



Louisville Metro Air Pollution Control District
 701 W. Ormsby Ave., Suite 303
 Louisville, Kentucky 40203-3137



28 December 2016

Title V Statement of Basis

Owner: University of Louisville

Source: University of Louisville, Belknap Campus

Plant Location: 2301 S. Brook St., Louisville, Kentucky 40208

Date Application Received: See Table

Date Admin Complete: 8/19/2015

Date of Draft Permit: 26 Nov 2016

Date of Proposed Permit: 26 Nov 2016

District Engineer: Yiqiu Lin

Permit No: O-0852-16-V

Plant ID: 0852

SIC Code: 8221

NAICS: 611310

Introduction:

This permit will be issued pursuant to: (1) Regulation 2.16, (2) Title 40 of the Code of Federal Regulations Part 70, and (3) Title V of the Clean Air Act Amendments of 1990. Its purpose is to identify and consolidate existing District and Federal air requirements and to provide methods of determining continued compliance with these requirements.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO₂), carbon monoxide (CO), 1 hr and 8 hr ozone (O₃), and particulate matter less than 10 microns (PM₁₀); and is a non-attainment area for the 1997 standard for particulate matter less than 2.5 microns (PM_{2.5}), unclassifiable for the 2012 standard for particulate matter less than 2.5 microns (PM_{2.5}) and partial non-attainment area for sulfur dioxide (SO₂).

Application Type/Permit Activity:

- Initial Issuance
- Permit Revision
 - Administrative
 - Minor
 - Significant
- Permit Renewal

Compliance Summary:

- Compliance certification signed
- Compliance schedule included
- Source is out of compliance
- Source is operating in compliance

I. Source Information

1. **Product Description:** The source is a university that primarily engaged in furnishing academic courses and granting degrees at baccalaureate or graduate levels.
2. **Process Description:** The Steam and Chilled Water Plant, University of Louisville Belknap Campus, provides steam for heating and chilled water for air conditioning. There are also lithographic presses, small boilers, and emergency generators in various buildings.
3. **Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.
4. **Emission Unit Summary:**

| Emission Unit | Equipment Description |
|----------------------|---|
| U1/U2 | Three (3) natural gas/fuel oil/coal boilers |
| U5 | Three (3) lithographic sheet feed presses |
| U7 | One (1) portable gasoline storage tank |
| U8 | Six (6) emergency generators |
| U9 | Various hot water boilers and steam boilers |
| U10 | One (1) groundwater remediation system |
| U11 | One (1) Theatre Arts Spray Booth |

5. **Fugitive Sources:** There are fugitive VOC or HAP emissions from the parts cleaner, lithography presses, groundwater treatment system, and gasoline storage tank.
6. **Permit Revisions:**

| Revision No. | Permit No. | Issue Date | Public Notice Date | Change Type | Change Scope | Description |
|---------------------|-------------------|-------------------|---------------------------|--------------------|---------------------|--|
| Initial | 329-03-TV | 11/17/2004 | 8/15/2004 | Initial | Entire Permit | Initial Permit Issuance |
| R1 | 329-03-TV (R1) | 11/18/2004 | N/A | Admin. Revision | U1/U2 | Corrected the usage limits of fuel oil, natural gas and coal |

| Revision No. | Permit No. | Issue Date | Public Notice Date | Change Type | Change Scope | Description |
|--------------|----------------|------------|--------------------|---|---------------|---|
| R2 | 329-03-TV (R2) | 12/27/2010 | 09/15/2010 | Renewal and Revision | Entire Permit | Scheduled permit renewal; Incorporation of construction permit; Incorporation of pollution prevention operation plan; Significant and minor permit revisions; Insignificant activities list update. |
| R3 | 329-03-TV (R3) | 06/27/2013 | 05/09/2013 | Admin. Revision Significant Revision | U1/U2, U10 | Incorporation of construction permit (Admin): 47-10-C (New boiler #1) 30142-10-C (groundwater remediation system) 33168-11-C (New boiler #3) 37071-13-C (Paint booth) Incorporation of the Area Source MACT requirements (Sig) |
| R4 | O-0852-16-V | 12/28/2016 | 11/26/2016 | Renewal | Entire Permit | Operating permit renewal; added regulatory citation to the TAC standards and updated S2.c.ii. in the Plant-Wide Emission Unit |

7. Construction Permit History:

| Permit No. | Issue Date | Description |
|------------|------------|--|
| 47-10-C | 6/30/2010 | One (1) natural gas boiler (#1) with flue gas recirculation and low NOx burners, rated heat input 99 MMBtu/hr |
| 30142-10-C | 2/22/2011 | One (1) custom-made groundwater remediation system controlled by one (1) dual carbon adsorption system |
| 33168-11-C | 9/30/2011 | One (1) natural gas boiler (#3) with distillate fuel oil backup, equipped low NOx burners and using flue gas recirculation |
| 37071-13-C | 4/24/2013 | One (1) Theatre Arts Spray Booth for aerosol spray paint can or RIT dye application to stage production clothing, shoes, and jewelry |

8. Applications and Related Documents

| Application No. | Date | Description |
|-----------------|------------|---|
| 72697 | 7/29/2015 | TV Permit Renewal Application |
| 77183 | 5/11/2016 | Performance tune-up and energy assessment |
| 80554 | 11/21/2016 | Comments on pre-draft TV permit |

9. Emission Summary:

| Pollutant | District Calculated Actual Emissions (tpy) 2014 Data | Pollutant that triggered Major Source Status (based on PTE) |
|------------------|--|---|
| CO | 11.21 | Yes |
| NO _x | 8.03 | Yes |
| SO ₂ | 0.11 | Yes |
| PM ₁₀ | 2.50 | No |
| VOC | 0.95 | No |
| Total HAPs | 0.26 | No |
| Single HAP | | No |
| Hexane | 0.24 | |

Note: The source is potentially major for CO, NO_x, and SO₂. However the source has accepted limits to restrict their potential to emit to below the major source threshold.

10. Applicable Requirements:

PSD 40 CFR 60 SIP 40 CFR 63
 NSR 40 CFR 61 District-Origin Other

11. Referenced MACT Federal Regulations:

40 CFR 63 Subpart JJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

40 CFR 63 Subpart ZZZZ National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

12. Referenced non-MACT Federal Regulations:

| | |
|----------------------------------|---|
| 40 CFR 60 Subpart D _c | Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units |
| 40 CFR 60 Subpart IIII | Standards of Performance for Stationary Compression Ignition Internal Combustion Engines |

II. Regulatory Analysis

- 1. Acid Rain Requirements:** The source is not subject to the Acid Rain Program.
- 2. Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.
- 3. Prevention of Accidental Releases 112(r):** The source does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, Chemical Accident Prevention Provisions, in a quantity in excess of the corresponding specified threshold amount.
- 4. 40 CFR Part 64 Applicability Determination:** The source is major for NO_x, CO, and SO₂ based on the plant-wide uncontrolled PTE evaluation. There are no equipment that relies on control devices to achieve compliance with any emission standards. Therefore the source is not subject to 40 CFR Part 64 - *Compliance Assurance Monitoring for Major Stationary Sources*.
- 5. Basis of Regulation Applicability**

a. Plant-wide

University of Louisville, Belknap Campus is potentially a major source for CO, NO_x, SO₂, and Greenhouse Gases. Regulation 2.16 - *Title V Operating Permits* establishes requirements for major sources.

The source is subject to a plant-wide limit of 100 tons per year for NO_x emissions to avoid Regulation 6.42. To fulfill the 100 tons per year NO_x limit, the source accepted plant-wide fuel usage limits for fuel oil, diesel, and natural gas. With the fuel material usage limits, the CO, and SO₂ emissions cannot exceed their limits uncontrolled.

Regulations 5.00 5.20, 5.21, and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards. University of Louisville submitted the TAC Environmental Acceptability (EA) Demonstration to the District in December, 2006. SCREEN3 air dispersion modeling was performed for each emission unit that has non-*de minimis* TAC emissions. The District reviewed the EA Demonstration based on the submitted SCREEN3 modeling results, 2013 revised TAC benchmark values, and updated emission units. The District accepted that compliance with the STAR EA Goals was demonstrated. The following table demonstrates that the carcinogen risk and non-carcinogen risk values comply with the STAR EA goals required in Regulation 5.21.

| Plant-wide Sum | All existing & new | | All new P/PE | |
|--|--------------------|-------|--------------|-------|
| | Model | Goal | Model | Goal |
| Industrial Total R _C | 1.98 | < 75 | 0.59 | < 38 |
| Non-Ind. Total R _C | 0.24 | < 7.5 | 0.17 | < 3.8 |
| Industrial Total R _{NC} (max) | 0.01 | < 3.0 | | |
| Non-Ind. Total R _{NC} (max) | 0.00 | < 1.0 | | |

Regulation 2.16, section 4.1.9.1 and 4.1.9.2 requires monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.

Regulation 2.16, section 4.3.5, requires stationary sources for which a Title V operating permit is issued shall submit an annual compliance certification by April 15 of each calendar year. In addition, as required by Regulation 2.16, section 4.1.9.3, the source shall submit compliance reports at least every six months to show compliance with the permit. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.16, section 3.5.11.

b. Emission Unit U1/U2 - Three (3) boilers

i. Equipment:

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|---|--|---|
| E1 | One (1) natural gas fired boiler (#1), rated heat input capacity 99 MMBtu/hr (2010) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.02, 7.06, 40CFR60 Subpart Dc | Regulation 5.00, etc. establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values. |

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|--|---|
| E2 | One (1) fuel oil fired boiler (#2), rated heat input capacity 100 MMBtu/hr (1978) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.06 40 CFR63 Subpart JJJJJ | New indirect heat exchangers for which having a capacity less than 250 MMBtu/hr and commenced after September 1, 1972 are subject to Regulation 7.06. The institutional steam generating unit is subject to 40 CFR60, Subpart Dc if the commencement date of construction is after June 9, 1989 and the heat input capacity is less than 100 MMBtu/hr, but greater than 10 MMBtu/hr. |
| E3 | One (1) natural gas boiler (#3) with distillate fuel oil backup, rated heat input 99.6 MMBtu/hr when burning natural gas and 99.3 when burning fuel oil (2012) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.02, 7.06, 40CFR60 Subpart Dc, 40 CFR63 Subpart JJJJJ | The institutional steam generating unit is subject to 40 CFR63, Subpart JJJJJ since it is located at an area source of HAP and combusts distillate oil as backup fuel. |

i. **Standards/Operating Limits**

1) **PM**

- (a) The boilers are subject to Regulation 7.06. The emission standard for PM is determined in accordance with Regulation 7.06, section 4.1.4 as follows:

$$\text{Total Heat Input Capacity} = 249 \text{ MMBtu/hr}$$

$$\text{PM limit} = 1.919 \times (249)^{-0.535} = 0.10 \text{ lb/MMBtu}$$

- (b) 40 CFR 60.43c(e) establishes standard for PM for new oil-fired boilers.
- (c) U of L has completed the June 16, 2010 approved Pollution Prevention Operating Plan by September 20, 2013. All the coal-fired boilers have been converted into natural gas/fuel oil boilers according to the Pollution Prevention Operating Plan. Using AP-42 emission factors, the 0.10 lb/MMBtu standard cannot be exceeded when combusting natural gas or distillate fuel oil. Since the PM standards in 40 CFR 60 Subpart Dc and 40 CFR 63 Subpart JJJJJ are more stringent than that in Regulation 7.06, the source need only demonstrate compliance with the PM standard in 40 CFR 60 Subpart Dc and 40 CFR 63 Subpart JJJJJ.

2) **SO₂**

- (a) In accordance with Regulation 7.06, section 5.1.3, the emission standards for SO₂ are determined as the following:

Total Heat Input Capacity = 249 MMBtu/hr

Liquid/Gas: $7.7223 \times (249)^{-0.4106} = 0.80 \text{ lb/MMBtu}$

- (b) 40 CFR 60.42c(d) establishes standard for SO₂ for new oil-fired boilers.

3) **Opacity**

- (a) The boilers are subject to the opacity standards in accordance with Regulation 7.06, section 4.2.

- (b) 40 CFR 60.43c(c) establishes standard for opacity for new oil-fired boilers.

4) **HAP**

- (a) With the limits of natural gas, fuel oil, and coal usage as specified in the Plant-wide Standards, the source is below major source thresholds for HAP. Therefore, the source is not subject to 40 CFR 63 Subpart DDDDD, but is subject to 40 CFR 63 Subpart JJJJJ as an area source of HAPS emissions.

- (b) 40 CFR 63.11201 establishes emission limits, work practice standards, and operating limits for oil-fired boilers.

5) **TAC**

- (a) The source requested a fuel oil usage limit in order to be in compliance with the STAR Program.

ii. **Monitoring and Recordkeeping**

1) **SO₂**

40 CFR 60.42c and 48c establish monitoring and record keeping requirements for this pollutant.

2) **HAP**

- (a) 40 CFR 63.11210 through 11215 establishes monitoring and recording keeping requirements to

ensure initial and continuous compliance with this subpart.

iii. **Reporting**

1) **SO₂**

40 CFR 60.42c establish reporting requirements for this pollutant.

2) **HAP**

40 CFR 63.11215 establishes reporting requirements for fuel oil-fired boilers.

iv. **Testing**

1) 40 CFR 60, Subpart D_c establishes testing requirements for SO₂, PM, and opacity for new fuel oil-fired boilers.

2) 40 CFR 63, Subpart JJJJJJ establishes testing requirements for PM and opacity for fuel-oil-fire boilers.

c. **Emission Unit U5 – Three lithographic sheet feed presses**

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|---|---|
| E6 | One AB Dick, 9985 sheet fed litho press, capacity 3,500 sheets/hr (2006) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23 and 7.25 | Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values. |
| E7 | One Hamada 660 sheet fed litho press, capacity 3,500 sheets/hr (2006) | | New VOC emission facilities for which construction or modification is commenced after June 13, 1979 are subject to Regulation 7.25. |
| E8 | One Heidelberg KORS sheet fed litho press, capacity 3,500 sheets/hr (2006) | | |

ii. **Standards/Operating Limits**

1) **VOC**

(a) Regulation 7.25, section 3 establishes VOC

standards for the affected facilities. The source is required to utilize best available control technology (BACT) and set out the designated specifications as permit conditions to insure compliance with the requirements.

- (b) University of Louisville requested an allowable emission limit of less than 5 tons per year for the printing presses E6, E7, and E8. The total VOC emissions from all facilities subject to Regulation 7.25, including the lithographic presses (U5), the groundwater remediation system (U10), and the paint spray booth (U11), are subject to the 5 tons-per-year limit.
- (c) Construction permit 413-06-C requires that permits issued shall be subject to the terms and conditions set forth and embodied in the permit as the District may deem necessary to insure compliance with its standards. Such terms and conditions may include maintenance and availability of records relating to operations which may cause or contribute to air pollution including periodic sampling of the affected facilities.

2) **TAC**

- (a) According to Regulation 5.21, section 2.1, TAC emissions from the printing presses under this unit are *de minimis*, either by potential uncontrolled emissions or MSDS weight percent.

d. **Emission Unit U7** – One portable gasoline storage tank

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|--|--|
| E10 | One 550 gallon portable gasoline storage tank (2009) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 6.40, and 7.15 | <p>Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values.</p> <p>Regulation 6.40 establishes the requirements for refueling of motor vehicles at a gasoline dispensing facility.</p> <p>New gasoline storage tank for which construction or modification is commenced after June 13, 1979 are subject to Regulation 7.15.</p> |

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.15, section 3 establishes installation, maintenance, and operation requirements for the storage tanks.
- (b) In order to be exempted from Regulation 6.40, section 2.2.1, the source shall not exceed an average of 10,000 gallons of throughput per month.

2) **TAC**

- (a) According to Regulation 5.21, section 2.6, emissions from motor vehicle fueling or refueling are *de minimis*.

iii. **Reporting**

1) **VOC**

Regulation 6.40, section 2.2.2 establishes reporting requirements for this equipment.

e. **Emission Unit U8** – Two emergency generators

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|-----------------------|---|------------------------------------|---|
| E12 | One Caterpillar SR4 diesel generator, rated at 1,208 HP (1991) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23 | Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values. |
| E15 | One Caterpillar 3508 diesel generator, rated at 1,342 HP (2005) | | |

ii. **Standards/Operating Limits**

1) **TAC**

- (a) According to 40 CFR 63.6590(b)(3), the emergency generators under this unit are exempt from 40 CFR 63, Subpart ZZZZ since they are existing (before 6/12/2006) institutional emergency RICE located at an area source of HAP emissions. The proposed emergency generators are not subject to 40 CFR 60, Subpart IIII because they were installed before July 12, 2006.
- (b) In accordance with Regulation 5.21, section 4, and utilizing AP-42 emission factors and the 500 hours of operating limits, it has been determined that the uncontrolled TAC emissions from this unit are *de minimis*.

f. **Emission Unit U9** – Various hot water boilers and steam boilers

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|-----------------------|--|---|---|
| E16 | Two natural gas fired hot water boilers, 1.0 MMBtu/hr (2010) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 6.07 (existing), 7.06 (new) | Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values. |
| E17 | One natural gas fired hot water boiler, 3.07 MMBtu/hr (1981) | | |

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|---|---|--|
| E18 | Two natural gas fired hot water boilers, 1.7 MMBtu/hr (1990) | | Existing indirect heat exchangers which have a total capacity less than 250 MMBtu/hr and commenced before September 1, 1972 or which have a total capacity more than 250 MMBtu/hr and commenced before August 17, 1971 are subject to Regulation 6.07. New indirect heat exchangers which have a total capacity less than 250 MMBtu/hr and commenced after September 1, 1972, or which have a total capacity more than 250 MMBtu/hr and commenced after August 17, 1971 are subject to Regulation 7.06. |
| E19 | One natural gas fired hot water boiler, 3.06 MMBtu/hr (1966) | | |
| E20 | Three natural gas fired hot water boilers, 1.05 MMBtu/hr (1969) | | |
| E21 | Two natural gas fired hot water boiler, 1.0 MMBtu/hr (2010) | | |
| E22 | Two natural gas fired hot water boilers, 2.0 MMBtu/hr (2003) | | |
| E23 | Two natural gas fired hot water boilers, 1.38 and 2.25 MMBtu/hr (1985 and 1986) | | |
| E24 | Two natural gas fired hot water boilers, 2.0 and 1.5 MMBtu/hr (1998 and 2010) | | |
| E25 | One natural gas fired hot water boiler, 2.0 MMBtu/hr (2005) | | |
| E26 | Two natural gas fired hot water boilers, 2.0 and 3.0 MMBtu/hr (2005) | | |
| E27 | Two natural gas fired hot water boilers, 2.0 MMBtu/hr for each (2007) | | |
| E29 | One natural gas fired steam boiler, 4.2 MMBtu/hr (1986) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 6.07 (existing), 7.06 (new) | Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values. |
| E30 | One natural gas fired steam boiler, 2.1 MMBtu/hr (1995) | | Existing indirect heat exchangers which have a total capacity less than 250 MMBtu/hr and commenced before September 1, 1972 or which have a total capacity more than 250 MMBtu/hr and commenced before August 17, 1971 are subject to Regulation 6.07. |
| E31 | One natural gas fired steam boiler, 1.34 MMBtu/hr (1995) | | |
| E32 | One natural gas fired steam boiler, 1.53 | | |

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|-----------------------|--|
| | MMBtu/hr (1980) | | |
| E33 | One natural gas fired steam boiler, 1.82 MMBtu/hr (2009) | | New indirect heat exchangers which have a total capacity less than 250 MMBtu/hr and commenced after September 1, 1972, or which have a total capacity more than 250 MMBtu/hr and commenced after August 17, 1971 are subject to Regulation 7.06. |
| E34 | Three natural gas fired steam boilers, 3.5 MMBtu/hr for each (2005, 2010) | | |
| E35 | Two natural gas fired domestic hot water boilers, 1.44 and 1.5 MMBtu/hr (2000, 2010) | | |
| E36 | One natural gas fired domestic hot water boiler, 2.0 MMBtu/hr (1998) | | |
| E37 | Two natural gas fired domestic hot water boilers, 1.0 MMBtu/hr (2005) | | |
| E38 | Two natural gas fired domestic hot water boilers, 1.0 MMBtu/hr (2007) | | |

ii. **Standards/Operating Limits**

1) **PM**

- (a) The total heat input capacity for boilers subject to Regulation 6.07 is less than 10 MMBtu/hr. In accordance with Regulation 6.07, section 3.1, the emission standards for this unit is 0.56 lb/MMBtu.
- (b) The total heat input capacity for boilers subject to Regulation 7.06 is more than 250 MMBtu/hr. In accordance with Regulation 7.06, section 4.1.4, the emission standards for this unit is 0.1 lb/MMBtu.
- (c) The District has performed a one-time PM and SO₂ compliance demonstration for the boiler, using AP-42 emission factors and combusting natural gas, and the emission standards cannot be exceeded. Therefore, there are no monitoring, record keeping, and reporting requirements for this boiler with

respect to PM and SO₂ emission limits.

2) **SO₂**

- (a) The total heat input capacity for boilers subject to Regulation 6.07 is less than 10 MMBtu/hr. In accordance with Regulation 6.07, section 4.1, the emission standards for this unit is 1.0 lb/MMBtu.
- (b) The total heat input capacity for boilers subject to Regulation 7.06 is more than 250 MMBtu/hr. In accordance with Regulation 7.06, section 5.1.1, the emission standards for this unit is 0.8 lb/MMBtu.
- (c) The District has performed a one-time PM and SO₂ compliance demonstration for the boiler, using AP-42 emission factors and combusting natural gas, and the emission standards cannot be exceeded. Therefore, there are no monitoring, record keeping, and reporting requirements for this boiler with respect to PM and SO₂ emission limits.

3) **Opacity**

- (a) Regulation 6.07, section 3.2 and Regulation 7.06, section 4.2 limit the visible emissions to 20% opacity.
- (b) The District has determined that using a natural gas fired boiler will inherently meet the 20% opacity standard. Therefore, the company is not required to perform periodic monitoring to demonstrate compliance with the opacity standard.

4) **TAC**

- (a) The TAC emissions from the combustion of natural gas are considered to be “*de minimis* emissions” per Regulation 5.21, section 2.7.

g. **Emission Unit U10** – One groundwater remediation system

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|--|---|
| E39 | One custom-made groundwater remediation system, 20 gallon/min (2011) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, and 7.25 | <p>Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values.</p> <p>Regulation 7.25 establishes requirements for new VOC emission facilities for which construction or modification is commenced after June 13, 1979.</p> |

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.25, section 3 establishes VOC standards for the affected facilities. The source is required to utilize best available control technology (BACT) and set out the designated specifications as permit conditions to ensure compliance with the requirements. The source accepted a plantwide 5 tons per year limit to avoid BACT.
- (b) The total VOC emissions from all facilities subject to Regulation 7.25, including the lithographic presses (U5), and groundwater remediation system (U10), and paint spray booth (U11), are subject to the 5 tons per year limit.

2) **TAC**

- (a) The potential uncontrolled emissions of all TACs are below the *de minimis* threshold levels except for Benzene. Benzene emission can exceed its *de minimis* level (216.0 lb/yr) uncontrolled, but not controlled. In lieu of performing environmental acceptability demonstration by modeling, University of Louisville is required to demonstrate that the Benzene emission is below *de minimis* level. The *de minimis* emission limit for Benzene was changed from 62.4 lb/yr to 216.0 lb/yr in the District's 2013 updated TAC list.

h. **Emission Unit U11 – One Theatre Arts Spray Booth**

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|--|--|---|
| E40 | One Theatre Arts Spray Booth for aerosol can spray paint or RIT dye, equipped with natural gas heater and a fiber filter. (2013) | 5.00, 5.01, 5.20, 5.21, 5.22, 5.23, 7.08, and 7.25 | <p>Regulation 5.00 establishes the requirements for Environmental Acceptability for TACs. The source is a Group I company with Category 1TACs which could exceed the <i>de minimis</i> values.</p> <p>Regulation 7.08 established requirements for new process operations that are subject to PM standards and were installed after September 1, 1976.</p> <p>Regulation 7.25 establishes requirements for new VOC emission facilities for which construction or modification is commenced after June 13, 1979.</p> |

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.25, section 3 establishes VOC standards for all affected facilities at a source. The source is required to utilize best available control technology (BACT) if total VOC emissions from all affected facilities exceed 5 tons per year.
- (b) The total VOC emissions from all facilities subject to Regulation 7.25, including the lithographic presses (U5), and groundwater remediation system (U10), and paint spray booth (U11), are subject to the 5 tons per year limit.

2) **PM**

- (a) In accordance with Regulation 7.08, Table 1, PM standards for the paint booth is 2.34 lb/hr.

(b) A one-time PM compliance demonstration has been performed for this equipment and the lb/hr standard cannot be exceeded uncontrolled. Therefore, there are no monitoring, record keeping, and reporting requirements with respect to PM lb/hr emission limits.

3) **Opacity**

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

4) **TAC**

(a) It was demonstrated that the TAC emissions from the paint booth are *de minimis* uncontrolled and TAC emissions from the natural gas heater are *de minimis* per definition (Regulation 5.21, section 2.7). Therefore this unit is in compliance with STAR Program.

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** N/A
4. **Operational Flexibility:** The source did not request alternative operating scenario in its Title V application.
5. **Compliance History:**

| Date | Regulation Violated | Result |
|------------|--|---------|
| 10/14/1980 | KRS 77.155 (Opacity) Reg. 7.06, Section (4)(b) for heat exchangers Reg. 1.07, Section (2) Start-up | Settled |
| 8/15/1990 | Reg. 5.13, Section 4(a) | Settled |
| 10/4/1991 | Reg. 2.03, Section 1(b) | Settled |
| 12/22/2008 | Reg. 2.16, Section 5 | Settled |

| Date | Regulation Violated | Result |
|-----------|----------------------|-------------------|
| 2/17/2010 | Reg. 5.04, Section 3 | Board Order 11-01 |

6. Calculation Methodology or Other Approved Method:

Generally, emissions are calculated by multiplying the throughput (ton, MMcf, gallons, etc) or hours of operation of the equipment by the appropriate emission factor and accounting for any control devices unless otherwise approved in writing by the District.

| Unit ID | Emi. Point ID | Emission Point Description | Pollutant | Uncontr. Emission Factor | Contr. Emission Factor | Unit | Emission Factor Sources | Control Efficiency & Source |
|-----------|---------------|--------------------------------|--------------|--|------------------------|-------|-------------------------|-----------------------------|
| U1/ U2 | E1 | Natural gas boiler | Various | Emission factors from AP-42, 1.4, Natural Gas Combustion | | | | |
| | E2 | Fuel oil boiler | Various | Emission factors from AP-42, 1.3, Fuel Oil Combustion | | | | |
| | E3 | Natural gas/fuel oil boiler | Various | Emission factors from AP-42, 1.3 and 1.4 | | | | |
| U5 | E6 | Litho. press | Various | Mass balance method | | | | |
| | E7 | Litho. press | Various | Mass balance method | | | | |
| | E8 | Litho. press | Various | Mass balance method | | | | |
| U7 | E10 | Gasoline tank | VOC | EPA TANK4.0 Program | | | | |
| U8 | E12 | Emerg. generator | Various | Emission factors from AP-42, 3.3, Gasoline/Diesel Industrial Engines | | | | |
| | E15 | Emerg. generator | Various | Emission factors from AP-42, 3.3, Gasoline/Diesel Industrial Engines | | | | |
| U9 | E16 - E38 | Small boilers | Various | Emission factors from AP-42, 1.4, Natural Gas Combustion | | | | |
| U10 | E39 | Groundwater remediation system | VOC | 0.29 | 0.003 | lb/hr | Site analytical results | 99%, Option 1 |
| | | | Benzene | 0.077 | 7.7×10^{-4} | lb/hr | Site analytical results | 99%, Option 1 |
| | | | Ethylbenzene | 0.018 | 1.8×10^{-4} | lb/hr | Site analytical results | 99%, Option 1 |
| | | | Toluene | 0.065 | 6.5×10^{-4} | lb/hr | Site analytical results | 99%, Option 1 |
| | | | Xylene | 0.13 | 1.3×10^{-3} | lb/hr | Site analytical results | 99%, Option 1 |
| U11 | E40 | Art spray booth | Various | Mass balance method | | | | |

Note:

- Options for control efficiency determination:
 - Option 1: Use District pre-approved control efficiency
 - Option 2: Submit a signature guarantee from the control device manufacture stating the control device efficiency
 - Option 3: Perform stack test. See Note 3 for general testing requirements.
- Until the District receives a signature guarantee from the control device manufacturer stating the control device efficiency is higher (Option 2), or an approved stack test (Option 3), the pre-approved efficiency (Option 1) will be used in all calculations to demonstrate compliance with applicable standards and calculations for emission inventory.

7. Insignificant Activities

| Description | Quan. | PTE (tpy) | Basis for Exemption |
|---|-------|-----------------------|-----------------------------|
| Non-halogenated cold solvent parts cleaner (See unit IA2, previous U4) | 1 | 0.02 VOC | Reg. 2.16, section 1.23 |
| New emergency generator, 805 HP (See unit IA3) | 1 | 4.83 NOx | Reg. 2.16, section 1.23 |
| Existing diesel emergency generators installed before 6/12/2006 (See Note 8) | 17 | 4.83 NOx | Reg. 2.16, section 1.23 |
| Existing natural gas emergency generators installed before 6/12/2006 (See Note 8) | 6 | 1.03 NOx | Reg. 2.16, section 1.23 |
| Combustion Sources <1.0 MMBtu/hr, including 12 hot water boilers, 2 steam boilers, and 15 domestic hot water boilers (See Note 9) | 29 | 0.43 NOx | Regulation 1.02, Appendix A |
| Silver stream color+ negative maker | 1 | 0.01 VOC | EPA White Papers |
| Digital dry toner printers | 3 | 0 | EPA White Papers |
| Residential/Domestic Equipment | 637 | 0 | Regulation 1.02, Appendix A |
| Emergency relief vents and ventilating systems (not otherwise regulated) | 426 | 0 | Regulation 1.02, Appendix A |
| Academic Labs for Research and Development | <100 | 0 | Regulation 1.02, Appendix A |
| Diesel Fuel Storage Tanks used for emergency generators and boilers | 28 | 0.01 VOC | Regulation 1.02, Appendix A |
| Four (4) 280 gallon used oil storage tanks and three (3) 294 gallon used cooking grease tank | 7 | 0.01 VOC | Regulation 1.02, Appendix A |
| Natural gas fired crucible furnace, capacity 1.75 gal (0.95 MMBtu/hr), for melting aluminum and bronze used in Fine Arts Department | 1 | 0.41 NOx | Regulation 1.02, Appendix A |
| Soil or Groundwater Remediation Projects - Passive or total removal | 1 | 0.01 VOC | Regulation 1.02, Appendix A |
| Lab ventilating and exhausting systems for nonradioactive materials | 80 | 0.39 VOC | Regulation 1.02, Appendix A |
| Cooling Towers | 7 | 0.87 PM ₁₀ | Reg. 2.16, section 1.23 |

- 1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements pursuant to Regulation 2.16 section 3.5.4.1.4.

- 2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements as required by Regulation 2.16 section 4.1.9.4.
- 3) The Insignificant Activities Table is correct as of the date the permit was proposed for review by U.S. EPA, Region 4.
- 4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- 5) The owner or operator shall submit an updated list of insignificant activities that occurred during the preceding year pursuant to Regulation 2.16 section 4.3.5.3.6.
- 6) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions, or use Potential to Emit (PTE) to be reported on the annual emission inventory.
- 7) The District has determined pursuant to Regulation 2.16 section 4.1.9.4 that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.
- 8) The emergency generators in the following table meet the definition of insignificant activity in Regulation 2.16, section 1.23. According to 40 CFR 63.6585(f)(3), existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii) are not subject to 40 CFR 63, Subpart ZZZZ.

| Bldg No. | Building Name | Fuel Type | Capacity (Btu/hr) | Capacity (HP) | Tank Location |
|----------|------------------------|-------------|-------------------|---------------|-------------------------|
| 90 | Business School | Diesel | 426,875 | 168 | NE basement Mech. Room |
| 36 | Chemistry | Diesel | 211,730 | 83 | NW basement Mech. Room |
| 84 | Education Bldg. | Diesel | 341,500 | 134 | N end Mech. Room |
| 9 | Ekstrom Library | Diesel | 1,366,000 | 537 | SE end Mech. Room |
| 81 | Houchens | Diesel | 102,450 | 40 | SE corner of Bldg. |
| 19 | Law School | Diesel | 102,450 | 40 | W/S basement Mech. |
| 28 | Duthie | Diesel | 341,500 | 134 | SE side of Bldg. |
| 23 | Lutz Hall | Diesel | 1,366,000 | 537 | W of MITC UG Bldg |
| 83 | Music School | Diesel | 443,950 | 175 | E side of Bldg. |
| 16 | SAC | Diesel | 853,750 | 336 | NW basement Mech. Room |
| 70 | Steam & Chill | Diesel | 1,366,000 | 537 | SE corner Mech. Room |
| 88 | Strickler | Diesel | 204,900 | 81 | SW basement Mech. Room |
| 99/31 | Vogt Bldg/Sackett Hall | Diesel | 341,500 | 134 | N central Mech. Room |
| 99 | Vogt Bldg | Diesel | 546,400 | 215 | S side of Bldg. |
| 48 | University Tower | Diesel | 683,000 | 268 | SW side of Bldg. |
| 75 | Public Safety | Diesel | 341,500 | 134 | SW corner of Bldg. |
| 108 | Cardinal Stadium | Diesel | 2,049,000 | 805 | NW end of Stadium Bldg. |
| 108 | Cardinal Stadium | Diesel | 2,049,000 | 805 | NE end of Stadium Bldg. |
| 18 | Life Sciences | Natural Gas | 341,210 | 134 | W end of Bldt |
| 45 | Louisville Hall | Natural Gas | 341,210 | 134 | E side of Bldg. |
| 47 | Unitas Tower | Natural Gas | 102,363 | 40 | E end of Bldg. |
| 9 | Ekstrom Library | Natural Gas | 426,513 | 168 | N side of Bldg. |
| 12 | Natatorium | Natural Gas | 85,303 | 34 | W side of Bldg. |
| 14 | YUM Center | Natural Gas | 170,605 | 67 | W side of Bldg. |
| 123 | Student Rec Center | Natural Gas | 511,815 | 201 | W side of Bldg. |
| 124 | Lynn Soccer Stadium | Natural Gas | 204,726 | 80 | E side of Bldg. |

- 9) List of small water boilers, steam boilers, and domestic hot water boilers with capacity less than 1.0 MMBtu/hr:

| Location | Boiler Type | Capacity (Btu/hr) | Location Description |
|------------------|------------------|-------------------|--------------------------|
| Playhouse | hot water boiler | 500,000 | Basement Mech Room |
| University Club | hot water boiler | 725,000 | Basement Mech Room |
| University Club | hot water boiler | 725,000 | Basement Mech Room |
| Minority Affairs | hot water boiler | 225,000 | Mech Room |
| Red Barn | hot water boiler | 212,500 | 2nd Floor Mech Room |
| Triangle Frat | hot water boiler | 360,000 | Hatch Basement Mech Room |
| Sigma Chi | hot water boiler | 225,000 | Basement Mech Room |
| Duthie | hot water boiler | 700,000 | Central Mech Room |
| Public Safety | hot water boiler | 500,000 | North Mech Room |

| Location | Boiler Type | Capacity (Btu/hr) | Location Description |
|-----------------|---------------------------|-------------------|---------------------------|
| Public Safety | hot water boiler | 990,000 | South Mech Room |
| Cardinal Park | hot water boiler | 794,000 | South Mech Room |
| Cardinal Park | hot water boiler | 794,000 | North Mech Room |
| Fairfax | hot water boiler | 500,000 | East Mech Room |
| SAC | steam boiler | 358,920 | W Mech Penthouse |
| SAC | steam boiler | 650,000 | Flextube-W Mech Penthouse |
| SAC | domestic hot water boiler | 360,000 | W Mech Penthouse |
| SAC | domestic hot water boiler | 360,000 | W Mech Penthouse |
| Life Science | domestic hot water boiler | 360,000 | Basement Mech Room |
| Life Science | domestic hot water boiler | 360,000 | Basement Mech Room |
| University Club | domestic hot water boiler | 500,000 | Basement Storage Area |
| Threlkeld | domestic hot water boiler | 360,000 | Basement Mech Room |
| Threlkeld | domestic hot water boiler | 360,000 | Basement Mech Room |
| Threlkeld | domestic hot water boiler | 360,000 | Basement Mech Room |
| Miller Hall | domestic hot water boiler | 360,000 | Basement Mech Room |
| Miller Hall | domestic hot water boiler | 360,000 | Basement Mech Room |
| Miller Hall | domestic hot water boiler | 360,000 | Basement Mech Room |
| Louisville Hall | domestic hot water boiler | 800,000 | Basement Mech Room |
| Louisville Hall | domestic hot water boiler | 800,000 | Basement Mech Room |
| Cardinal Park | domestic hot water boiler | 720,000 | South Mech Room |
| Cardinal Park | domestic hot water boiler | 720,000 | South Mech Room |

8. Basis of Regulation Applicability for IA units

a. **Emission Unit IA2** – One non-halogenated cold solvent parts cleaner

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|----------------|---|-----------------------|--|
| E5 | One non-halogenated cold solvent metal parts washer with a secondary reservoir (1986) | 6.18 | Regulation 6.18 establishes the requirements for solvent metal cleaning equipment. |

ii. **Standards/Operating Limits**

1) **VOC**

Regulation 6.18, section 4.1 through 4.3 establishes equipment requirements, operating requirements, and material requirements for cold cleaners.

iii. **Monitoring and Record Keeping**

1) **VOC**

Regulation 6.18, section 4.4 establishes record keeping requirements for cold cleaners.

b. **Emission Unit IA3 – One emergency generator**

i. **Equipment:**

| Emission Point | Description | Applicable Regulation | Basis for Applicability |
|-----------------------|---|--|--|
| E14 | One (1) new diesel emergency generator, make Caterpillar, model 3412 and LC7 C18 (2010) | 40 CFR 60, Subpart IIII 40 CFR 63, Subpart ZZZZ | 40CFR60 Subpart IIII applies to manufacturers, owner or operators of new stationary compression ignition internal combustion engines. 40CFR63 Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP emissions. |

ii. **Standards/Operating Limits**

1) **Unit Operation**

40 CFR 60.4205, 4207, and 4211 establish unit operation requirements and fuel requirements for emergency generators.

iii. **Monitoring and Record Keeping**

1) **Unit Operation**

40 CFR 60.4209 and 4214 establish monitoring and record keeping requirements for emergency generators.

iv. **Reporting**

1) **Unit Operation**

40 CFR 60.4214 establishes reporting for emergency generators.