/hr, trichloroethylene emissions limited to <=0.0006 lb/hr and vinyl chloride emissions limited to <=0.0003 lb/hr from each MWC during shutdown.

    Same as comment #7 above. We request the lb/hr emission limits be revised as requested in comment #7.

12. Proposed U1, OS4, U2, OS4, U3, OS4, Ref. #1 – Defines the warmup period and limits the number of scheduled warmup events for maintenance purposes to 3 per year.

To reflect that there can be additional unscheduled warmup events which occur following shutdowns after malfunctions, we updated the facility potential to emit calculations to include 4 additional unscheduled warmup events for each unit based on a review of all unscheduled warmup events in the last two years. We would like clarification that the emission limits in OS4 also apply to unscheduled warmup events which are not subject to the limits in OS1. We would also request that there not be a limit on the number of unscheduled warmup events as these can't be predicted with certainty.

13. Proposed U6, U7, U8, OS Summary, Ref. #2 and U11, OS Summary, Ref. #3 – No visible emissions exclusive of condensed water vapor, except for no more than 3 minutes in any consecutive 30-minute period from any of the three lime storage silos (U6, U7, and U8) or the activated carbon storage silo (U11).

    This is a new permit condition that is not in our current Title V permit. The monitoring requirement in this condition is a new requirement that requires visual determination each month during operation which consists of conducting visual opacity inspections during daylight hours to identify if the stack has visible emissions for at least 30 minutes. We would like clarification on why this requirement has been added because the silos typically can only emit visible emissions during filling of the silos during a delivery. Each silo has a dust collector for particulate control and inspections and maintenance are performed on the dust collectors to ensure they are operating properly to control particulate emissions and to prevent the occurrence of visible emissions.

14. Proposed U11, OS Summary, Ref. #8 – Limits opacity to <=5% opacity.

    This condition is contradictory to the opacity limit contained in Ref. #2 of this section and requires a continous opacity monitoring system to monitor opacity. Please confirm if this limit is applicable to the activated carbon silo which does not have a COMS system.

15. Proposed U11, OS Summary, Ref. #9 and #10 – limits opacity to <=20% exclusive of water vapor except for 3 minutes in any 30 minute period.

    Both conditions are identical and are repetitive of the limit in Ref. #2 of this operating scenario. These conditions also require a visual determination each month during daylight hours by a certified opacity reader. Per comment #13 above we would like clarification on why this new requirement has been added to the permit.

16. Proposed U13, OS Summary, Ref. #8 – The condition states that the Emergency Generator may be operated at other locations (within the State of New Jersey) only in the event of an emergency as defined at N.J.A.C. 7:27-19.1.

    This condition appears to have replaced the limit in our current Title V permit of 400 hours per year of operation for emergency purposes. Because the emergency generator is not a portable unit, we are not able to operate this generator "at other locations", therefore, we would like clarification on

this requirement. Is there a limit on the number of hours we can operate the generator in the event of an emergency?

17. Proposed U13, OS Summary, Ref. #11 through #17 – Limits annual emissions of VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5 emissions from the emergency generator in tons/yr.

    The annual emission limits are based on potential hours of operation of 100 hours per year. If the generator is required to be operated in the event of an emergency would these limits still apply?

18. Proposed U14, OS Summary, Ref. #2 – Limits particulate emissions to <=0.954 lb/hr from the combustion of fuel based on the rated heat imput of the source.

    This limit has been reduced from the current particulate emission limit of 4.2 lb/hr. We would like clarification of why this limit was reduced.

19. Proposed U14, OS Summary, Ref. #10 through 16 - Limits annual emissions of VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5 emissions from the emergency fire pump in tons/yr.

    The annual emission limits are based on potential hours of operation of 50 hours per year. If the fire pump is required to be operated in the event of an emergency would these limits still apply? Also, it is noted that the VOC emission limit in tons/yr was not changed from the limit in the current Title V permit which was based on 500 hours of operation per year. Please confirm if this is the correct limit.

Attachment A

WU, SU, SD Emission Calculations

Acronyms used:
WU: Warm Up
SU: Start Up
SD: Shut Down

During WU/SU/SD, hourly mass and potential to emit (PTE) emissions are expected to impact CEMS pollutants only.
Impact to other pollutants is estimated to be negligible since APC equipment is operational during WU/SU/SD
and MSW load is less than full.
No changes to SO2 24-hr and NOx 24-hr RACT permit limits are requested.

Step 1. PTE Adjustment to correct existing PTE

Existing permitted PTE calculations were corrected due to errors in the current permit. Basis of correction is as shown below (existing permitted emissions limits)

Given:

# of Units	3	
Heat Input Boiler Rating	398.08	mmBTU/hr
Flow Rate	89877	dscfm7
M.W. CO	28	lb/mole
M.W. NOx	46	lb/mole
Molar Volume	385	cubic feet/mole
Hours of Operation	8760	hr/yr
Conversion Factor	2000	lb/ton

Potential To Emit Calculations	PTE, Existing Permit (tons/yr)	Emission Limit, Existing Permit	Units	PTE, Corrected (tons/yr)	Formula
SO2	996	75.8	lb/hr	996.0	=(3*75.8*8760/2000)
CO	1660	100	ppmdv7	515.3	=(89877*60*100*28*3*8760)/(1000000*385*2000)
NOx	1269	95	lb/hr	1248.3	=(3*95*8760/2000)

Step 2. Estimate WU Emissions

During WU, only ultra low sulfur diesel is combusted. Emissions were estimated using AP-42 factors.

Scheduled # of WUs	7	WUs / unit / yr	7	hrs / event

Aux. Burner Heat Input	Maximum fuel oil sulfur content	Conversion
109 mmBTU/hr	0.0015% S #2 oil	140,000 BTU/gal

	Sect. 1.3 AP-42 Factor (lb/1000 gal)	Proposed WU Emission Rate (lb/hr)
SO2	142*0.0015% S	0.166
CO	5	3.9
NOx	24	18.7

Step 3. Estimate SU/SD Emissions

# of Scheduled SUs	3	SUs / unit / yr	3	hrs / event
# of Scheduled SDs	3	SDs / unit / yr	3	hrs / event
# of Uncheduled SUs	4	SUs / unit / yr	3	hrs / event
# of Unscheduled SDs	4	SDs / unit / yr	3	hrs / event
Total # of SUs	7	SUs / unit / yr	3	hrs / event
Total # of SDs	7	SDs / unit / yr	3	hrs / event

Based on CEMS data from 2013-2017, SU/SD emissions are expected to be less than the existing permitted 1-hour mass emission rate for SO2 and corresponding hourly mass emission rate for the existing permitted 1-hour maximum concentration limits for CO and NOx.

	Basis (Existing 1-Hr Permit Limit)	Units	Proposed SU/SD Hourly Mass Emission Rate, lb/hr	Formula
SO2	75.8	lb/hr	75.8	75.8
CO	400	ppmdv7	156.9	=(89877*400*28*60)/(1000000*385)
NOx	300	ppmdv7	193.3	=(89877*300*46*60)/(1000000*385)

Step 4. Adjust Corrected PTE using proposed WU/SU/SD emissions

	PTE, Corrected (tons/yr)	Proposed WU Emission Rate (lb/hr)	Proposed SU/SD Hourly Mass Emission Rate (lb/hr)	Normal Rate (lb/hr/unit)	WU Adjustment (lb/yr)	SU Adjustment (lb/yr)	SD Adjustment (lb/yr)	Total Adjustment (lb/yr)	Adjusted PTE (ton/yr)
SO2	996.0	0.166	75.8	75.8	-11118.2	0.0	0.0	-11118.2	990.5
CO	515.3	3.893	156.9	39.2	-5193.0	7412.4	7412.4	9631.9	520.1
NOx	1248.3	18.686	193.3	95.0	-11218.2	6192.9	6192.9	1167.6	1248.9

Covanta Essex Company
Comments on Pre-Draft Compliance Plan received from NJDEP on January 24, 2019

1. Proposed Section A, Pollutant Emission Summary, Table 1 – Based on the new proposed emission limits for formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene, and vinyl chloride requested in comment #5 below, the total facility wide VOC emissions, which include formaldehyde, should be 83.88 tons per year and the total facility wide HAP emissions should be 300.7 tons per year.

2. Proposed Section A, Table 3 - Based on the new proposed emission limits for formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene, and vinyl chloride requested in comment #5 below, the facility wide emissions of formaldehyde should equal 1.08 tons per year, the facility wide emissions of carbon tetrachloride should be 0.09 tons per year, the facility wide emissions of trichloroethylene should be 0.078 tons per year, and the facility wide emissions of vinyl chloride should be 0.036 tons per year. Additionally, because emissions of benzo(a)pyrene and tetrachloroethylene are below the reporting thresholds listed under N.J.A.C. 7:27-17.9, Table 2, they are not required to be included in Table 3 of Section A and should be removed.

3. Proposed U1, U2, U3, OS Summary, Ref. #19 – VOC emissions are limited to less than or equal to 27.9 tons/yr from each MWC.

   Based on the new proposed emission limit for formaldehyde requested in comment #5 below, the VOC emission limit in Ref. #19, which includes formaldehyde emissions, should be slightly revised to 27.96 tons per year.

4. Proposed U1, U2, U3, OS Summary, Ref. #27 – HAPs (Total) emissions limited to <= 100.145 tons/yr for each MWC.

   Based on the new proposed emission limits for formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene, and vinyl chloride requested in comment #5 below, the emissions of HAPs (Total) from each MWC should be 100.233 tons per year.

5. Proposed U1, U2, U3, OS Summary, Ref. #40 - 45 – Limits emissions of formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene and vinyl chloride in tons per year from each MWC.

   Based on a review of the 2018 stack test results, which are the first set of stack test results on these six HAP emissions since the installation of the new baghouses on each of the MWCs, the following new limits are being requested for these HAPs for each MWC:

   Formaldehyde – 0.082 lb/hr and 0.359 tons/yr
   Carbon Tetrachloride – 0.007 lb/hr and 0.03 tons/yr
   Trichloroethylene – 0.006 lb/hr and 0.026 tons/yr
   Vinyl chloride – 0.003 lb/hr and 0.012 tons/yr

Emissions of benzo(a)pyrene and tetrachloroethylene shall be less than the reporting thresholds listed under N.J.A.C. 7:27-17.9, Table 2.

The above limits are based on the worst case run from 2018 stack testing increased by 10% and the new tons per year limits should replace the tons per year limits on these HAPs in Ref. #40 through #45.

A written request to incorporate the above revised HAP emission limits into the Title V renewal as a minor permit modification will be submitted separately. Additionally, upon approval of the above emission limits, the facility wide risk assessment will be revised to include the above revised emission limits.

6. Proposed U1, U2, U3, OS Summary, Ref. #57 – Minimum carbon usage >= 17 lb/hr

   Please revise the second paragraph of the Monitoring Requirement section of this condition as follows to clarify the requirement as follows:

   The operation below the minimum allowable carbon feed rate as indicated by the auger speed must be corrected within three hours **of the start of** the condition that causes the excursion **so that** ~~and~~ the proper rate is restored.

7. Proposed U1, OS1, U2, OS1, U3, OS1, Ref. #1 – Limits VOC emissions from each MWC to <= 6.37 lb/hr including formaldehyde emissions.

   Based on the new proposed emission limit for formaldehyde requested in comment #5, the VOC emission limit in Ref. #1, which includes formaldehyde emissions, should be slighty revised to 6.38 lb/hr.

8. Proposed U1, OS1, U2, OS1, U3, OS1, Ref. #27 - 32 – Limits emissions of formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene and vinyl chloride in lbs/hr from each MWC.

   Based on the new proposed emission limits for formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene, and vinyl chloride requested in comment #5, the lb/hr emission limits in Ref. #27 through #32 should be replaced with the lb/hr emission limits identified in comment #5.

9. Proposed U1, OS2, U2, OS2, U3, OS2, Ref. #19 – Mercury compounds limited to <=0.01 lb/hr based on concentration limit of 28 ug/dscm during startup.

   Please correct the units of the concentration limit from ug<u>ms</u>/dscm to ug/dscm.

10. Proposed U1, OS2, U2, OS2, U3, OS2, Ref. #24 through #29 - Limits emissions of formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene and vinyl chloride in lbs/hr from each MWC during startup.

    Based on the new proposed emission limits for formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene, and vinyl chloride requested in comment #5, the lb/hr emission limits in Ref. #24 through #29 should be replaced with the lb/hr emission limits identified in comment #5.

11. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #1 - Defines the shutdown period and limits the number of shutdown events (not including shutdowns as a result of emergency malfunctions) to 7 per year.

    As previously commented, the definition of the shutdown period states that the shutdown period commences when the feeding of municipal solid waste to the hopper is terminated as a result of a scheduled shutdown. This implies that the shutdown definition only applies to scheduled shutdown events and not unscheduled shutdowns which can occur after a malfunction of equipment. We would like the definition revised to reflect the current definition of the shutdown period in the current Title V permit by removing the portion of the definition which reads "as a result of a scheduled shutdown" from the first sentence.

    We would like clarification that the emission limits in OS3 apply to all shutdown events, both scheduled and due to emergency malfunctions, and these shutdown periods are not subject to the limits in OS1.

12. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #4 – Limits CO emissions to <=156.9 lb/hr during shutdown.

    In order to account for CO emissions, corrected to 7% oxygen, during shutdowns resulting from emergency malfunctions which may be elevated for short periods during the 3 hour shutdown period, it is requested that the CO emission limit in Ref. #4 be revised to be based on a 3 hour average. This will not affect the facility wide CO potential to emit calculations previously submitted.

13. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #19 – Mercury compounds limited to <=0.01 lb/hr based on concentration limit of 28 ug/dscm during startup.

    Same as comment #9 above. Please correct the units of the concentration limit from ugms/dscm to ug/dscm.

14. Proposed U1, OS3, U2, OS3, U3, OS3, Ref. #24 through 29 – Limits emissions of formaldehyde, benzo(a)pyrene, carbon tetrachloride, tetrachloroethylene, trichloroethylene and vinyl chloride in lbs/hr from each MWC during shutdown.

    Same as comment #10 above. We request the lb/hr emission limits be revised as requested in comment #10.

15. Proposed U15 Ash and Metal Recovery System – Emission Unit description

    As requested in the Reason for Application section of the Title V renewal application submitted on 10/2/17, E31, Re-Feed Chute and E32, Feeder were permanently removed from the facility in 2016 because re-feeding of combined ash for metal recovery is prohibited by condition 126 of the Solid Waste Facility Permit for the Essex County Resource Recovery Facility issued by NJDEP Division of Solid and Hazardous Waste. Please remove references to E31 and E32 in from the Emission Unit description.

16. Equipment Inventory, page 3 of 3 (RADIUS application) – E31 and E32

    Same as comment #15 above. Please remove references to E31 and E32 in from the Equipment Inventory in RADIUS under U15. Also, please remove all equipment specifications for E31 and E32 from the RADIUS file.

17. Control Device Inventory, page 2 of 2 (RADIUS application) – CD1023, CD1024, CD1025

    Please include the installation dates for the MSW Boiler baghouses as follows:

    CD1023 – Installed 11/6/16
    CD1024 – Installed 5/24/16
    CD1025 – Installed 11/1/15

Emission Unit: U1 Municipal Waste Combustor E1 - Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF
Operating Scenario: OS2 Start-Up of MWC #1

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Start-up Period: commences when the affected incinerator begins the combustion of municipal waste, including continuous, semicontinuous, or batch feeding of municipal solid waste to the furnace. Continuous burning is the continuous, semicontinuous, or batch feeding of municipal solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of municipal solid waste solely to provide thermal protection of the grate or hearth during the startup period when municipal solid waste is not being fed to the grate is not considered to be continuous burning. The number of start-up events (not including start-up events after emergency malfunctions) shall be limited to ~~7~~ **20** per year and the duration of each start-up period shall not exceed 3 hours. This is based on the requirement at 40 CFR 60.58b(a)(1). The facility shall maintain the equipment, operate the equipment properly and take steps to minimize emissions during start-up	Start-up Period: Monitored by waste feed/charge rate monitoring (solid) continuously. [N.J.A.C. 7:27-22.16(o)]	Start-up Period: Recordkeeping ~~by~~ **of the commencement of each start-up period shall be by manual logging of the start time of each start-up event in a permanently bound logbook. The end time shall be the time that is 3 hours after the start time. Continuous emission monitoring** data **obtained from the data** acquisition system (DAS) / electronic data storage **may also be used to record the start time of each start-up event when the boiler is flagged as online**~~continuously~~. Maintain calculations and basis of startup emissions limits. [N.J.A.C. 7:27-22.16(o)]	None.

	periods. 40 CFR 60.39b(d) & [N.J.A.C. 7:27-22.16(a)]			
2	VOC (Total) <= 6.38 lb/hr. Total VOC emissions includes formaldehyde emissions. [40 CFR 52.21] and. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.
3	NOx (Total) <= ~~193~~ **184.9** lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.
4	CO <= 156.9 lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.
5	SO2 <= 75.8 lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None.	None.	None.

Emission Unit: U1 Municipal Waste Combustor E1 - Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF
Operating Scenario: OS3 Shut-Down of MWC #1

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Shutdown Period: commences when the feeding of municipal solid waste to the hopper is terminated as a result of a shutdown. The shutdown period ends when municipal solid waste is no longer combusting on the grate. The number of shutdown events (not including shutdowns as a result of emergency malfunctions) shall be limited to ~~7~~ **20** per year and the duration of each shutdown period shall not exceed 3 hours The facility shall maintain the equipment, operate the equipment properly and take steps to minimize emissions during the shut-down periods. [N.J.A.C. 7:27-22.16(e)]	Shutdown Period: Monitored by waste feed/charge rate monitoring (solid) continuously. [N.J.A.C. 7:27-22.16(o)]	Shutdown Period: Recordkeeping ~~by~~ **of the commencement and completion of each shutdown period shall be by manual logging of the start time and end time of each shutdown event in a permanently bound logbook. Continuous emission monitoring** data **obtained from the data** acquisition system (DAS) / electronic data storage **may also be used to record the end time of each shutdown event when the boiler is flagged as offline**~~continuously~~. Maintain calculations and basis of shutdown emissions limits. [N.J.A.C. 7:27-22.16(o)]	None.
2	VOC (Total) <= 6.38 lb/hr. Total VOC emissions includes formaldehyde emissions. [40 CFR 52.21] and. [N.J.A.C. 7:27-22.16(a)]	None	None	None
3	NOx (Total) <= ~~193~~ **184.9** lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None	None	None
4	CO <= 156.9 lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None	None	None
5	SO2 <= 75.8 lb/hr **based on a 3 hour average**. [N.J.A.C. 7:27-22.16(a)]	None	None	None

Emission Unit: U1 Municipal Waste Combustor E1 - Subject to NSPS Subparts Cb and 40 CFR 62 Subpart FFF
Operating Scenario: OS4 Warm-Up of MWC #1

Ref. #	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Warm up period is when the incinerator combusts only auxiliary fuel (fuel oil) and no municipal solid waste is being combusted. The warmup period begins upon initiation of auxiliary fuel combustion in furnace. The number of warmup events (not including warmup events after emergency malfunctions) shall be limited to ~~7~~ **20** per year and the duration of the warmup period shall not exceed 7 consecutive hours per warmup event. [N.J.A.C. 7:27-22.16(a)]	None	Recordkeeping **of each warmup period duration shall be** by manual logging of **the start time and end time of each warmup event in a permanently bound log book.** ~~parameter or storing data in a computer data system once initially~~. Maintain calculations of warm up period emissions limits. [N.J.A.C. 7:27-22.16(o)]	None.
2	NOx (Total) <= 18.7 lb/hr based on AP-42 emission factor. [N.J.A.C. 7:27-22.16(a)]	None	None	None
4	CO <= 3.9 lb/hr based on AP-42 emission factor. [N.J.A.C. 7:27-22.16(a)]	None	None	None
5	SO2 <= 0.166 lb/hr based on sulfur content in fuel. [N.J.A.C. 7:27-22.16(a)]	None	None	None

Acronyms used:
WU: Warm Up
SU: Start Up
SD: Shut Down

During WU/SU/SD, hourly mass and potential to emit (PTE) emissions are expected to impact CEMS pollutants only.
Impact to other pollutants is estimated to be negligible since APC equipment is operational during WU/SU/SD
and MSW load is less than full.
No changes to SO2 24-hr and NOx 24-hr RACT permit limits are requested.

Step 1. PTE Adjustment to correct existing PTE

Existing permitted PTE calculations were corrected due to errors in the current permit. Basis of correction is as shown below (existing permitted emissions limits)

Given:

# of Units	3	
Heat Input Boiler Rating	398.08	mmBTU/hr
Flow Rate	89877	dscfm7
M.W. CO	28	lb/mole
M.W. NOx	46	lb/mole
Molar Volume	385	cubic feet/mole
Hours of Operation	8760	hr/yr
Conversion Factor	2000	lb/ton

Potential To Emit Calculations	PTE, Existing Permit (tons/yr)	Emission Limit, Existing Permit	Units	PTE, Corrected (tons/yr)	Formula
SO2	996	75.8	lb/hr	996	=(3*75.8*8760/2000)
CO	1656	100	ppmdv7	515	=(89877*60*100*28*3*8760)/(1000000*385*2000)
NOx	1248	95	lb/hr	1248	=(3*95*8760/2000)

Step 2. Estimate WU Emissions

During WU, only ultra low sulfur diesel is combusted. Emissions were estimated using AP-42 factors.

# of WUs	20	WUs / unit / yr	7	hrs / event

Aux. Burner Heat Input	Maximum fuel oil sulfur content	Conversion
109 mmBTU/hr	0.0015% S #2 oil	140,000 BTU/gal

	Sect. 1.3 AP-42 Factor (lb/1000 gal)	Proposed WU Emission Rate (lb/hr)
SO2	142*0.0015% S	0.166
CO	5	3.9
NOx	24	18.7

Step 3. Estimate SU/SD Emissions

Total # of SUs	20	SUs / unit / yr	3	hrs / event
Total # of SDs	20	SDs / unit / yr	3	hrs / event

Based on CEMS data from 2013-2018, SU/SD emissions are expected to be less than the existing permitted 1-hour mass emission rate for SO2 and corresponding hourly mass emission rate for the existing permitted 1-hour maximum concentration limits for CO and NOx.

	Basis	Units	Proposed SU/SD Hourly Mass Emission Rate, lb/hr	Formula
SO2	75.8	lb/hr	75.8	75.8
CO	400	ppmdv7	156.9	=(89877*400*28*60)/(1000000*385)
NOx	287	ppmdv7	184.9	=(89877*287*46*60)/(1000000*385)

Step 4. Adjust Corrected PTE using proposed WU/SU/SD emissions

	PTE, Corrected	Proposed WU Hourly Mass Emission Rate	Proposed SU/SD Hourly Mass Emission Rate	Normal Rate	WU Adjustment	SU Adjustment	SD Adjustment	Total Adjustment	Adjusted PTE
	(tons/yr)	(lb/hr)	(lb/hr)	(lb/hr/unit)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(ton/yr)
SO2	996	0.166	75.8	75.8	-31766.3	0.0	0.0	-31766.3	980
CO	515	3.893	156.9	39.2	-14837.0	21178.3	21178.3	27519.6	529
NOx	1248	18.686	184.9	95.0	-32052.0	16182.0	16182.0	312.0	1248

Covanta Essex Company Comments on Proposed Draft BOP170001 provided by NJDEP on 4/11/19

1. Page 1 Mailing Address - There is an error in the spelling of the facility manager's name. Please correct the spelling of the facility manager's name to read Carlos Ascencio.

2. Section A, Table 1 – Please correct the facility wide CO and SO2 emissions from all Significant Source Operations as follows:

    a. CO – 529.3 tons per year which also includes emissions from U13 and U14
    b. SO2 – 980.2 tons per year which also includes emissions from U13 and U14

3. U1, U2, U3, OS2, Ref. #1 – Recordkeeping Requirement – Please remove the word "continuously" from the end of the first sentence of the second paragraph. That term is confusing in the sentence and should be deleted.

4. U1, U2, U3, OS2, Ref. #3 – Based on the most recent emission calculations for startup, shutdown, and warmup submitted to NJDEP on 3/26/19, the NOx emission limit during startup should be revised to 184.9 lb/hr to maintain the total NOx emissions from U1, U2 and U3 at 1248 tons per year.

5. U1, U2, U3, OS3, Ref. #1 – Recordkeeping Requirement – Please remove the word "continuously" from the end of the first sentence of the second paragraph. That term is confusing in the sentence and should be deleted.

6. U1, U2, U3, OS3, Ref. #3 – Based on the most recent emission calculations for startup, shutdown, and warmup submitted to NJDEP on 3/26/19, the NOx emission limit during shutdown should be revised to 184.9 lb/hr to maintain the total NOx emissions from U1, U2 and U3 at 1248 tons per year.

7. U1, U2, U3, OS4, Ref. #6 – Please replace the TSP limit of 0.05 lb/hr with the TSP, PM-10 and PM-2.5 lb/hr emission limits provided in the calculations submitted to NJDEP on 4/18/19. The limits are 1.6 lb/hr for TSP, 2.6 lb/hr for PM-10, and 2.6 lb/hr for PM-2.5 based on AP-42 emission factors.

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October 11, 2019

Ms. Yaso Sivaganesh
NJDEP Air Quality Permitting and Planning
Bureau of Stationary Sources
401 E. State Street, 2nd Floor
P.O. Box 420
Mail Code 401-02
Trenton NJ 08625-0420

Re: **Covanta Essex Company**
Essex County Resource Recovery Facility
Facility ID Number: 07736
Permit Number: BOP090003
Reconstruction Analysis

Dear Yaso:

On behalf of Covanta Essex Company ("Covanta Essex"), the attached analysis is being submitted in response to your June 28, 2019 email requesting Covanta Essex to provide an explanation or justification of Covanta's applicability or non-applicability to NSPS Subpart Eb based on the definition of "reconstruction".

Based upon the original cost calculations of the MWC units in 2018 dollars ($209.5 MM) and the cumulative capital costs in 2018 dollars ($35.9MM), it was determined that cumulative cost of changes are approximately 17.1% of the original costs, less than the 50% threshold defined in the regulation. Based upon this analysis, the Facility has not triggered the applicability of 40 CFR Part 60 Subpart Eb.

If you any questions or require additional information, please contact me at pearls@covanta.com or (973) 817-7322.

Sincerely,

Patricia Earls
New Jersey Regional Environmental Manager

cc: Ted Chleboski, NJDEP
Gary Pierce, Covanta

Project: Evaluation of Applicability to 40 CFR 60 - New Source Performance Standards (NSPS) Subpart Eb

Prepared by: Covanta Essex Company for the Essex County Resource Recovery Facility
Facility ID Number: 07736 Permit Number: BOP090003

Date: October 11, 2019

Introduction

NJDEP asked Covanta to evaluate the applicability of New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart Eb (§§ 50b – 59b) to the Essex County Resource Recovery Facility ("the Facility").

Section 129 of the Clean Air Act ("the Act") required the U.S. Environmental Protection Agency ("USEPA") to develop and adopt New Source Performance Standards ("NSPS") and Emission Guidelines ("EG") for solid waste incineration units pursuant to Sections 111 and 129 of the Act. Section 111(b) of the Act, the NSPS program, addresses the emissions from new, modified and reconstructed Municipal Waste Combustor ("MWC") units with a combustion capacity greater than 250 tons per day, referred to as large MWC units. The NSPS set forth in 40 CFR Part 60, Subpart Eb (§§ 50b – 59b) apply to such MWC units for which construction was commenced after September 20, 1994 or for which modification or reconstruction commenced after June 19, 1996. The EG set forth at 40 CFR Part 60, Subpart Cb apply to existing MWC units built before the Subpart Eb applicability date, September 20, 1994.

Essex County MWC Units 1, 2 and 3 were constructed in the 1987-1990 timeframe and started up in 1990. Thus, all three units were built prior to the Subpart Eb applicability date and as such are presently subject to the Emission Guidelines in 40 CFR Part 60, Subpart Cb. To determine if these units have been reconstructed, as defined in the regulation, an analysis was conducted as described in the following sections.

Regulatory Definitions Used in NSPS Applicability Evaluation

In order to evaluate applicability to NSPS, Covanta performed an analysis consistent with:

- Section 111 of the Act and 40 CFR 60 Subpart A, 60.14 definition of modification
- Section 129 of the Act and 40 CFR 60 Subpart Eb 60.51b definition of a modification
- Section 129 of the Act and 40 CFR 60 Subpart Eb 60.51b definition of an MWC unit

The term "modification" is defined in 40 CFR Part 60 Subpart A-General Provisions of the NSPS, consistent with Section 111 of the Act, as follows:

> *40 CFR 60.14 Modification*
> *(a) Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.*

Further, paragraphs 40 CFR 60.14 (e) and (f) state:

> (*e) The following shall not, by themselves, be considered modifications under this part:*
> *(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of paragraph (c) of this section and § 60.15.*
>
> *(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.*

In 40 CFR 60, Subpart Eb, an applicable subpart of this part, the term "modification or modified municipal waste combustion unit" is more specifically defined as follows:

> *40 CFR 60.51b Modification*
> *Modification or modified municipal waste combustor unit means a municipal waste combustor unit to which changes have been made after June 19, 1996 if the cumulative cost of the changes, over the life of the unit, exceed 50 percent of the original cost of construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs; or any physical change in the municipal waste combustor unit or change in the method of operation of the municipal waste combustor unit increases the amount of any air pollutant emitted by the unit for which standards have been established under section 129 or section 111. Increases in the amount of any air pollutant emitted by the municipal waste combustor unit are determined at 100-percent physical load capability and downstream of all air pollution control devices, with no consideration given for load restrictions based on permits or other nonphysical operational restrictions.*

The regulatory conclusion from these definitions is that the cumulative cost of the changes are those costs incurred over the life of the units and do not include routine maintenance, repair and replacement projects.

The USEPA has also clearly identified this provision in a September 2011 Summary of Public Comments and Responses regarding Sewage Sludge Incineration NSPS/ Emission Guidelines. In response to a comment "that routine maintenance or 'in kind' replacement costs be excluded," the USEPA responded:

> *These costs [the cumulative costs incurred over the life of the unit] … do not include maintenance, repair, or replacements that the Administrator considers to be routine for the source category, as prescribed in section 60.14(e). The definition of a modified unit in this rule is conceptually identical to the definition of modification in the MWC rule.*[(a)]

Thus, for Covanta's analysis, cumulative costs were determined over the life of the MWC units, and routine maintenance, repair and replacement costs were not included as a capital cost.

Equipment Boundary Limits for Determining Changes

When Covanta performed the analysis of the cumulative cost of changes, it considered the regulatory boundaries defined within the 40 CFR 60.51b definition of an "MWC Unit" to assess which equipment capital costs were applicable and which equipment were not.

The boundary limits of a municipal waste combustor unit are defined in 40 CFR 60.51b as follows:

> *40 CFR 60.51b Municipal waste combustor, MWC, or municipal waste combustor unit*
>
> *(1) Means any setting or equipment that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved-air or excess-air), boilers (i.e., steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, air curtain incinerators, or fluidized bed-fired), and pyrolysis/combustion units. Municipal waste combustors do not include pyrolysis/combustion units located at a plastics/rubber recycling unit (as specified in §60.50b(m)). Municipal waste combustors do not include cement kilns firing municipal solid waste (as specified in §60.50b(p)). Municipal waste combustors do not include internal combustion engines, gas turbines, or other combustion devices that combust landfill gases collected by landfill gas collection systems.*

(a) Page 3-7 of September 2011 Summary of Public Comments and Responses (EPA-HQ-OAR-2009-0559-0171) published concurrently with the final promulgation of the Sewage Sludge Incineration NSPS/ Emission Guidelines.

(2) The boundaries of a municipal solid waste combustor are defined as follows. The municipal waste combustor unit includes, but is not limited to, the municipal solid waste fuel feed system, grate system, flue gas system, bottom ash system, and the combustor water system. The municipal waste combustor boundary starts at the municipal solid waste pit or hopper and extends through:

(i) The combustor flue gas system, which ends immediately following the heat recovery equipment or, if there is no heat recovery equipment, immediately following the combustion chamber,

(ii) The combustor bottom ash system, which ends at the truck loading station or similar ash handling equipment that transfer the ash to final disposal, including all ash handling systems that are connected to the bottom ash handling system; and

(iii) The combustor water system, which starts at the feed water pump and ends at the piping exiting the steam drum or superheater.

(3) The municipal waste combustor unit does not include air pollution control equipment, the stack, water treatment equipment, or the turbine-generator set.

Under 40 CFR Part 60.50b(d), certain other changes are not considered:

40 CFR 60.50b(d) Physical or operational changes made to an existing municipal waste combustor unit primarily for the purpose of complying with emission guidelines under subpart Cb are not considered a modification nor reconstruction and do not result in an existing municipal waste combustor unit becoming subject to this subpart.

Thus, the changes made for the Facility to comply with emission guidelines under subpart Cb in 1999-2001 and to equip the Facility with new fabric filters in 2014-2016 were not considered in this analysis.

Cumulative Cost of Changes

Covanta determined that cumulative, applicable project costs over life of the MWC units to be $35.9MM updated to 2018 dollars. These costs were accumulated from two sources: American Ref-Fuel Company ("ARC") operations and Covanta operations. Actual costs were adjusted per R.S. Means, Inc. indices to values circa 2018.

Original Cost of Construction

As part of the analysis, Covanta determined the original cost of construction and installation of the MWC units, not including any cost of land purchased in connection with such construction or installation, and then, updated those actual costs to current costs (2018 dollars).

Covanta utilized the Second Amendment to the Conditional Sale Agreement between American Ref-Fuel Company of New Jersey (as purchaser) and The Port Authority of New York and New Jersey (as Seller) dated February 28, 1986 to establish the original cost of construction of the Facility as $243,255,705 (approximately $698.3 MM in $2018 dollars). From this review, Covanta determined the original cost of construction and installation of the MWC units to be approximately $209.5 MM in 2018 dollars.

50% Threshold Trigger

Based upon the original cost calculations of the MWC units in 2018 dollars ($209.5 MM) and the cumulative capital costs in $2018 dollars ($35.9MM), it was determined that cumulative cost of changes are approximately 17.1% of the original costs, less than the 50% threshold defined in the regulation.

Conclusion

As detailed above, NJDEP had requested Covanta to evaluate whether the Essex County facility was applicable to NSPS as a result of the cumulative capital costs exceeding 50% of the original construction cost.

Covanta reviewed the applicable regulations and performed the analysis. Based upon this analysis, the Facility has not triggered the applicability of 40 CFR Part 60 Subpart Eb.

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October 31, 2019

Ms. Yaso Sivaganesh
NJDEP Air Quality Permitting and Planning
Bureau of Stationary Sources
401 E. State Street, 2nd Floor
P.O. Box 420
Mail Code 401-02
Trenton NJ 08625-0420

Re: **Covanta Essex Company**
Essex County Resource Recovery Facility
Facility ID Number: 07736
Permit Number: BOP090003
Reconstruction Analysis

Dear Yaso:

On behalf of Covanta Essex Company ("Covanta Essex"), the attached Excel file is being submitted in response to your October 15, 2019 email requesting Covanta Essex to provide the backup information for the reconstruction cost analysis submitted to the Department on October 11, 2019. A summary of the results of the analysis is provided in the sheet named "Summary SU thru 2019". A listing of the applicable capital expenditures which contributed to the cumulative capital costs in 2018 dollars is contained in the sheet named "Applicable Capex ($2018)".

As noted in our October 11, 2019 submittal (copy also attached), based upon the original cost calculations of the MWC units in 2018 dollars ($209.5 MM) and the cumulative capital costs in 2018 dollars ($35.9MM), it was determined that cumulative cost of changes are approximately 17.1% of the original costs, less than the 50% threshold defined in the regulation. Based upon this analysis, the Facility has not triggered the applicability of 40 CFR Part 60 Subpart Eb.

If you any questions or require additional information, please contact me at pearls@covanta.com or (973) 817-7322.

Sincerely,

Patricia Earls
New Jersey Regional Environmental Manager

Project: Evaluation of Applicability to 40 CFR 60 - New Source Performance Standards (NSPS) Subpart Eb

Prepared by: Covanta Essex Company for the Essex County Resource Recovery Facility
Facility ID Number: 07736 Permit Number: BOP090003

Date: October 11, 2019

Introduction

NJDEP asked Covanta to evaluate the applicability of New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart Eb (§§ 50b – 59b) to the Essex County Resource Recovery Facility ("the Facility").

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Essex County MWC Units 1, 2 and 3 were constructed in the 1987-1990 timeframe and started up in 1990. Thus, all three units were built prior to the Subpart Eb applicability date and as such are presently subject to the Emission Guidelines in 40 CFR Part 60, Subpart Cb. To determine if these units have been reconstructed, as defined in the regulation, an analysis was conducted as described in the following sections.

Regulatory Definitions Used in NSPS Applicability Evaluation

In order to evaluate applicability to NSPS, Covanta performed an analysis consistent with:

- Section 111 of the Act and 40 CFR 60 Subpart A, 60.14 definition of modification
- Section 129 of the Act and 40 CFR 60 Subpart Eb 60.51b definition of a modification
- Section 129 of the Act and 40 CFR 60 Subpart Eb 60.51b definition of an MWC unit

The term "modification" is defined in 40 CFR Part 60 Subpart A-General Provisions of the NSPS, consistent with Section 111 of the Act, as follows:

> *40 CFR 60.14 Modification*
> *(a) Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.*

Further, paragraphs 40 CFR 60.14 (e) and (f) state:

> (*e) The following shall not, by themselves, be considered modifications under this part:*
> *(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of paragraph (c) of this section and § 60.15.*
>
> *(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.*

In 40 CFR 60, Subpart Eb, an applicable subpart of this part, the term "modification or modified municipal waste combustion unit" is more specifically defined as follows:

> *40 CFR 60.51b Modification*
> *Modification or modified municipal waste combustor unit means a municipal waste combustor unit to which changes have been made after June 19, 1996 if the cumulative cost of the changes, over the life of the unit, exceed 50 percent of the original cost of construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs; or any physical change in the municipal waste combustor unit or change in the method of operation of the municipal waste combustor unit increases the amount of any air pollutant emitted by the unit for which standards have been established under section 129 or section 111. Increases in the amount of any air pollutant emitted by the municipal waste combustor unit are determined at 100-percent physical load capability and downstream of all air pollution control devices, with no consideration given for load restrictions based on permits or other nonphysical operational restrictions.*

The regulatory conclusion from these definitions is that the cumulative cost of the changes are those costs incurred over the life of the units and do not include routine maintenance, repair and replacement projects.

The USEPA has also clearly identified this provision in a September 2011 Summary of Public Comments and Responses regarding Sewage Sludge Incineration NSPS/ Emission Guidelines. In response to a comment "that routine maintenance or 'in kind' replacement costs be excluded," the USEPA responded:

> *These costs [the cumulative costs incurred over the life of the unit] … do not include maintenance, repair, or replacements that the Administrator considers to be routine for the source category, as prescribed in section 60.14(e). The definition of a modified unit in this rule is conceptually identical to the definition of modification in the MWC rule.*[(a)]

Thus, for Covanta's analysis, cumulative costs were determined over the life of the MWC units, and routine maintenance, repair and replacement costs were not included as a capital cost.

Equipment Boundary Limits for Determining Changes

When Covanta performed the analysis of the cumulative cost of changes, it considered the regulatory boundaries defined within the 40 CFR 60.51b definition of an "MWC Unit" to assess which equipment capital costs were applicable and which equipment were not.

The boundary limits of a municipal waste combustor unit are defined in 40 CFR 60.51b as follows:

> *40 CFR 60.51b Municipal waste combustor, MWC, or municipal waste combustor unit*
>
> *(1) Means any setting or equipment that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved-air or excess-air), boilers (i.e., steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, air curtain incinerators, or fluidized bed-fired), and pyrolysis/combustion units. Municipal waste combustors do not include pyrolysis/combustion units located at a plastics/rubber recycling unit (as specified in §60.50b(m)). Municipal waste combustors do not include cement kilns firing municipal solid waste (as specified in §60.50b(p)). Municipal waste combustors do not include internal combustion engines, gas turbines, or other combustion devices that combust landfill gases collected by landfill gas collection systems.*

(a) Page 3-7 of September 2011 Summary of Public Comments and Responses (EPA-HQ-OAR-2009-0559-0171) published concurrently with the final promulgation of the Sewage Sludge Incineration NSPS/ Emission Guidelines.

(2) The boundaries of a municipal solid waste combustor are defined as follows. The municipal waste combustor unit includes, but is not limited to, the municipal solid waste fuel feed system, grate system, flue gas system, bottom ash system, and the combustor water system. The municipal waste combustor boundary starts at the municipal solid waste pit or hopper and extends through:

(i) The combustor flue gas system, which ends immediately following the heat recovery equipment or, if there is no heat recovery equipment, immediately following the combustion chamber,

(ii) The combustor bottom ash system, which ends at the truck loading station or similar ash handling equipment that transfer the ash to final disposal, including all ash handling systems that are connected to the bottom ash handling system; and

(iii) The combustor water system, which starts at the feed water pump and ends at the piping exiting the steam drum or superheater.

(3) The municipal waste combustor unit does not include air pollution control equipment, the stack, water treatment equipment, or the turbine-generator set.

Under 40 CFR Part 60.50b(d), certain other changes are not considered:

40 CFR 60.50b(d) Physical or operational changes made to an existing municipal waste combustor unit primarily for the purpose of complying with emission guidelines under subpart Cb are not considered a modification nor reconstruction and do not result in an existing municipal waste combustor unit becoming subject to this subpart.

Thus, the changes made for the Facility to comply with emission guidelines under subpart Cb in 1999-2001 and to equip the Facility with new fabric filters in 2014-2016 were not considered in this analysis.

Cumulative Cost of Changes

Covanta determined that cumulative, applicable project costs over life of the MWC units to be $35.9MM updated to 2018 dollars. These costs were accumulated from two sources: American Ref-Fuel Company ("ARC") operations and Covanta operations. Actual costs were adjusted per R.S. Means, Inc. indices to values circa 2018.

Original Cost of Construction

As part of the analysis, Covanta determined the original cost of construction and installation of the MWC units, not including any cost of land purchased in connection with such construction or installation, and then, updated those actual costs to current costs (2018 dollars).

Covanta utilized the Second Amendment to the Conditional Sale Agreement between American Ref-Fuel Company of New Jersey (as purchaser) and The Port Authority of New York and New Jersey (as Seller) dated February 28, 1986 to establish the original cost of construction of the Facility as $243,255,705 (approximately $698.3 MM in $2018 dollars). From this review, Covanta determined the original cost of construction and installation of the MWC units to be approximately $209.5 MM in 2018 dollars.

50% Threshold Trigger

Based upon the original cost calculations of the MWC units in 2018 dollars ($209.5 MM) and the cumulative capital costs in $2018 dollars ($35.9MM), it was determined that cumulative cost of changes are approximately 17.1% of the original costs, less than the 50% threshold defined in the regulation.

Conclusion

As detailed above, NJDEP had requested Covanta to evaluate whether the Essex County facility was applicable to NSPS as a result of the cumulative capital costs exceeding 50% of the original construction cost.

Covanta reviewed the applicable regulations and performed the analysis. Based upon this analysis, the Facility has not triggered the applicability of 40 CFR Part 60 Subpart Eb.

Reference	Non-Routine Costs	
	Actual mm $'s	2018 mm $'s
1992 thru 2005	15.9	31.7
2006 thru 2019	3.7	4.2
Total	19.6	35.9
Total Facility Cost	243.3	
Apply R.S. Means 2.87		698.3
Cost of MWC Units	72.99	
Apply R.S. Means 2.87		209.5
Non-Routine Costs as		17.1
as % of Total		

Applicable Capex Startup-2019 Broken Down BY Project

Items included in definition of MWC unit and included in calculation of facility cumulative capital costs.

			Actual Cost $	2018 R.S.Means Factor	$2018 Cost
0391545	28652-HOPPER MODIFICATIONS-2ND, 3RD PASS;	1-Apr-92	758.00	2.43	1,841.94
0391330	28130-ESSEX ADDED ASSETS 5/92;BOILER FEED	1-May-92	11,071.18	2.43	26,902.97
0391348	35122-ESSEX ADDED ASSETS 5/92;#2 BOILER FEED REG 150 VALVE UPGRD	1-May-92	12,240.00	2.43	29,743.20
0391558	35123-ESSEX ADDED ASSETS 5/92;ASH EXTRACTOR LEVEL CONTROL MODS	1-May-92	2,981.00	2.43	7,243.83
0392118	35127-ESSEX ADDED ASSETS 5/92;CV-500 AB BELT TENSION SYSTEMS	1-May-92	117,663.00	2.43	285,921.09
0391341	28142-ESSEX ADDED ASSETS 5/92;SIFTING ASH CONTAINMENT	1-May-92	21,741.00	2.43	52,830.63
0391504	28134-ESSEX ADDED ASSETS 5/92;INSTALL ASH CRANE BUMPER	1-May-92	41,407.00	2.43	100,619.01
0392109	28147-ESSEX ADDED ASSETS 7/92;UPGRADE #2 BOILER FEED REC VALVE ST	1-Jul-92	-233.00	2.43	-566.19
0391345	35134-ESSEX ADDED ASSETS 7/92;BOILER FEED WTR SYS A PUMP & 1 BLR	1-Jul-92	66,390.00	2.43	161,327.70
0392109	35138-ESSEX ADDED ASSETS 7/92;UPGRADE 2 BOILER FEED REC VLV STN	1-Jul-92	17,006.00	2.43	41,324.58
0391546	28157-ESSEX ADDED ASSETS 8/92;UNDERNOZZLE DRAG PLATFORM	1-Aug-92	97,040.00	2.43	235,807.20
0391333	35139-ESSEX ADDED ASSETS 8/92;#3 CHARGE HOPPER REAR WALL MOD	1-Aug-92	15,145.00	2.43	36,802.35
0392119	35141-ESSEX ADDED ASSETS 8/92;BURNER COOLING AIR UPGRADE	1-Aug-92	29,338.00	2.43	71,291.34
0391326	35145-ESSEX ADDED ASSETS 8/92;POG MILL SLIDE GATE UPGRADE	1-Aug-92	18,464.00	2.43	44,867.52
0392121	35147-ESSEX ADDED ASSETS 8/92;SIX MECHANICAL/ CIVIL IMPROVEMENTS	1-Aug-92	22,941.00	2.43	55,746.63
0391324	35148-ESSEX ADDED ASSETS 8/92;UNDERNOZZLE DRAG CONVEYOR DBL-FLAP	1-Aug-92	99,642.00	2.43	242,130.06
0392119	28194-ESSEX ADDED ASSETS;BURNER	1-Aug-92	30.00	2.43	72.90
0391559	35144-ESSEX ADDED ASSETS 8/92;NEW SIFTING HOPPERS FR 3 BOILERS	1-Aug-92	442,032.00	2.43	1,074,137.76
0391557	35151-ESSEX ADDED ASSETS 9/92;MISC CIVIL	1-Sep-92	12,250.00	2.43	29,767.50

			Actual Cost $	2018 R.S.Means Factor	$2018 Cost
	PROJECTS/ASH EXT WTRBOX				
0392128	35155-ESSEX ADDED ASSETS 9/92;REFRACTORY	1-Sep-92	114,085.00	2.43	277,226.55
0392133	35156-ESSEX ADDED ASSETS 9/92;SAFETY & MISS VALVES	1-Sep-92	88,081.00	2.43	214,036.83
0392125	35149-ESSEX ADDED ASSETS 9/92;#2 BOILER TRAIN CPTL IMPROVEMENTS	1-Sep-92	41,762.00	2.43	101,481.66
0392131	35154-ESSEX ADDED ASSETS 9/92;RAY-OL BURNERS	1-Sep-92	62,230.00	2.43	151,218.90
0392110	28169-ESSEX ADDED ASSETS 9/92;REFUSE CRANE RAIL UPGRADE	1-Sep-92	131,833.00	2.43	320,354.19
	35159-ESSEX ADDED ASSETS 9/92;WATER BOXES	1-Sep-92	13,472.00	2.43	32,736.96
0391525	35158-ESSEX ADDED ASSETS 9/92;TIPPING PORT MODIFICATIONS	1-Sep-92	490,226.00	2.43	1,191,249.18
0392129	35170-ESSEX ADDED ASSETS PRD 4/93;ASH/FERROUS CRANE SPEED CONTROL	1-Jan-93	19,914.00	2.34	46,598.76
0392134	35171-ESSEX ADDED ASSETS PRD 4/93;REINFORCE SECONDARY AIR DUCTS	1-Jan-93	76,155.00	2.34	178,202.70
	#1 TUBE SHIELDS				
0392174	35174-ESSEX ADDED ASSETS PRD 5/93;RAM FEEDER MODIFICATION	1-Feb-93	27,972.00	2.34	65,454.48
0392135	35089-ESSEX ADDED ASSET PRD 07;COMBUSTION CONTROL SYSTEM	1-Feb-93	233,349.00	2.34	546,036.66
0393111	35163-ESSEX ADDED ASSETS PRD 06/94;PUGMILL AUTOMATIC LIME INJECTION	1-Feb-93	14,948.06	2.34	34,978.46
0392168	28190-ESSEX ADDED ASSETS PRD 5/93;2ND&3RD PASS HPPR DRS-TRANS PCE BLR	1-Feb-93	23,927.00	2.34	55,989.18
0392170	35173-ESSEX ADDED ASSETS PRD 5/93;ATTEMP VALVE UPGRADE BOILERS 1,2,3	1-Feb-93	2,578.00	2.34	6,032.52
	28175-ESSEX ADDED ASSETS PRD 05/93;BOILER #1 TUBE SHIELDS	1-Feb-93	20,020.00	2.34	46,846.80
	VALVE UPGRADE BOILERS 1,2,3				
0393110	28077-ESSEX ADDED ASSET PRD 01/94;BOILER #2 TUBE SHIELDS	1-Mar-93	999.76	2.34	2,339.44
0392176	28080-ESSEX ADDED ASSET PRD 06;BOILER #1 BYPASS FOR VA081	1-Mar-93	31,044.00	2.34	72,642.96
0393110	28081-ESSEX ADDED ASSET PRD 06;BOILER #2 - TUBE SHIELDS	1-Mar-93	4,444.00	2.34	10,398.96
0392185	28082-ESSEX ADDED ASSET PRD 06;BOILER #3 BYPASS FOR VA 081	1-Mar-93	14,230.00	2.34	33,298.20
0392186	28087-ESSEX ADDED ASSET PRD 06;RAM FEEDER MODS.-BOILER #3	1-Mar-93	14,896.00	2.34	34,856.64

			Actual Cost $	2018 R.S.Means Factor	$2018 Cost
0393108	28176-ESSEX ADDED ASSETS PRD 06;BOILER #2 RAM FEEDER MODIFICATION	1-Mar-93	17,159.00	2.34	40,152.06
0392183	28177-ESSEX ADDED ASSETS PRD 06;CABLE DROP BOX - BOILER #3	1-Mar-93	35,138.00	2.34	82,222.92
0392191	35082-ESSEX ADDED ASSET PRD 06;BOILER #1 WELDING OVERLAY OF TUBES	1-Mar-93	102,499.00	2.34	239,847.66
0393106	35083-ESSEX ADDED ASSET PRD 06;BOILER #2 CABLE DROP BOX	1-Mar-93	23,348.00	2.34	54,634.32
0393119	35084-ESSEX ADDED ASSET PRD 06;BOILER #3 PRECYCLONES A&B-INSTL 3/8	1-Mar-93	41,000.00	2.34	95,940.00
0393101	35111-ESSEX ADDED ASSET PRD 12/93;BLR #3 OVERLAY-FIRST PASS	1-Mar-93	142,950.00	2.34	334,503.00
0392184	35164-ESSEX ADDED ASSETS PRD 06;TUBE SHIELD - BOILER #3	1-Mar-93	6,566.00	2.34	15,364.44
0393150	28091-ESSEX ADDED ASSET PRD 09/93;BLR 1-2ND & 3RD PASS HOPPER DOORS	1-Jun-93	6,000.00	2.34	14,040.00
0393149	28092-ESSEX ADDED ASSET PRD 09/93;BLR 1-INTERMITTANT BLOWDOWN TANK	1-Jun-93	24,813.00	2.34	58,062.42
0393112	28093-ESSEX ADDED ASSET PRD 09/93;BLR 2-INCONNEL OVERLAY IST PASS	1-Jun-93	151,856.00	2.34	355,343.04
0393158	28116-ESSEX ADDED ASSET PRD 12/93;BLR #2-ECONOMIZER TUBE BUNDLES HNGR	1-Jun-93	8,301.00	2.34	19,424.34
0393174	28117-ESSEX ADDED ASSET PRD 12/93;BLR #3 ECONOMIZER TUBE HANGERS	1-Jun-93	4,686.00	2.34	10,965.24
0393136	35104-ESSEX ADDED ASSET PRD 09/93;SLIPSTICK WALL (SEAL)	1-Jun-93	26,716.00	2.34	62,515.44
0393118	35094-ESSEX ADDED ASSET PRD 09/93;CLEAN-OUT DOORS ON 1,2,3 CV-505 A,B	1-Jun-93	1,291.00	2.34	3,020.94
0393134	28119-ESSEX ADDED ASSET PRD 12/93;ECONOMIZER TUBE BUNDLE HANGERS BLR1	1-Jun-93	5,233.00	2.34	12,245.22
0392126	28102-ESSEX ADDED ASSET PRD 09/93;NEW ASH ALLEN DOORS	1-Jun-93	8,270.00	2.34	19,351.80
0393169	35091-ESSEX ADDED ASSET PRD 09/93;BOL 3-SECONDARY AIR NOZZLE EXTENSN	1-Jun-93	5,200.00	2.34	12,168.00
0393120	35097-ESSEX ADDED ASSET PRD 09/93;ECONOMIZER EXPANSION JNT-ALL BLRS	1-Jun-93	6,279.00	2.34	14,692.86
0393166	28106-ESSEX ADDED ASSET PRD 09/93;SECONDARY AIR NOZZLE EXTENSION	1-Jun-93	6,464.00	2.34	15,125.76
0393151	28107-ESSEX ADDED ASSET PRD 09/93;STEEL CAP	1-Jun-93	26,076.00	2.34	61,017.84

			Actual Cost $	2018 R.S.Means Factor	$2018 Cost
	OVER TOP-REFUSE PIT WHEEL				
0393141	28115-ESSEX ADDED ASSET PRD 12/93;ASH EXTRACTOR TRENCH PLATE	1-Jun-93	7,767.00	2.34	18,174.78
0392189	28128-ESSEX ADDED ASSET PRD 8/93;ASH EXTRACTOR DOORS-BOILERS 2&3	1-Aug-93	0	2.34	
0393179	28111-ESSEX ADDED ASSET PRD 10/93;FAB & DELIVER REFUSE PIT WALL CAP	1-Aug-93	7,790.00	2.34	18,228.60
	35107-ESSEX ADDED ASSET PRD 10/93;BLR #3-FLAME SPRAY CTNG-FRNCE FNT W	1-Aug-93	36,243.00	2.34	84,808.62
0393132	35162-ESSEX ADDED ASSETS PRD 06/94;PROCESS MONITORS-CRANE CABS	1-Nov-93	19,159.77	2.34	44,833.86
0393197	28181-ESSEX ADDED ASSETS PRD 08/94;PRECYCLONE BOILER #2	1-Jan-94	171,903.64	2.26	388,502.23
0394004	33555-BUILDINGS;INSTALL MONERAIL IN 49 LEVEL	1-Jan-94	87,292.10	2.26	197,280.15
0394017	25519-BOILER #2 3RD PASS TUBE SHIELDS;ELEVATION 70' LEVEL CONV SUPERHEATR	1-Feb-94	43,306.27	2.26	97,872.17
0394010	29511-MACHINERY & EQUIPMENT;BOILER #1 REFRACTORY TILE-S. WALL	1-Feb-94	251,689.53	2.26	568,818.34
0394023	36216-MACHINERY & EQUIPMENT-STEAM;OVERLAY REAR WALL BLR 2	1-Feb-94	99,305.25	2.26	224,429.87
					0.00
0394001	28182-ESSEX ADDED ASSETS PRD 08/94;PRECYCLONE BOILER #2	1-Mar-94	183,444.63	2.26	414,584.86
0394025	29343-M & E STEAM PRODUCTION;INSTL TUBE SHIELDS BLR 3 3RD PASS	1-Mar-94	49,429.85	2.26	111,711.46
0394027	36279-MACHINERY & EQUIPMENT;INTERCONNECT OVERLAY #3	1-Mar-94	342,849.97	2.26	774,840.93
0394033	28818-INSTALL CAP ON REFUSE PIT WALL;SOUTH OF BLR #3 REFUSE HOPPER	1-Mar-94	26,793.07	2.26	60,552.34
0393153	35168-ESSEX ADDED ASSETS PRD 08/94;INCONNEL OVERLAY BOILER & FURN WALL	1-Apr-94	172,122.90	2.26	388,997.75
0393201	35169-ESSEX ADDED ASSETS PRD 08/94;SPR PRT-REFUSE CRANE HOLDING BRK AS	1-Apr-94	17,450.00	2.26	39,437.00
0394024	29513-MACHINERY & EQUIPMENT;DRIVE & DIRIVEN PUGMILL STUB	1-Apr-94	2,855.41	2.26	6,453.23
0393162	29348-MACHINERY & EQUIP-STEAM PRD 12/94;SOOTBLOWER MODS ON BLRS 1,2 & 3	1-Jun-94	102,268.58	2.26	231,126.99
0394031	29440-MACHINERY & EQUIPMENT-STEAM;UPGRD WATER TANK LEVEL DETECTOR	1-Jun-94	14,925.31	2.26	33,731.20
0395006	32921-BOILER #2 INCONEL OVERLAY;MACH &	1-Nov-94	384,214.98	2.26	868,325.85

				Actual Cost $	2018 R.S.Means Factor	$2018 Cost
		EQUIP - WASTE				
0395036		32939-BOILER #3 TUBE SHIELDS;WASTE DISPOSAL EQUIPMENT	1-Feb-95	22,000.00	2.19	48,180.00
0394003		35399-HARDPIPE ASH EXTRACTOR #1 HYDRAULIC;MACH & EQUIP - WASTE	1-Feb-95	22,570.95	2.19	49,430.38
0395019		25499-BLRS 1&2 2ND&3RD PASS HOPPER DOORS;4 DOORS AND 1 REFRACTORY	1-Mar-95	12,955.84	2.19	28,373.29
0395004		32657-ASH EXTRACTOR UPPER CHUTES-ALL BLRS;FOR ALL BOILERS	1-Apr-95	244,141.96	2.19	534,670.89
0395017		32897-BLRS 1&3 PRECYCLONE TRANSITION	1-Apr-95	65,746.61	2.19	143,985.08
0395028		32979-BOILER 1 3RD PASS TUBE SHIELDS;AT EL	1-Apr-95	31,433.00	2.19	68,838.27
0395031		38408-UPGRADE BOTTOM ASH PART OF BLDG;TO BRING BLDG UP TO VPP STANDARDS	1-May-95	6,482.98	2.19	14,197.73
0395029		32911-BOILER #1 SECOND PASS INCONEL;AT E195' AND 123'	1-May-95	23,362.43	2.19	51,163.72
0395027		25597-BOILER 1 WALL REFRACTORY UPGRADE;RIGHT SIDE WALL	1-Jun-95	31,548.00	2.19	69,090.12
0395009		25517-BOILER #2 3RD PASS SHIELDS;ELEVATIONS 84' AND 95'	1-Jul-95	23,653.81	2.19	51,801.84
0396005		32920-BOILER #2 INCONEL OVERLAY;	1-Nov-95	286,648.35	2.19	627,759.89
0396011		27271-CV 610 UPGRADES;	1-Dec-95	38,758.47	2.19	84,881.05
0396007		35698-INSTALL SHIELDS IN B #2 FURNACE;IN FURNACE SCREEN TUBE	1-Dec-95	36,379.69	2.19	79,671.52
0396006		32255-2ND & 3RD PASS HOPPER DOORS & CHUTE;FOR BOILER #2	1-Jan-96	27,709.09	2.09	57,912.00
0395030		38405-UPGR SERVICE WATER PIPING TO PUGMIL;	1-Jan-96	9,643.65	2.09	20,155.23
0396020		32265-3RD PASS TUBE SHIELDS-B #3;	1-Mar-96	27,677.14	2.09	57,845.22
0395023		32887-BLOWDOWN CONTROL VALVES - 3 BOILERS;	1-Mar-96	9,297.53	2.09	19,431.84
0396010		32936-BOILER #3 INCONEL;	1-Mar-96	360,848.93	2.09	754,174.26
0396016		32663-ASH LOADOUT OVERHEAD DOOR-ENTRANCE;	1-Mar-96	28,930.05	2.09	60,463.80
0396034		32910-BOILER #1 REFUSE CHUTE SIDEWALL	1-Apr-96	91,808.11	2.09	191,878.95
0396029		25594-BOILER 1 INCONEL - FIRST PASS;	1-Apr-96	10,360.00	2.09	21,652.40
0396028		25595-BOILER 1 INCONEL PLATTEN LEDING EDG;	1-Apr-96	76,500.00	2.09	159,885.00
0396024		25596-BOILER 1 THIRD PASS TUBE SHIELDS;	1-Apr-96	52,435.02	2.09	109,589.19
0396023		32899-BOIL 1 SUPERHEATER UPGRADE ELEV 61;	1-Apr-96	49,808.25	2.09	104,099.24
0396019	Waste Dispo	24735-2ND & 3RD PASS HOPPER DORRS & CHUTE;FOR BOILER 1 & 3	1-Apr-96	60,392.41	2.09	126,220.14
0397024		25510-BOILER #1 RAM FEEDER DOOR UPGRADE;	1-Oct-96	3,503.30	2.09	7,321.90
0397011		32923-BOILER #2 RAM FEEDER DOOR UPGRADE;	1-Oct-96	3,503.30	2.09	7,321.90
0397007	Biomass	25241-B #2 2ND PASS LEADING EDGE INCONEL;	1-Nov-96	135,870.90	2.09	283,970.18

			Actual Cost $	2018 R.S.Means Factor	$2018 Cost
0397009	25518-BOILER #2 3RD PASS TUBE SHIELDS;	1-Nov-96	18,926.00	2.09	39,555.34
0397010	32915-BOILER #2 ASH EXTRACTR DOOR UPGRADE;	1-Nov-96	16,524.00	2.09	34,535.16
0397034	25545-BOILER #3 RAM FEEDER UPGRADE;	1-Feb-97	5,171.99	1.99	10,292.26
0397020	25497-BLR#3 3RD PASS TUBE SHLDS-ELEVATION;103& 1,2,3,10,11,12 LOWER TUBE SHLD	1-Mar-97	20,260.90	1.99	40,319.19
0397042	25541-BOILER #3 INCONEL;	1-Mar-97	211,787.38	1.99	421,456.89
0397002	32894-BLR#3 2ND PASS LEADING EDGE INCONEL;	1-Apr-97	135,902.67	1.99	270,446.31
0397019	32901-BOILER #1 3RD PASS TUBE SHIELDS;	1-Apr-97	18,638.91	1.99	37,091.43
0397021	25504-BOILER #1 ASH EXTRACTOR DOORS;UPGRADES	1-Apr-97	12,690.85	1.99	25,254.79
0397041	32907-BOILER #1 INCONEL;	1-Apr-97	324,917.90	1.99	646,586.62
0397044	25503-BOILER #1 2/3 PASS ASH HANDLNG MODS;	1-May-97	25,751.28	1.99	51,245.05
0397043	25515-BOILER #2 2/3 PASS ASH HANDLING MOD;	1-May-97	31,962.85	1.99	63,606.07
0397003	27270-CV 502 B CONVEYOR MODIFICATIONS;	1-Sep-97	175,387.00	1.99	349,020.13
0397079	25494-BLR 2 CHUTES TO BYPASS CVR-504;ASH CANNONS BOTTOM-2ND/3RD HOPPER	1-Dec-97	23,078.52	1.99	45,926.25
0397072	34366-CONVEYOR 527 PLATFORM;29' TO 55' ELEVATION/24 DEG ANGLE	1-Dec-97	24,638.69	1.99	49,030.99
0398003	25520-BOILER #2 ASH EXTRACTOR (2A) DOOR UPGRADE	1-Dec-97	13,250.80	1.99	26,369.09
0398014	25477-BIFURCATED CHUTES EXHAUST HOODS UPGRADE-BOILERS 1,2&3	1-Mar-98	39,000.00	1.90	74,100.00
0398043	25538-BOILER #3 FURNACE INCONEL OVERLAY	1-Apr-98	83,292.06	1.90	158,254.91
0398044	32928-BOILER #3 2ND PASS INCONAL OVERLAY	1-Apr-98	63,417.02	1.90	120,492.34
0398045	33522-BOTTOM ASH WATER LINE-HOSE REEL SYSTEM CLOSE TO ASH EXTRACTOR WATER BOX	1-Apr-98	6,497.01	1.90	12,344.32
0398036	32877-BELT CLEANER FOR 502 B CONVEYOR	1-May-98	7,494.12	1.90	14,238.83
0398037	25507-BOILER #1 INCONEL	1-May-98	158,388.00	1.90	300,937.20
0399010	32900-BOILER #1 1ST PASS SCREEN TUBE	1-Jul-99	10,555.45	1.86	19,633.14
0399011	32913-BOILER #2 1ST PASS TUBE SHIELD MATERIAL UPGRADE	1-Jul-99	6,547.45	1.86	12,178.26
0399012	32927-BOILER #3 1ST PASS SCREEN TUBE SHIELD MATERIAL UPGRADE	1-Jul-99	10,555.45	1.86	19,633.14
0399022	32905-BOILER #1 FURNACE INCONEL	1-Aug-99	164,759.66	1.86	306,452.97
0399023	32917-BOILER #2 FURNACE INCONEL	1-Aug-99	157,017.52	1.86	292,052.59
0399024	32932-BOILER #3 FURNACE INCONEL	1-Aug-99	185,469.37	1.86	344,973.03
0300015	39040-INCONEL BLR #3 FURNACE WATER WALL TUBES	1-Mar-00	196,743.50	1.85	363,975.48
0300016	39041-INCONEL BLR #1 FURNACE WATER WALL	1-Mar-00	250,370.32	1.85	463,185.09

				Actual Cost $	2018 R.S.Means Factor	$2018 Cost
		TUBES				
0300017		39042-INCONEL BLR #2 FURNACE WATERWALL TUBES	1-Mar-00	251,217.27	1.85	464,751.95
0300039		39047-INCONEL BLR #1 FURNACE4 WATER WALL TUBES	1-Sep-00	837,438.75	1.85	1,549,261.69 0.00
0301003		39225-BOILER #2 FURNACE INCONEL	1-Mar-01	337,147.24	1.79	603,493.56
0301005		39226-BOILER #3 FURNACE INCONEL	1-Mar-01	403,116.10	1.79	721,577.82
0301007		39230-BOILER #2 ROOF TUBES	1-Mar-01	66,128.50	1.79	118,370.02
0301004		39231-BOILER #3 FURNACE SCREEN TUBES	1-Mar-01	173,381.09	1.79	310,352.15
0302015		39775-BLR #1 INCONEL OVERLAY FURNACE WATER	1-Mar-02	311,223.79	1.75	544,641.63
0302018		39868-BOILER #2 FURNACE WATERWALL INCONEL	1-Jun-02	320,901.54	1.75	561,577.70
0303011		40271-BOILER #1 FURNACE INCONEL	1-Feb-03	315,052.86	1.68	529,288.80
0303002		40135-BLR#2 2ND PASS SUPERHEATER CAST TUBE SHIELDS	1-Mar-03	55,601.97	1.68	93,411.31
0303012		40272-BOILER #2 FURNACE INCONEL AND REFRACTORY REPAIR	1-Mar-03	152,030.00	1.68	255,410.40 0.00
0303013		40273-BOILER #3 FURNACE INCONEL AND REFRACTORY REPAIRS	1-Feb-03	224,421.00	1.68	377,027.28 0.00
		40134-BOILER #1 2ND PASS PLATEN SUPERHEATER FAB CAST TUBE SHIELDS	1-Feb-03	45,984.04	1.68	77,253.19
0303003		40136-BLR #3 2ND PASS SUPERHEATER CAST TUBE SHIELDS	1-Mar-03	64,451.02	1.68	108,277.71
0303026		40352-MODIFY CV 502B AND SLIPSTICK B	31-May-03	107,788.11	1.68	181,084.02
0303034		40349-REPLACE THE WALL SEPARATING SLIPSTICK ALLEY AND BOTTOM ASH	1-Nov-03	48,675.52	1.68	81,774.87 0.00
0304755		41061-BLR#3 FURANCE INCONEL	1-Feb-04	510,837.79	1.67	853,099.11
0304755		41063-BLR #1 FURNACE INCONEL	1-Feb-04	423,293.78	1.67	706,900.61
0304755		41062-BLR #2 FURNACE INCONEL	1-Mar-04	393,899.22	1.67	657,811.70
0304755		41072-BLR # 2 SUPERHEATER ENHANCEMENT	1-Mar-04	566,050.51	1.67	945,304.35
0304754		41071-BLR #1 CSB-PA TIE IN	1-Sep-04	52,235.35	1.67	87,233.03
0304755		41074-BLR #1 SUPERHEATER ENHANCEMENT	1-Oct-04	136,065.81	1.67	227,229.90
0304759		41243-FUEL OIL BURNER MODS	1-Nov-04	39,130.17	1.67	65,347.38
0305755		41270-BLR #3 FURNACE INCONEL AND REFRACTORY	28-Feb-05	365,682.00	1.50	548,523.00
0305755		41269-BLR #2 FURNACE INCONEL AND REFRACTORY	31-Mar-05	218,033.00	1.50	327,049.50
0305755		41249-BLR 1 FURNACE INCONEL AND REFRACTORY	30-Apr-05	143,676.00	1.50	215,514.00
W2007446	INCONEL	Boiler #1 Rear Wall Slope Inco	4-Apr-08	112,313.11	1.29	144,883.91
W2007445	INCONEL	Boiler #3 Rear Wall Slope Inco	19-Jun-08	89,475.03	1.29	115,422.79
W2009005	INCONEL	INCO Overlay Front Wall Blr 1	7-Apr-09	93,081.81	1.20	111,698.17
W2009006	INCONEL	INCO Overlay Front Wall Blr 3	2-Feb-09	74,477.12	1.20	89,372.54
W2009499	INCONEL	Blr 1 Inconel Overlay	30-Jan-10	156,381.22	1.19	186,093.65
W2009500	INCONEL	Blr 2 Inconel Overlay	27-Feb-10	174,145.98	1.19	207,233.72

				Actual Cost $	2018 R.S.Means Factor	$2018 Cost
W2009501	INCONEL	Blr 3 Inconel Overlay	16-Apr-10	70,049.29	1.19	83,358.66
W2010410	INCONEL	Blr 2 Inconel Overlay (Fall)	26-Oct-10	16,055.38	1.19	19,105.90
W2010035	LOWER FURN	Blr 1 Tile Refractory 2010	30-Jan-10	267,778.20	1.19	318,656.06
W2010036	LOWER FURN	Blr 2 Tile Refractory 2010	27-Feb-10	240,419.35	1.19	286,099.03
W2010575	INCONEL	Blr 1 Inconel Overlay	1-Feb-11	257,658.20	1.17	301,460.09
W2010573	LOWER FURN	Blr 1 Tile Refractory 2011	1-Feb-11	136,188.00	1.17	159,339.96
W2010574	LOWER FURN	Blr 2 Tile Refractory 2011	6-May-11	320,294.00	1.17	374,743.98
W2010576	HIGH PERFM	Blr 2 Inconel Overlay	6-May-11	105,006.47	1.17	122,857.57
W2010577	HIGH PERFM	Blr 3 Inconel Overlay	1-Apr-11	97,796.10	1.17	114,421.44
W2011383	HIGH PERFM	Blr 3 Inconel Overlay	31-Oct-11	19,647.87	1.17	22,988.01
W2011489	LOWFRN_BL	Blr 3 Tile Refractory 2012	1-Apr-12	273,861.00	1.12	306,724.32
W2011490	LOWFRN_BL	Blr 1 Tile Refractory 2013	2-Apr-12	75,159.60	1.12	84,178.75
W2011486	HIGH PERFM	Inconel Overlay - Blr 1	1-Mar-12	71,281.86	1.12	79,835.68
W2011487	HIGH PERFM	Blr 2 Inconel Overlay	1-Jun-12	61,701.65	1.12	69,105.85
W2011488	HIGH PERFM	Blr 3 Inconel Overlay	1-Apr-12	24,237.10	1.12	27,145.55
W2013004	HIPERF_BL3	Blr 3 Inconel Overlay	1-Feb-13	26,040.00	1.10	28,644.00
W2013039	OTHBOILER1	Blr 1 Tile of 95 and 123 Doors	1-Mar-13	40,000.00	1.10	44,000.00
W2013002	HIPERF_BL1	Blr 1 Inconel Overlay 2nd Pass	1-Mar-13	17,856.00	1.10	19,641.60
		Blr 2 Inconel Overlay	1-Apr-13	35,712.00	1.10	39,283.20
W2013040	OTHBOILER2	Blr 2 Tile of 95 and 123 Doors	1-Apr-13	40,000.00	1.10	44,000.00
	W2012529	BL1 Semi-Dry Ash System	21-Oct-13	124,044.47	1.10	136,448.92
	W2012530	BL2 Semi-Dry Ash System	21-Oct-13	161,130.04	1.10	177,243.04
	W2012531	BL3 Semi-Dry Ash System	21-Oct-13	162,326.11	1.10	178,558.72
W2013508	HIPERF_BL1	Bl 1 Inco Overlay 2nd Pass WW	13-Mar-14	17,525.80	1.06	18,577.35
	HIPERF_BL1	Blr 1 Tile of 95 & 113 Ports	28-Mar-14	91,000.00	1.06	96,460.00
W2014576	HIPERF_BL3	BL3 Inco Overlay 2nd Pass WW	31-Jan-15	20,624.00	1.07	22,067.68
W2014575	HIPERF_BL2	Blr 2 Inconel Overlay 2nd Pass	30-Apr-15	20,624.00	1.07	22,067.68
	HIPERF_BL1	BL1 Inconel Overlay Furnace WW	31-Mar-16	19,679.00	1.05	20,662.95
		FIELD APPLIED INCONEL 2017	30-Nov-17	26,771.00	1.01	27,038.71
		BOILER 1 INGITION SLOPE TILE W	30-Nov-17	61,300.00	1.01	61,913.00
	HIPERF_BL3	B3 FURNACE/ SECOND PASS INCONEL	31-Mar-18	22,366.00	1.00	22,366.00
	HIPERF_BL2	B2 FURNACE 2ND PASS INCONEL	31-Mar-19	33,409.00	1.00	33,409.00
	TOTALS			**19,538,572.89**		**35,888,965.64**

Newark, NJ

Year	RS Means Factor	$2,018 Factor
2018	245.2	1.00
2017	242.7	1.01
2016	232.9	1.05
2015	230.1	1.07
2014	230.6	1.06
2013	223.6	1.10
2012	219.2	1.12
2011	210.3	1.17
2010	206.2	1.19
2009	203.6	1.20
2008	189.6	1.29
2007	185.2	1.32
2006	173.6	1.41
2005	163.9	1.50
2004	147.2	1.67
2003	145.7	1.68
2002	140.2	1.75
2001	136.9	1.79
2000	132.6	1.85
1999	131.6	1.86
1998	128.9	1.90
1997	123.2	1.99
1996	117.6	2.09
1995	111.9	2.19
1994	108.3	2.26
1993	104.7	2.34
1992	101.0	2.43
1991	97.4	2.52
1990	93.8	2.61
1989	91.7	2.67
1988	89.7	2.73
1987	87.6	2.80
1986	85.5	2.87
1985	83.5	2.94

Year	National 30 City Average	Montana		Nebraska		Nevada		New Hampshire	New Jersey					NM	NY
		Billings	Great Falls	Lincoln	Omaha	Las Vegas	Reno	Manchester	Camden	Jersey City	Newark	Paterson	Trenton	Albu-querque	Albany
Jan 2018	215.8	192.3E	192.9E	191.5E	192E	222.3E	201.8E	202.7E	238.7E	241.1E	245.2E	243.2E	241.6E	187.8E	215.7E
	209.4														
2017		190.4	191.0	189.6	190.1	220.1	199.8	200.7	236.3	238.7	242.7	240.8	239.2	185.9	213.5
2016	207.7	191.8	191.1	186.8	187.6	221.1	198.8	200.9	228.8	229.6	232.9	231.3	229.3	181.6	209.6
2015	204.0	188.1	188.4	183.7	184.7	215.5	194.9	198.7	224.5	226.1	230.1	228.5	227.6	178.3	208.1
2014	203.0	185.4	186.3	181.1	183.7	210.9	195.7	198.8	224.6	226.6	230.6	227.8	226.6	178.0	205.1
2013	196.9	180.5	181.1	175.5	180.6	206.8	190.4	193.8	217.7	219.3	223.6	221.2	218.7	173.6	195.3
2012	194.0	178.6	179.5	169.3	177.1	202.6	186.8	189.2	213.6	215.2	219.2	217.5	213.7	171.0	191.2
2011	185.7	168.8	170.8	162.8	169.6	195.7	179.8	176.8	205.5	207.0	210.3	209.2	206.4	163.3	180.9
2010	181.6	166.5	168.6	159.3	165.8	193.7	175.6	172.5	201.2	203.3	206.3	205.3	200.8	162.5	177.8
2009	182.5	165.3	166.0	161.7	165.0	191.5	176.5	174.0	196.8	200.5	203.6	202.0	198.6	163.0	178.1
2008	171.0	153.1	154.6	152.0	154.8	176.2	167.0	162.5	184.0	187.3	189.6	188.7	185.6	152.6	166.0
2007	165.0	147.7	147.8	147.7	150.3	166.7	161.4	159.3	179.3	183.3	185.2	184.6	181.7	146.7	159.4
2006	156.2	140.5	140.8	132.4	140.7	160.0	154.5	146.7	167.7	171.0	173.6	172.2	169.9	140.1	151.6
2005	146.7	131.9	132.4	124.1	132.8	149.5	145.4	136.8	159.0	162.4	163.9	163.0	161.5	130.4	142.2
2004	132.8	118.2	117.9	112.1	119.4	137.1	130.5	124.2	143.4	145.4	147.2	146.6	146.0	118.3	128.6
2003	129.7	115.8	115.8	110.2	117.3	133.8	128.3	122.4	142.0	144.3	145.7	145.0	143.0	116.4	126.8
2002	126.7	114.6	114.5	108.2	115.0	131.9	126.4	119.9	135.9	138.5	140.2	140.1	137.6	114.6	122.6
2001	122.2	117.5	117.7	101.3	111.6	127.8	122.5	116.2	133.4	136.7	136.9	136.8	136.0	111.4	119.2
2000	118.9	113.7	113.9	98.8	107.0	125.8	118.2	111.9	128.4	130.5	132.6	132.4	130.6	109.0	116.5
1999	116.6	112.1	112.7	96.6	104.8	121.9	114.4	109.6	125.3	128.8	131.6	129.5	129.6	106.7	114.6
1998	113.6	109.7	109.1	94.9	101.2	118.1	111.4	110.1	124.3	127.7	128.9	128.5	127.9	103.8	113.0
1995	105.6	104.7	104.9	85.6	93.4	108.5	105.0	100.9	107.0	112.2	111.9	112.1	111.2	96.3	103.6
1990	93.2	92.9	93.8	78.8	85.0	96.3	94.5	86.3	93.0	93.5	93.8	97.2	94.5	84.9	93.2
1985	81.8	83.9	84.3	71.5	77.5	87.6	85.0	78.1	81.3	83.3	83.5	84.5	82.8	76.7	79.5
1980	60.7	63.9	64.6	58.5	63.5	64.6	63.0	56.6	58.6	60.6	60.1	60.0	58.9	59.0	59.5
1975	43.7	43.1	43.8	40.9	43.2	42.8	41.9	41.3	42.3	43.4	44.2	43.9	43.8	40.3	43.9
	27.8	28.5	28.9	26.4	26.8	29.4	28.0	26.2	27.2	27.8	29.0	27.8	27.4	26.4	28.3
	21.5	22.0	22.3	20.3	20.6	22.4	21.6	20.6	20.9	21.4	23.8	21.4	21.3	20.6	22.3
	19.5	20.0	20.3	18.5	18.7	20.2	19.6	18.0	19.0	19.4	19.4	19.4	19.2	18.5	19.3
	16.3	16.7	17.0	15.5	15.7	16.9	16.4	15.1	16.0	16.3	16.3	16.3	16.1	15.6	16.2
T	13.5	13.9	14.0	12.8	13.0	14.0	13.6	12.5	13.2	13.5	13.5	13.5	13.3	12.9	13.4

Historical Cost Indexes

The following tables are the estimated Historical Cost Indexes based on a 30-city national average with a base of 100 on January 1, 1993.

The indexes may be used to:

1. Estimate and compare construction costs for different years in the same city.
2. Estimate and compare construction costs in different cities for the same year.
3. Estimate and compare construction costs in different cities for different years.
4. Compare construction trends in any city with the national average.

EXAMPLES

1. Estimate and compare construction costs for different years in the same city.

   A. To estimate the construction cost of a building in Lexington, KY in 1970, knowing that it cost $915,000 in 2018.

   Index Lexington, KY in 1970 = 26.9
   Index Lexington, KY in 2018 = 188.1

   $$\frac{\text{Index 1970}}{\text{Index 2018}} \times \text{Cost 2018} = \text{Cost 1970}$$

   $$\frac{26.9}{188.1} \times \$915{,}000 = \$130{,}853$$

   Construction Cost in Lexington, KY in 1970 = $130,853

   B. To estimate the current construction cost of a building in Boston, MA that was built in 1980 for $900,000.

   Index Boston, MA in 1980 = 64.0
   Index Boston, MA in 2018 = 242.4

   $$\frac{\text{Index 2018}}{\text{Index 1980}} \times \text{Cost 1980} = \text{Cost 2018}$$

   $$\frac{242.4}{64.0} \times \$900{,}000 = \$3{,}408{,}750$$

   Construction Cost in Boston in 2018 = $3,408,750

2. Estimate and compare construction costs in different cities for the same year.

   To compare the construction cost of a building in Topeka, KS in 2018 with the known cost of $800,000 in Baltimore, MD in 2018

   Index Topeka, KS in 2018 = 190.0
   Index Baltimore, MD in 2018 = 199.7

   $$\frac{\text{Index Topeka}}{\text{Index Baltimore}} \times \text{Cost Baltimore} = \text{Cost Topeka}$$

   $$\frac{190.0}{199.7} \times \$800{,}000 = \$761{,}142$$

   Construction Cost in Topeka in 2016 = $761,142

3. Estimate and compare construction costs in different cities for different years.

   To compare the construction cost of a building in Detroit, MI in 2018 with the known construction cost of $5,000,000 for the same building in San Francisco, CA in 1980.

   Index Detroit, MI in 2018 = 214.2
   Index San Francisco, CA in 1980 = 75.2

   $$\frac{\text{Index Detroit 2018}}{\text{Index San Francisco 1980}} \times \text{Cost San Francisco 1980} = \text{Cost Detroit 2018}$$

   $$\frac{214.2}{75.2} \times \$5{,}000{,}000 = \$14{,}242{,}021$$

   Construction Cost in Detroit in 2018 = $14,242,021

4. Compare construction trends in any city with the national average.

   To compare the construction cost in Las Vegas, NV from 1975 to 2018 with the increase in the National Average during the same time period.

   Index Las Vegas, NV for 1975 = 42.8 For 2018 = 222.3
   Index 30 City Average for 1975 = 43.7 For 2018 = 215.8

   A. National Average escalation From 1975 to 2018 = $\frac{\text{Index — 30 City 2018}}{\text{Index — 30 City 1975}} = \frac{215.8}{43.7}$

   National Average escalation From 1975 to 2018 = 4.94 or increased by 494%

   B. Escalation for Las Vegas, NV From 1975 to 2018 = $\frac{\text{Index Las Vegas, NV 2018}}{\text{Index Las Vegas, NV 1975}} = \frac{222.3}{42.8}$

   Las Vegas escalation From 1975 to 2018 = 5.19 or increased by 519%

Conclusion: Construction costs in Las Vegas are higher than National Average costs and increased at a greater rate from 1975 to 2018 than the National Average.

Covanta Essex Company Comments on Proposed Draft BOP170001 provided by NJDEP on 10/15/19

1. Page 1 Mailing Address – Please replace the facility manager name with the new facility manager, David Blackmore. This was recently approved under Administrative Amendment BOP190001, issued on October 18, 2019.

2. Section A, Table 1 – The facility wide VOC emissions from all Significant Source Operations listed in the table has been revised to 81.9 tons per year from 83.9 tons per year. It is not clear why this change was made as there have been no changes to the VOC emission limits in the permit. Based on the VOC emission limits for U1, U2, U3, U13 and U14, the facility wide VOC potential emissions should be 83.9 tons per year.

3. U1, U2, U3, OS Summary, Ref. #55 – It is noted that the second paragraph of the SO2 emission limit condition that is in the current Title V permit, BOP090003, under U1, OS Summary, Ref. #95, has been removed from the Title V renewal permit. The paragraph in the existing permit reads as follows:

   "The limit of 94 ppmvd shall not apply for 1-hour block periods during which the average concentration of SO2 (ppmvd @ 7% O2) in the stack gas is less than 30% of the average concentration of SO2 (ppmvd @ 7% O2) at the inlet to the acid gas control equipment. [N.J.A.C. 7:27-22.16(e)]"

   This paragraph was in the PSD permit issued to the facility under 40 CFR 52.21. Please explain why this has been removed.

4. U1, U2, U3, OS Summary, Ref. #56 – It is noted that the second paragraph of the HCl emission limit condition that is in the current Title V permit, BOP090003, under U1, OS Summary, Ref. #96, has been removed from the Title V renewal permit. The paragraph in the existing permit reads as follows:

   "The limit of 47 ppmvd shall not apply for 1-hour block periods during which the average concentration of HCl (ppmvd @ 7% O2) in the stack gas is less than 10% of the average concentration of HCl (ppmvd @ 7% O2) at the inlet to the acid gas control equipment. [N.J.A.C. 7:27-22.16(a)]"

   This paragraph was in the PSD permit issued to the facility under 40 CFR 52.21. Please explain why this has been removed.

5. U1, U2, U3, OS1, Ref. #44 – Monitoring Requirements – The condition states that "Monitoring is as required at 40 CFR 60.58b(h), except as specified at 40 CFR 62.14109(d)(1)." Pursuant to 40 CFR 62.14109(d)(1), "The owner or operator of an affected facility may follow the alternative performance testing schedule for dioxin/furan emissions specified in paragraph (d)(1) of this section.

1. If all performance tests for all affected facilities at the MWC plant over a 2-year period indicate that dioxin/furan emissions are less than or equal to 15 nanograms per dry standard cubic meter total mass, corrected to 7 percent oxygen for all affected facilities located within a municipal waste combustor plant, the owner or operator of the municipal waste combustor plant may elect to conduct annual performance tests for one affected facility (i.e., unit) per year at the municipal waste combustor plant. At a minimum, a performance test for dioxin/furan emissions shall be conducted annually (no more than 12 months following the previous performance test) for one affected facility at the municipal waste combustor plant. Each year a different affected facility at the municipal waste combustor plant shall be tested, and the affected facilities at the plant shall be tested in sequence (e.g., unit 1, unit 2, unit 3, as applicable). If each annual performance test continues to indicate a dioxin/furan emission level less than or equal to 15 nanograms per dry standard cubic meter (total mass), the owner or operator may continue conducting a performance test on only one affected facility per year. If any annual performance test indicates a dioxin/furan emission level greater than 15 nanograms per dry standrd cubic meter (total mass), performance tests thereafter shall be conducted annually on all affected facilities at the plant until and unless all annual performance tests for all affected facilities at the plant over a 2-year period indicate a dioxin/furan emission level less than or equal to 15 nanograms per dry standard cubic meter (total mass)."

   Please confirm that the alternate testing requirement is still applicable to the Covanta Essex facility as long as the performance test results are less than 15 nanograms per dscm.

6. U1, U2, U3, OS1, Ref. # 24 and #25 – Monitoring Requirements – The condition requires stack testing annually to demonstrate compliance with the Dioxins/Furans (Total) and TCDD (2,3,7,8) emission limits but does not reference the alternate testing requirements under 40 CFR 62.14109(d)(1) referenced in the previous comment. Please include a reference to the alternate testing requirements to demonstrate compliance with these limits.

Response to Additional Comments from NJDEP and ICC on Title V Renewal permit for Essex

1. **Why cannot the facility's auxiliary burners burn natural gas instead of diesel fuel, particularly in light of the natural gas fueling station Covanta installed in 2013?**

   Covanta Essex Company is in the process of assessing the feasibility of converting the existing ultra low sulfur diesel fired auxiliary burners used in the three MWC units to natural gas auxiliary burners with a capability of using ultra low sulfur diesel fuel as a back-up fuel. This involves an engineering assessment of whether the connection to the natural gas transmission line, installed when the CNG fueling station was installed at the Covanta Essex facility in 2013 by Clean Energy, is of adequate size and capacity to provide the required amount of natural gas to fuel auxiliary burners on the three MWC units. There is also a significant cost associated with replacing the auxiliary burners with natural gas-fired burners. We have met with a vendor to determine what the cost of this project would be including the requirements for the natural gas connection that would be needed and are expecting a quote in approximately two weeks. Therefore, the economic feasibility of this project has not yet been determined.

2. **The current monitors can safely measure temperatures up to 4,200 degrees F, so it is no longer necessary for the air permit to use a downstream surrogate temperature limit, instead of a directly-measured combustion limit. See attached memorandum.**

   The 1-second point downstream of secondary air injection is dynamic depending on the combustion conditions. That is why the correlation is developed and a fixed point is selected to have a more sustainable/accurate means for continuously monitoring the furnace temperature.

   Currently, the MWC units at the Covanta Essex facility each utilize 4 Infrared (IR) temperature sensors which are the Infra-View Boiler Thermometers (Manufactured by Infraview) to measure the flue gas temperature at the 116'4" elevation which represents the temperature 1 second downstream of secondary air injection that is correlated to the furnace temperature. IR pyrometers or temperature sensors are one of the most accurate instruments for measuring high temperature flue gas. The pyrometers are calibrated to measure thermal energy of CO2 in the flue gas which is then correlated to flue gas temperature. Covanta has done many tests over the years comparing HVT (high velocity thermocouples) to IR pyrometers and their readings are very similar.

   Therefore, the current instrument setup for quantifying and monitoring the Time and Temperature permit requirement is more than adequate. The IR temperature sensors are more accurate than the standard thermowell plus thermocouple configuration and there are no radiation losses which have an influence on the accuracy of the temperature measurement.