

# STATEMENT OF BASIS for JOINT MEETING OF ESSEX AND UNION COUNTIES

## TITLE V OPERATING PERMIT RENEWAL AND PERMIT MODIFICATION

Program Interest (PI): 41813 / Permit Activity Number: BOP180002

### I. FACILITY INFORMATION

Joint Meeting of Essex and Union Counties is located 500 South First Street, Elizabeth, Union County and consists of municipal wastewater treatment plant. The facility is owned and operated by Joint Meeting of Essex and Union Counties.

The facility is classified as a major facility based on its potential to emit 49 tons/year of VOC and 69.4 tons/year of NOx.

This permit allows individual hazardous air pollutants to be emitted at a rate not to exceed: 0.0175 tons/year of Acrolein, 3.33 tons/year Formaldehyde, 1.10 tons/year Hydrogen Chloride, 0.393 tons/year Phenol, 0.197 tons/year Phosphorus.

### II. AREA ATTAINMENT CLASSIFICATION

The Federal Clean Air Act (CAA) sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are particulate matter, ground-level ozone, carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and lead. The US Environmental Protection Agency (USEPA) also classifies areas as "attainment" or "nonattainment" for each criteria pollutant, based on the magnitude of an area's problem. Nonattainment classifications are used to specify what air pollution reduction measures an area must adopt, and when the area must reach attainment. Currently, the entire State of New Jersey is designated as nonattainment for the 8-hour ozone NAAQS. New Jersey is designated attainment for all other pollutants. For nonattainment classification refer to <https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information>.

### III. BACKGROUND AND HISTORY

The equipment that emits air contaminants from this facility include: 5 boilers, 6 RICE NG/DG engines, 3 emergency generators, 3 gas-fired sludge dryers, 2 sludge storage tanks with waste gas burners, 3 gravity belt thickeners, 4 digesters with waste gas flares, 4 liquid sludge storage tanks, 6 bulk solid storage tanks and material handling equipment consisting of conveyors, centrifuges, hoppers and bins. The control devices include particulate filters, catalytic oxidizers, cyclones, condensers, waste gas burners, and scrubbers.

Table 1 - Operating Permit Revision History (located at the end of this document) provides a summary of all the changes that have been incorporated into the operating permit through seven-day notice changes, administrative amendments, minor modifications, or significant modifications since the approval of the initial operating permit or the most recent renewal thereof. Please refer to the attached explanation sheet for the structure and configuration of conditions of approval, included in the Facility Specific Requirements section of this permit.

A Facility-Wide Risk Assessment was conducted as part of the review of this permit application and health risk was determined to be acceptable to the Department consistent with NJDEP Technical Manual 1003.

This is a Permit Modification with Renewal and includes the following changes:

1. Two 8.3 MMBtu/hr cogeneration engines firing natural gas (E4305, E4306) were added at U43:OS5, 6, 11,12, 17 & 18.
2. GR2 requirements were moved to the individual units (U31, U32 and U33, Indirect 33.4 Dry Ton/day Sludge Dryers). A new emissions cap for the flares (U2, Sludge Digesters #1, 2, 3, & 4 controlled by flares, U4, Sludge Digesters and Sludge Storage Tanks Controlled by Flares, U37, Two Sludge Storage Tanks controlled by 12 MMBTU/hr Flare CD7) was established in GR2.
3. A new configuration for the existing sludge digesters (E3, E4, E5, E6) and tanks (E57, E58) was added in U4. Two new enclosed waste gas flares (CD4, CD5) were added.

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5. Combustion adjustment requirements were added to U31, U32, U33, 33.4 Dry Ton/Day Sludge Dryers.
6. Fuel monitoring requirements were added to U16, Two 5.23 MMBTU/hr NG/FO boilers.
7. A periodic monitoring procedure for NO<sub>x</sub> and CO was added to U43, Six 9.3 MMBtu/hr NG/DG RICE Engines.
8. N.J.A.C. 7:27-6.2(a) particulates emission limit was added to U2, Sludge Digesters #1, 2, 3, & 4 controlled by flares, and U4, Sludge Digesters and Sludge Storage Tanks Controlled by Flares.
9. PM-2.5 emission limits were added to U1, U2, U3, U4, U9, U16, U18, U25, U31, U32, U33, U37, U41, U44 and U45 consistent with N.J.A.C. 7:27-22. PM-10 emission limits were added to U16, U25 and U41 consistent with N.J.A.C. 7:27-22.
10. VOC emissions were corrected to below reporting threshold for U3:OS2, 7.93 MMBtu/hr Boiler #4 - Digester Gas.
11. Annual emissions rates were updated for all insignificant sources.
12. Monitoring requirements were added for the total production rate in the sludge digesters in U2:OS1-4, the material transfer limit in U37, Two Sludge Storage Tanks controlled by 12 MMBTU/hr Flare CD7, the total throughput in U18, 4600 cu ft Lime Storage Silo.
13. Pressure drop monitoring requirements were added to the dust filters in CD3, CD8, CD9 & CD10.
14. Odor dilution-to-threshold requirements were updated in U42, Gravity Belt Thickener System, based on the latest guidance in NJDEP Technical Manual 1002.
15. SO<sub>2</sub> emissions were updated for U16, Two 5.23 MMBTU/hr NG/FO boilers, and U3, Three 7.93 MMBTU/hr DG/FO boilers, based on the new N.J.A.C. 7:27-9 fuel oil sulfur content regulations. SO<sub>2</sub> was removed for U16:OS2,4 and U3:OS2,4 as below reporting threshold. U3 annual total emissions were reduced from 33.4 tons/year to 17.0 tons/year. U16 annual total emissions of 9.64 tons/year were removed as below reporting threshold.
16. VOC emissions were corrected for U3, Three 7.93 MMBTU/hr DG/FO boilers: the annual VOC emissions limit of 0.210 tons/year was removed since it is below reporting threshold.
17. The 10.46 MMBtu/hr NG emergency generator emission rates in U1 were updated based on the new AP-42 emissions factors and 100 hours per year of testing and maintenance operation. VOC emissions were reduced from 0.0188 to 0.00290 tons/year, NO<sub>x</sub> emissions were reduced from 0.434 to 0.0513 tons/year, CO emissions were reduced from 0.269 to 0.0431 tons/year, TSP, PM-10 and PM-2.5 emissions were reduced from 0.0250 to 0.00390 tons/year.
18. The maximum hours for testing and maintenance for the emergency generators in U44, Two FO Emergency Generators, was corrected from 100 hours/year to 50 hours/year. Annual emissions limits were corrected.
19. 4 new operating scenarios were added to U2, Sludge Digesters #1, 2, 3, & 4 controlled by flares, to clarify that the control devices operate in alternative configuration as opposed to in series.
20. An NAICS code of 221320, Sewage Treatment Facilities, was added.
21. Operating limits for engines 1-4 in U43 was reduced to combined total of 28,800 hours per year for all 4 engines (combined limit for both natural gas and digester gas). U43 maximum gross heat input was corrected from 8.3 MMBtu/hr to 9.3 MMBtu/hr per engine. Formaldehyde emissions from U43 was corrected

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from 0.190 lbs/hr to 0.140 lbs/hr per engine. TSP, PM-10 and PM-2.5 emissions rates for the RICE engines U43:OS1-4 were corrected from 0.104 lb/hr to 0.180 lb/hr. New HAPs emissions were added to U43.

22. Stack parameters in the Emission Point Inventory were updated for the following stack points: Min. Exhaust Temperature was updated for PT23, equivalent diameter, exhaust temperatures and volumes were updated for PT4301, PT4302, PT4303 and PT4304.

23. 40 CFR 63 Subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines, and 40 CFR 60 Subpart JJJJ, Stationary Spark Ignition Internal Combustion Engines, requirements were added to U43, Six 9.3 MMBtu/hr NG/DG RICE Engines.

24. Stack testing requirements for U43, Six 9.3 MMBtu/hr NG/DG RICE Engines, were updated.

25. Methane emissions limits were added to U2, Sludge Digesters #1, 2, 3, & 4 controlled by flares, and U37, Two Sludge Storage Tanks controlled by 12 MMBTU/hr Flare CD7.

26. The sandblaster, U45, was removed from the permit.

27. Environmental Justice Special Conditions requiring a submittal for emission reduction measures were added at GR3.

This renewal will also change the allowable emission limits as listed in the following table:

Allowable Emission Limits	Facility's Potential Emissions (tons per year)*									
	VOC (total)	NO <sub>x</sub>	CO	SO <sub>2</sub>	TSP (total)	PM <sub>10</sub> (total)	PM <sub>2.5</sub> (total)	Pb	HAPs (total)	CO <sub>2</sub> e (total)
Current Permit	44.1	69.2	75.8	80.5	26.6	19.1	NA	0.00234	5.04	115,295
Proposed Permit	50.8	76.3	80.3	56.4	28.4	21.4	21.4	0.00234	21.8	159,676
Change (+ / -)	+6.70	+7.10	+4.50	-24.1	+1.80	+2.30	+21.4	--	+16.8	44,381

VOC Volatile Organic Compounds

NO<sub>x</sub> Nitrogen Oxides

CO Carbon Monoxide

SO<sub>2</sub> Sulfur Dioxide

TSP Total Suspended Particulates

\* Other Any other air contaminant regulated under the Federal Clean Air Act. There is no change to the methane emissions.

PM<sub>10</sub> Particulates under 10 microns

PM<sub>2.5</sub> Particulates under 2.5 microns

Pb Lead

HAPs Hazardous Air Pollutants

CO<sub>2</sub>e Carbon Dioxide equivalent

#### IV. CASE-BY-CASE DETERMINATIONS

No case-by-case determinations were required for this permit action.

#### V. EMISSION OFFSET REQUIREMENTS

This permit action is not subject to Emission Offset requirements.

#### VI. BASIS FOR MONITORING AND RECORDKEEPING REQUIREMENTS

The facility's operating permit includes monitoring, recordkeeping and reporting requirements that are sufficient to demonstrate the facility's continued compliance with the applicable requirements consistent with the following:

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1. Provisions to implement the testing and monitoring requirements of N.J.A.C. 7:27-22.18, the recordkeeping and reporting requirements of N.J.A.C. 7:27-22.19, and all emissions monitoring and analysis procedures or compliance assurance methods required under the applicable requirements, including any procedures and methods promulgated pursuant to 40 CFR 64; and
2. Where the applicable requirement does not require direct periodic monitoring of emissions, the Department requires periodic monitoring of surrogate parameters sufficient to yield reliable data from the relevant time period that are representative of the facility's compliance with the permit.

For emergency generator in U1, the facility monitors the hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, TSP, PM-10 and PM-2.5.

For the emergency generators in U44, the facility monitors the hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5. Surrogate monitoring for the short-term (lb/hr) emission limits fuel oil sulfur content for SO2.

For the boilers in U3, U16 the facility monitors fuel use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10, PM-2.5 and Acrolein. Surrogate monitoring for the short-term (lb/hr) emission limits are combustion process adjustment for NOx and CO, and fuel oil sulfur content for SO2.

For the engines in U43, the facility monitors fuel use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10, PM-2.5 and Acrolein. Surrogate monitoring for the short-term (lb/hr) emission limits are combustion process adjustment for NOx and CO, and fuel oil sulfur content for SO2.

For the dryers in U31, U32, U33, the facility monitors fuel use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10, PM-2.5, Phenol, Phosphorus, and Lead. Surrogate monitoring for the short-term (lb/hr) emission limits are combustion process adjustment for NOx and CO.

For the storage tanks in U13, the facility monitors the total material transferred (MMGal/year) as surrogates for the long-term (TPY) emission limit for VOC.

For the storage tanks and controlling flare in U37, the facility monitors the total throughput (MMgal/yr), as surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5. Surrogate monitoring for the HAPs short-term (lb/hr) emission limits are name and vapor pressure of each VOC stored, and HAP content for tank cleaning, roof landings, and tank refill.

For the storage silos in U18, U41 the facility monitors the throughput as surrogates for the long-term (TPY) emission limits for TSP, PM-10 and PM-2.5.

For the abrasive blaster in U45 the facility monitors the material transfer limits as surrogates for the long-term (TPY) emission limits for TSP, PM-10 and PM-2.5.

For the centrifuges in U20, wetwell, U19, the facility monitors the total throughput (MMgal/yr) as surrogates for the long-term (TPY) emission limits for VOC.

For the dewatering facility in U25, the facility monitors the sewage sludge feed rate as a surrogate for the long-term (TPY) emissions limit of TSP, PM-10 and PM-2.5.

For the gravity belt thickener system in U42, the facility monitors the sewage sludge feed rate as a surrogate of the long term emissions limit of VOC, Hydrogen sulfide and Methyl Mercaptan.

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3. In some cases, direct periodic monitoring of emissions and/or surrogate parameters is not required due to one or more of the following:
- Equipment size and capacity limitations,
  - Subject equipment being permitted at the maximum rated capacity,
  - There is no specific state or Federal standard that applies to this piece of equipment,
  - Not a pollutant of concern for this piece of equipment,
  - Agreements with EPA on the frequency of testing and monitoring for combustion sources.

### VII. APPLICABLE STATE AND FEDERAL RULES

The facility is subject to New Jersey Air Pollution Control Regulations, codified in N.J.A.C. 7:27-1 through 34, as applicable. A complete text of these regulations is available at:

<http://www.nj.gov/dep/aqm/rules27.html>

The facility is subject to Federal regulations listed below.

NSPS Subpart A: General Provisions

NSPS Subpart Dc: Small Commercial Steam General Units

NSPS Subpart IIII: Stationary CI Internal Combustion Engines

NSPS Subpart JJJJ: Stationary Spark Ignition Internal Combustion Engines

MACT Subpart A: General Provisions

MACT Subpart ZZZZ: Stationary Reciprocating Internal Combustion Engines

The Greenhouse Gas (GHG) emissions from this facility are 159,676 TPY CO<sub>2</sub>e and there is an emissions increase of 44,381 TPY CO<sub>2</sub>e. This renewal and modification is not subject to PSD rules at 40 CFR 52.21.

### VIII. FACILITY'S COMPLIANCE STATUS

The Responsible Official at the facility has certified that the facility currently meets all applicable requirements of the Federal Clean Air Act and the New Jersey Air Pollution Control Act. Based on this certification, the Department's evaluation of the information included in the facility's application, and a review of the facility's compliance status, the Department has concluded that this air pollution control operating permit should be approved.

The facility has submitted a timely and complete application to renew their operating permit and an application shield is in effect.

This operating permit includes a permit shield, pursuant to the provisions of N.J.A.C. 7:27-22.17. A permit shield provides that compliance with the relevant conditions of the operating permit shall be deemed compliance with the specific applicable requirements that are in effect on the date of issuance of the draft operating permit, and which form the basis for the conditions in the operating permit.

Also, prior to the expiration of the five-year period, the facility will be required to apply for a renewal of this operating permit, at which time the Department will evaluate the facility and issue a public notice with its findings.

### IX. EXEMPT ACTIVITIES

The facility's operating permit does not include exempt activities such as office and interior maintenance activities, maintenance shop activities, food preparation facilities, cafeterias and dining rooms, etc. A

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complete list of exempt activities, as allowed by the Operating Permit rule, can be found at N.J.A.C. 7:27-22.1.

Table 1 - Operating Permit Revision History

Permit Activity Number	Type of Revision	Description of Revision	Final Action Date
BOP180001	Significant Modification	<p>To request for a 90-day extension (to 7/20/18) to conduct the compliance stack testing on our Cogen engines covered under Emission Unit U43. The deadline is currently 4/20/18 and testing was initially scheduled to be conducted on April 17-20, however, testing had to be cancelled and rescheduled due to recent issues with the engines. We recently had an engine go out for an overhaul which was due to be reinstalled and in operation in time for the test but there have been issues restarting it. There have also been issues with one of the other engines. The testing has been rescheduled for June 5-8 with the contractor, Peregrine, and the NJDEP-EMS.</p> <p>U43, OS Summary, Ref.# 1 has been changed to require the permittee to perform stack tests no later than July 20, 2018 using an approved protocol.</p>	10/1/2018
BOP170001	Minor Modification	To delete the three (3) enginators (Equipment No. E11, E12 and E13) and Emission Unit U9 from the permit as all associated equipment has been removed.	10/3/2017
BOP150001	Minor Modification	<p>The purpose of this minor modification is to add a significant source, the Econoline Abrasive Blaster, to the Title V Permit under Emission Unit U45. This piece of equipment is located in the mechanical maintenance department.</p> <p>Also, renumber the Emergency Generator for the New Lab to be E4402.</p>	5/5/2015

FACILITY NAME (FACILITY ID NUMBER)  
BOP050001

Activity Number assigned  
by the Department

## New Jersey Department of Environmental Protection Facility Specific Requirements

Emission Unit Number  
assigned by the Facility

Brief description of  
emission unit

**Emission Unit:** U40 Sewage Sludge Incinerators  
**Operating Scenario:** OS Summary

OR

**OS2 Fluidized Bed Incinerator**

OS Summary lists all rules and requirements  
that apply to an emission unit. An emission unit  
may contain one or more pieces of equipment  
and corresponding operating scenarios.

OSX denotes the operating scenario number and lists the rules  
and requirements that apply to a scenario. An operating  
scenario represents various ways (or scenarios) a piece of  
equipment is permitted to operate.

Item  
Number

Description of applicable  
requirement

Monitoring method to  
ensure compliance

Recordkeeping to show  
facility's compliance

Actions and submittals  
required for the facility

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
3	The permittee shall conduct an annual performance test for each pollutant in Table 2 of 40CFR62 Subpart LLL between 11 and 13 calendar months after the previous performance test or within 60 days of a process change. [40 CFR 62.16000(a)]	Other: Conduct the performance test using the test methods, averaging methods and minimum sampling volumes or durations as specified in 40CFR62 Subpart LLL and according to the testing, monitoring and calibration requirements specified in 40 CFR 62.16015(a). [40 CFR 62.16000(a)].	Other: (1) Maintain records of the results of initial, annual and any subsequent performance tests conducted to determine compliance with the emission limits and standards and/or to establish operating limits, as applicable. [40 CFR 62.16025(e)].	Submit a report: Annually to the Administrator and to the Department. The permittee shall submit an annual compliance report as specified in 40 CFR 62. [40 CFR 62.16000(d)]

Rule citation for  
applicable requirement

Rule citation for  
monitoring requirement

Rule citation for  
recordkeeping requirement

Rule citation for submittal/  
action requirement

### Explanation Sheet for Facility Specific Requirements