## I. FACILITY INFORMATION

Rutgers University Cook Douglass Campus is located at 51 Dudley Rd Cook Campus, New Brunswick, Middlesex County, NJ 08901 and consists of a university campus using boilers, emergency generators, and an underground storage tank. The facility is owned and operated by Rutgers University.

The facility is classified as a major facility based on its potential to emit 58.41 tons per year of Nitrogen Oxides.

This permit allows individual hazardous air pollutants to be emitted at a rate not to exceed: 0.0788 pounds per year of Cobalt, 0.01388 pounds per year of Dimethylbenz(a)anthracene (7,12-), 70 pounds per year of Formaldehyde, 1.18 pounds per year of Nickel.

## 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 (SO2), nitrogen dioxide (NO2), 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: sixty-eight natural gas fired boilers rated less than or equal to 5 MMBTU/hr; three natural gas fired boilers rated between 5-10 MMBTU/hr; three natural gas fired boilers rated 10.461 MMBTU/hr; two 12 MMBTU/hr boilers combusting natural gas as the primary fuel and No. 2 fuel oil as backup; eleven emergency generators combusting natural gas; eight emergency generators combusting diesel fuel; and one 6000 gal underground storage tank for gasoline with a stage II vapor recovery system.

This permit also incorporates seven general operating permits (Activities # BOP200004, BOP240001, BOP240002, BOP240003, BOP240004, BOP250001, BOP250002). Details for each GOP, including the type of source operation and air emissions from that source operation are provided in Table 1 below.

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, significant modifications, or General Operating Permits (GOP) 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 negligible consistent with NJDEP Technical Manual 1003.

This is a Permit Renewal and includes the following changes:

1. Emission units were restructured for clarity and organized grouping.

2. Incorporated GOPs from BOP200004, BOP240001, BOP240002, BOP240003, BOP240004, BOP250001, BOP250002.

3. Removed equipment E84201, previously permitted under emission unit U8420 operating scenario OS1.

4. Removed equipment E60242, replaced with equipment E5; removed equipment E60243, replaced by equipment E6.

5. Added emission point PT301 for Marine Science EG (E63505), and PT431 for Neilson Dining Hall EG (E83333).

6. Removed MACT ZZZZ requirements from emission unit U6 operating scenario OS8 (E3) due to updated applicability review.

7. Removed SO2 limit from emission unit U3, since all operating scenarios are below reporting threshold.

8. Added reportable PM2.5 emissions for all applicable emission units.

9. Updated language of existing requirements for completeness.

Cadmium emissions were revised to below reporting threshold based on emission factors in the "Characterization and Comparison of Trace Metal Compositions in Natural Gas, Biogas, Biomethane (Characterization)" document and were removed from the permit. There are no other proposed changes to air contaminants.

## IV. 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:

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 the natural gas fired boilers in emission unit U1 (1-5 MMBtu/hr), the facility monitors natural gas use as the surrogate for the long-term (TPY) emission limits for NOx, CO, HAPs (Total), Cobalt, Dimethylbenz(a)anthracene (7,12-), Formaldehyde, and Nickel.
   For the natural gas fired boilers in emission unit U2 (5-10 MMBtu/hr) and U3 (10-50 MMBtu/hr), the facility monitors natural gas use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, TSP, PM-10, PM-2.5, HAPs (Total), Cobalt, Dimethylbenz(a)anthracene (7,12-), and Formaldehyde. Surrogate monitoring for the short-term (lb/hr) emission limits is combustion process adjustment for NOx and CO.
   For the boilers in emission unit U4 (10-50 MMBtu/hr), which are natural gas fired with fuel oil used as backup, the facility monitors natural gas use and fuel oil use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, TSP, PM-10, PM-2.5, HAPs (Total), Cobalt, Dimethylbenz(a)anthracene (7,12-), and Formaldehyde. 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 diesel fired stationary reciprocating engines in emission units U5 and U7, the facility monitors 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 is fuel oil sulfur content for SO2.
   For the natural gas fired stationary reciprocating engines in emission units U6 and U8, the facility monitors hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NOx, and CO, with the addition of PM-10 and PM-2.5 for U8.

For the underground storage tank in emission unit U9, the facility monitors the total throughput (gal/yr) as surrogate for the long-term (TPY) emission limit for VOC.

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.

## V. 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 also subject to Federal regulations listed below.

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| NSPS Subpart A: | General Provisions |
| NSPS Subpart Dc: | Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units |
| NSPS Subpart IIII: | Standards of Performance for Stationary Compression Ignition Internal Combustion Engines |
| NSPS Subpart JJJJ: | Standards of Performance for Stationary Spark Ignition Internal Combustion Engines |

The Greenhouse Gas (GHG) emissions from this facility are 72,720 TPY CO2e and there is no GHG emissions increase. This renewal is not subject to PSD rules at 40 CFR 52.21

## VI. 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 also 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 forms 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.

## VII. 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 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
New Jersey Department of Environmental Protection
**Operating Permit Revision History**

NJ RUTGERS UNIV COOK/DOUGLAS CAMPUS PI 18399

| Permit Activity Number | Type of Revision | Description of Revision | Final Action Date |
|---|---|---|---|
| BOP250002 | General Operating Permit | 4.38 MMBTU/hr (HHV) Emerg. Gen. (350 kW) Natural Gas, 100 hrs/yr Emission Unit U15 | 3/10/2025 |
| BOP250001 | General Operating Permit | 5.92 MMBTU/hr (HHV) Emerg. Gen. (600 kW) Diesel fuel, 100 hrs/yr Emission Unit U16 | 3/10/2025 |
| BOP240003 | General Operating Permit | 4.11 MMBTU/hr (HHV), Boiler Natural Gas Only Emission Unit U13 | 12/20/2024 |
| BOP240004 | General Operating Permit | 3.17 MMBTU/hr (HHV), Boiler Natural Gas Only Emission Unit U14 | 12/19/2024 |
| BOP240002 | General Operating Permit | 1.26 MMBTU/hr (HHV), Boiler Natural Gas Only Emission Unit U62482 | 6/28/2024 |
| BOP240001 | General Operating Permit | 2.0 MMBTU/hr (HHV), Boiler Natural Gas Only Emission Unit U12 | 2/9/2024 |
| BOP230001 | Administrative Amendment | The following changes were made to the operating permit during this amendment process:<br><br>- Updated the Air Permit Information, Fees/Billing contacts to Duc Tran | 6/15/2023 |
| BOP220001 | Administrative Amendment | The following changes were made to the operating permit in this Administrative Amendment:<br><br>1. James Simoni replaced Rich Bankowski for all associated contact fields.<br><br>2. The nameplate data for boiler E83292 corrected from 3.99 MMBtu/hr to 3.392 MMBtu/hr and boiler E83302 corrected from 3.99 MMBtu/hr to 3.753 MMBtu/hr. | 9/30/2022 |

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| | | 3. Updated FC section of compliance plan. | |
| BOP200004 | General Operating Permit | 1.051 MMBTU/hr (HHV) Emerg. Gen. (80 kW) Natural Gas, 100 hrs/yr Emission Unit U11 | 2/12/2021 |
| BOP200003 | Minor Modification | The following changes were made to the operating permit during this modification process:<br><br>1) Reduced the burner ratings of U6246 OS1 from 4.1 to 3.965 MMBTU/hr and U6246 OS2 from 3.773 to 3.428 MMBTU/hr;<br><br>2) Replaced a 2 MMBTU/hr Weil McLain boiler with a 2 MMBTU/hr Cleaver Brooks boiler in U8328 OS1; and<br><br>3) Incorporated Natural Gas General Operating Permit GOP200002 to U5 OS11.<br><br>The changes made during this permit activity result in an increase of allowable annual emissions of VOC by 0.0077 tons, NOx by 0.2611 tons, and CO by 0.2381 tons. | 1/8/2021 |
| BOP200002 | General Operating Permit | 1.28 MMBTU/hr (HHV) Emerg. Gen. (100 kW) Natural Gas, 100 hrs/yr Emission Unit U10 | 10/16/2020 |

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| BOP200001 | Minor Modification | The following changes were made to the operating permit during this modification process:<br><br>1) Replaced two 1.44 MMBTU/hr natural gas boilers (E84251 & 84252) in Emission Unit U8425 OS1 & 2 with two 1.356 MMBTU/hr natural gas boilers (same E numbers);<br><br>2) Replaced a 6.277 MMBTU/hr natural gas boiler (E62462) in Emission Unit U6246 OS2 with a 3.773 MMBTU/hr natural gas boiler (same E number);<br><br>3) Corrected the heat input rating of a natural gas boiler (E62461) in U6246 OS1 from 5.155 MMBTU/hr to 4.1 MMBTU/hr;<br><br>4) Removed two natural gas boilers in Emission Unit U6347 OS3 (E63472) and U8408 OS2 (E84083); and<br><br>5) Removed fuel oil usage for three boilers in U8419 OS4-6, which will now burn only natural gas.<br><br>The changes made during this permit activity result in a decrease of allowable annual emissions of VOC by 0.04 tons, NOx by 2.62 tons, CO by 0.7 tons, SO2 by 0.93 tons, and TSP, PM-10, and PM-2.5 by 0.42 tons. | 8/19/2020 |
| BOP190003 | Minor Modification | The following changes were made to the operating permit during this modification process:<br><br>1. Replaced a 6.277 MMBTU/hr natural gas boiler with a 5.155 MMBTU/hr natural gas boiler (E62461) in Emission Unit U6246 OS1; and<br><br>2. Updated the N.J.A.C. 7:27-16.3 Gasoline Transfer Operation requirements | 3/2/2020 |

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| | | for Emission Unit U6 due to the decommissioning of the Stage II vapor recovery system. | |
| BOP190001 | Minor Modification | The following changes were made to the operating permit during this modification process:<br><br>1. Replaced two 3.99 MMBTU/hr natural gas boilers with a 3.392 MMBTU/hr and a 3.172 MMBTU/hr natural gas boiler in Emission Unit U8396 OS2 and U8302 OS2;<br><br>2. Corrected the nameplate ratings of three 3.99 MMBTU/hr boilers to 4.113 MMBTU/hr boilers in Emission Unit U8302 OS1, U8333 OS1, and U8333 OS2;<br><br>3. Fixed typographical errors for boiler emission unit assignments in Emission Unit U6350 OS1-3; and<br><br>4. Increased the natural gas fuel limit for boilers in U6000 and U6350 and decreased the natural gas fuel limit for boilers in U6024, U8329, and U8330. There are no emission increases associated with these fuel limit changes.<br><br>The changes made during this permit activity result in an increase of allowable annual emissions of Cadmium by 0.000023 tons (0.046 lb) | 11/25/2019 |

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| BOP180001 | Minor Modification | The following changes were made to the operating permit during this modification process:<br><br>1) Reorganizes old emission units U1 and U2 into new emission units based on building location;<br><br>2) Replacement of a natural gas boiler (3.00 MMBTU/hr, E83071) with a new natural gas boiler (4.119 MMBTU/hr, E83071) in emission unit U8307;<br><br>3) Addition of a natural gas boiler (3.99 MMBTU/hr, E83292) in emission unit U8329; and<br><br>4) Addition of a natural gas boiler (4.119 MMBTU/hr, E83302) in emission unit U8330. | 7/6/2018 |
| BOP170001 | Administrative Amendment | This administrative amendment updates the mailing address for Richard Bankowski; | 10/23/2017 |
| BOP160004 | Significant Modification | This significant modification:<br><br>1) Adds a 12.5 MMBTU/hr natural gas boiler in emission unit U1 OS84; and<br><br>2) Replaces two dual fuel boilers with two new 12 MMBTU/hr dual fuel (natural gas and #2 fuel oil) boilers in emission unit U2 OS1-4.<br><br>The emission units are operating under fuel and emission caps and there is no increase in potential emissions. All three boilers are subject to the requirements of NSPS Subpart Dc because they are constructed after June 9, 1989 and have maximum design heat input capacity between 10 and 100 MMBTU/hr. | 5/2/2017 |
| BOP160003 | Minor Modification | This minor modification replaces three natural gas boilers with three new 3.99 MMBTU/hr natural gas boilers (E83021, 83031, and 83032) in emission unit U1 OS36, 53, and 54. The facility is operating under an emission cap and there is no change in potential emissions. | 1/31/2017 |

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| BOP160002 | Minor Modification | This minor modification:<br><br>1) Installs a 3.773 MMBTU/hr natural gas boiler (E63506) in emission unit U1 OS85; and<br><br>2) Replaces a 3.99 MMBTU/hr natural gas boiler (old E60051) with a 4.119 MMBTU/hr natural gas boiler (new E63501) in U1 OS4.<br><br>The emission unit is operating under a federally enforceable emission cap and there is no increase to the potential to emit. | 12/12/2016 |
| BOP160001 | Minor Modification | This minor modification:<br><br>1) Revises the maximum fuel input ratings for 6 natural gas boilers (U1 OS8, 17, 26, 40, 72, and 73) due to burner replacement. There is no increase in annual emissions because the boilers are operating under a combined fuel cap;<br><br>2) Removes 4 natural gas boilers from emission unit U1 that are no longer in operation; and<br><br>3) Incorporates two GOPs (U4 OS9 and OS10) that the facility obtained for emergency diesel generators. | 5/11/2016 |
| BOP150006 | General Operating Permit | 6.9 MMBTU/hr (HHV) Emerg. Gen. (700 kW) Diesel fuel, 10 hrs/yr Emission Unit U9 | 1/29/2016 |
| BOP150007 | General Operating Permit | 4.8 MMBTU/hr (HHV) Emerg. Gen. (500 kW) Diesel fuel, 10 hrs/yr Emission Unit U8 | 1/29/2016 |
| BOP150005 | Administrative Amendment | This administrative amendment updates the responsible official (Antonio Calcado). | 1/8/2016 |
| BOP150004 | Minor Modification | This minor modification 1) Adds a temporary boiler (4.19 MMBTU/hr firing Natural Gas) to Emission Unit U1 OS84); and 2) Updates the Subchapter 19 submittal/action language for boilers in Emission Unit U2 OS Summary Ref. 9. The facility is operating under a federally enforceable emissions cap and there is no increase to permitted emission limits. | 11/30/2015 |

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**