Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS

Title V, Construction / Operating
Permit: V-25-012
Murray State University
Murray, KY 42071
March 31, 2025
Ken Porter, Reviewer

SOURCE ID:	21-035-00049
AGENCY INTEREST:	37507
ACTIVITY:	APE20240001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code: 8221
Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☐ Yes ☒ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Calloway
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☒ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s): _____

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Murray State University (MSU) is a higher education facility located in Murray, Kentucky, in Calloway County. MSU has natural gas-fired boilers to provide space heat for its campus, generator engines to provide electricity for its campus in the event of emergencies, and insignificant activities. Insignificant activities consist of aboveground diesel storage tanks, underground diesel storage tanks, underground gasoline tanks, art kilns, and boilers with a heat input rate less than 1 MMBtu/hr.

SECTION 2 – CURRENT APPLICATION

Permit Number: V-25-012 Activities: APE20240001

Received: 10/10/2024 Application Complete Date(s): 3/11/2025

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
Murray State University submitted a renewal and an amendment application for their Title V permit. In the applications, Murray requested updates which include removal, replacement, moving, adding new and renaming of multiple units to their permit. An amendment to the renewal application was received 3/7/2025.

Emission Units:	Location	REMOVED		ADDED	
		Date of Construction	Capacity	Date of Construction	Capacity
EU01	Carr Health	1984	0.14 (MMBtu/hr)		
	Franklin College	1993	0.086 (MMBtu/hr)		
	General Services	1996	0.14 (MMBtu/hr)		
	Lovett	1993	0.097 (MMBtu/hr)		
	Mason Hall	1965	0.209 (MMBtu/hr)		
	Richmond College	1993	0.086 (MMBtu/hr)		
	SSC Building			1999	0.068 (MMBtu/hr)
EU03	Carr Hall			2024	107 hp
	CFSB (RSEC)	2017	61 hp		
	Curris Center	2015	234 hp		
EU04	Hart	1965	9.8 (MMBtu/hr)		
	Regents Hall (previously "Regents")	1969	5.23 (MMBtu/hr)		
		1969	5.23 (MMBtu/hr)		
	Richmond	1960	2.19 (MMBtu/hr)		
	White Hall (previously "White")	1965	5.23 (MMBtu/hr		
		1965	5.23 (MMBtu/hr)		

EU05	Alexander Hall - Heating Boiler 1 of 2 (previously “Alexander 1”)	2000	2.0 (MMBtu/hr)	2019	2.9 (MMBtu/hr)
	Alexander Hall - Heating Boiler 2 of 2 (previously “Alexander 2”)	2000	2.0 (MMBtu/hr)	2019	2.9 (MMBtu/hr
	Carr Health Boiler 1 of 3			2025	2.0 (MMBtu/hr)
	Carr Health Boiler 2 of 3			2025	2.0 (MMBtu/hr)
	Carr Health Boiler 3 of 3			2025	2.0 (MMBtu/hr)
	CFSB Center Boiler 1 of 3 (previously “CFSB”)	1995	1.8 (MMBtu/hr)	2019	1.9 (MMBtu/hr)
	CFSB Center Boiler 2 of 3 (previously “CFSB”)	1995	1.8 (MMBtu/hr)	2019	1.9 (MMBtu/hr)
	CFSB Center Boiler 3 of 3 (previously “CFSB”)	1995	1.8 (MMBtu/hr)	2019	1.9 (MMBtu/hr)
	CFSB	1995	1.8 (MMBtu/hr)		
	Curris Center (1st floor Mech)	2009	1.004 (MMBtu/hr)	2024	1.0 (MMBtu/hr)
	Curris Center	2009	1.004 (MMBtu/hr)	2024	1.0 (MMBtu/hr)
	Collins I&T Entire Building 1 of 2			2021	3.0 (MMBtu/hr)
	Collins I&T Entire Building 2 of 2			2021	3.0 (MMBtu/hr)
	Curris Center - Heating Boiler 1 of 2			2021	1.5 (MMBtu/hr)
	Curris Center - Heating Boiler 2 of 2			2021	1.5 (MMBtu/hr)
	Franklin Hall 1	2002	1.275 (MMBtu/hr)		
	Franklin Hall 2	2009	1.275 (MMBtu/hr)		
	Franklin Hall 3	2009	1.25 (MMBtu/hr)		
	Lovett Auditorium 1 of 2			2022	1.5 (MMBtu/hr)
	Lovett Auditorium 2 of 2			2022	1.5 (MMBtu/hr)
	Old Fine Arts Boiler 1 of 3			2025	2.0 (MMBtu/hr)
	Old Fine Arts Boiler 2 of 3			2025	2.0 (MMBtu/hr)
	Old Fine Arts Boiler 3 of 3			2025	2.0 (MMBtu/hr)
	Regents College Boiler 1 of 2 (previously “Regents”)			2025	4.0 (MMBtu/hr)
	Regents College Boiler 2 of 2 (previously “Regents”)			2025	4.0 (MMBtu/hr)
	Richmond	2000	1.26 (MMBtu/hr)		
	White College Boiler 1 of 2 (previously “White”)			2023	4.0 (MMBtu/hr)

	White College Boiler 2 of 2 (previously "White")			2023	4.0 (MMBtu/hr)
EU06	Biology Building - Boiler 1 of 2 (previously "Bio Sciences")	2003	12.56 (MMBtu/hr)		
	Biology Building - Boiler 2 of 2 (previously "Bio Sciences")	2007	12.56 (MMBtu/hr)		
	Biology Building - Boiler 1 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)
	Biology Building - Boiler 2 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)
	Biology Building - Boiler 3 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)
	Biology Building - Boiler 4 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)
	Biology Building - Boiler 5 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)
	Biology Building - Boiler 6 of 6 (previously "Bio Sciences")			2025 (proposed)	4.0 (MMBtu/hr)

V-25-012 Emission Summary				
Pollutant	2024 Actual (tpy)	Previous PTE V-18-003 (tpy)	Change (tpy)	PTE V-25-012 (tpy)
CO	7.11	81.52	2.11	83.63
NO_X	7.96	159.29	0.61	159.9
PT	0.46	11.45	0.03	11.48
PM_{10}	0.46	11.45	0.00	11.45
$PM_{2.5}$	0.46	11.45	-0.10	11.35
SO_2	0.13	5.72	-0.19	5.53
VOC	0.40	10.84	-0.15	10.69
Lead	0.00	0.00	0.00	0.00
Greenhouse Gases (GHGs)				
Carbon Dioxide	5,373.53	94,340.18	4394.59	94,340.18
Methane	0.30	3.21	-0.07	3.21
Nitrous Oxide	0.10	1.70	0.24	1.7
CO2e:	5,410.83	94,926.26	4466.30	94,926.26
Hazardous Air Pollutants (HAPs)				
Combined HAPs:	N/A	0.16	-0.01	0.15
Formaldehyde	0.02	0.13	-0.01	0.12

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit: EU01 Fourteen(14) Natural Gas Fired Emergency Generators				
Process Description:				
	Name	**Description**	**Capacity MMBtu/hr**	**Date of Construction**
1	Alexander Hall (previously "Alexander")	Natural Gas -Fired Emergency Generator	0.343	2002
2	Applied Science (previously "Applied")		0.140	1993
3	Blackburn Science (previously "Blackburn")		0.078	1966
4	Collins I&T Entire Building (previously "I&T")		0.209	1990
5	Lowry Center		0.170	1965
6	Old Fine Arts		0.170	1974
7	Pogue Library		0.209	1973
8	SSC Building		0.068	1999
9	Stewart Stadium		0.209	1968
10	Student Rec & Wellness Center (previously "Rec and Wellness")		0.343	2004
11	Waterfield Library		0.343	1976
12	Wilson Hall		0.170	2001
13	Winslow Dining Hall (previously "Winslow")		0.079	1961
14	WM Bill Cherry Agriculture Exposition Center (previously "West Expo")		0.078	1996
		TOTAL	**2.609**	

Applicable Regulation:
401 KAR 63:020 *Potentially Hazardous Matter or Toxic Substances*

Precluded Regulations:
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Emission Unit: EU02 Nine (9) Diesel Fired Emergency Generators				
Process Description:				
	Name:	**Description**	**Capacity (HP)**	**Date of Construction**
1	Biology Building (previously "Biological Science")	Diesel-Fired Emergency Generator	560	2003
2	Business Building (previously "Business")		87	1993
3	Collins I&T Comp Room (previously "I&T Comp Room")		600	2002
4	Elizabeth College		355	2004
5	Faculty Hall		277	1999
6	General Services Building - Telecommunications Center (previously "Telecomm")		600	2002
7	Hart College		355	2005
8	Hester College		355	2004
9	Wrather West Kentucky Museum (previously "Wrather")		24	1960
		TOTAL	**3,163**	

Applicable Regulation:
401 KAR 63:020 *Potentially Hazardous Matter or Toxic Substances*

Precluded Regulations:
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Emission Unit: EU03 Twenty(20) Diesel Fired Emergency Generators				
Process Description:				
	Name:	**Description**	**Capacity (HP)**	**Date of Construction**
1	Carr Hall (previously "Carr Health")	Diesel-Fired Emergency Generator	107	2024
2	Central Plant		544	2014
3	CFSB Center (previously "CFSB (RSEC)")		390	2016
4	Chemistry		483	2006
5	Curris Center		87	2015
6	Doyle Fine Arts - Life Safety Generator (previously "Doyle Fine Arts Life Safety")		175	2016
7	Doyle Fine Arts - Fire Pump Generator (previously "Doyle Fine Arts Fire Pump")		169	2016
8	Engineering and Physics		313	2017
9	Hancock Biological at Kentucky Lake		34	2014
10	Hollis Franklin College (previously "Hollis Franklin")		139	2016
11	Housing (3 MW - Serving all Dorms)		3,285	2009
12	JH Richmond		237	2019
13	Lee Clark College		191	2007
14	Lovett Auditorium		40	2023
15	Mason Hall		40	2024/2025
16	MSU Police Department (previously "Public Safety")		87	2009
17	Regents College		355	2007
18	Sparks Hall		54	2018
19	Wells Hall		20	2017
20	White College		355	2007
		TOTAL	**7,105**	

Applicable Regulations:
401 KAR 60:005, Section 2(2)(dddd) 40 C.F.R. 60.4200 to 60.4219, Tables 1 through 8 (**Subpart IIII**), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Comments:
The permittee shall, for all units, comply with the emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113, for all pollutants, for the appropriate Tier [40 CFR 60.4205(b) referencing 40 CFR 60.4202(a)(2)].

The permittee shall operate and maintain the stationary CI ICE in a manner to achieve the emission standards required by 40 CFR 60.4205 over the entire life of the engine [40 CFR 60.4206].

Emission Unit: EU04 Two(2) Existing Natural Gas Fired Indirect Heat Exchangers					
Pollutant	**Emission Limit or Standard (lb/MMBtu)**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	Mason Hall (previously "Mason")	0.45	401 KAR 61:015, Section 4(1)(a), referencing 401 KAR 61:015 Appendix A	7.6 lb/MMscf AP-42 Chapter 1.4.	Assumed based upon natural gas combustion
	Mason Hall (previously "Mason")	0.45			
	20% opacity		401 KAR 61:015, Section 4(2)		
SO_2	Mason Hall (previously "Mason")	5.32	401 KAR 61:015, Section 5(1) referencing 401 KAR 61:015 Appendix B	0.6 lb/MMscf AP-42 Chapter 1.4.	
	Mason Hall (previously "Mason")	5.32			

Process Description:

Name	Date of Construction	Capacity (MMBtu/hr)
Mason Hall (previously "Mason")	1966	1.68
Mason Hall (previously "Mason")	1966	1.68
	TOTAL	**3.36**

Applicable Regulation:
401 KAR 61:015, *Existing Indirect Heat Exchangers*

Emission Unit: EU05 Forty-One (41) Natural Gas Fired Indirect Heat Exchangers								
Emission Limit or Standard		**(lb/MMBtu)**		**Regulatory Basis for Emission Limit or Standard**		**Emission Factor Used and Basis**		**Compliance Method**
EU05 - Emission Units:		**PM**	**SO_2**	**PM**	**SO_2**	**PM**	**SO_2**	
1	Alexander Hall - Heating Boiler 1 of 2 (previously "Alexander 1")	0.30	0.98	401 KAR 59:015, Section 4(1)(c)	401 KAR 59:015, Section 5(1)(c)(2)(b)	7.6 lb/MMscf AP-42 Chapter 1.4.	0.6 lb/MMscf AP-42 Chapter 1.4.	Assumed based upon natural gas combustion
2	Alexander Hall - Heating Boiler 2 of 2 (previously "Alexander 2")	0.30	0.98					
3	Carr Health Boiler 1 of 3	0.29	0.95					
4	Carr Health Boiler 2 of 3	0.29	0.95					
5	Carr Health Boiler 3 of 3	0.29	0.95					
6	CFSB Center Boiler 1 of 3 (previously "CFSB")	0.30	0.98					
7	CFSB Center Boiler 2 of 3 (previously "CFSB")	0.30	0.98					
8	CFSB Center Boiler 3 of 3 (previously "CFSB")	0.30	0.98					
9	Collins I&T Entire Building 1 of 2	0.29	0.97					
10	Collins I&T Entire Building 2 of 2	0.29	0.97					
11	Curris Center - Heating Boiler 1 of 2	0.29	0.97					
12	Curris Center - Heating Boiler 2 of 2	0.29	0.97					
13	Elizabeth College - Heating Boiler 1 of 2 (previously "Elizabeth Hall")	0.30	1.01					
14	Elizabeth College - Heating Boiler 2 of 2 (previously "Elizabeth Hall")	0.30	1.01					
15	General Services Building 1 of 2 (previously "General Services")	0.31	1.04					
16	General Services Building 2 of 2 (previously "General Services")	0.31	1.04					
17	Hart College - DWH Boiler (previously "Hart Hall")	0.33	1.20					
18	Hester College 1 of 3	0.30	1.02					
19	Hester College 2 of 3	0.30	1.02					
20	Hester College 3 of 3	0.30	1.00					

Emission Unit: EU05 Forty-One (41) Natural Gas Fired Indirect Heat Exchangers								
21	Hollis Franklin College 1 of 3 (previously "HC Franklin 1")	0.30	0.98					
22	Hollis Franklin College 2 of 3 (previously "HC Franklin 2")	0.30	0.98					
23	Hollis Franklin College 3 of 3 (previously "HC Franklin 3")	0.30	0.98					
24	Lovett Auditorium 1 of 2	0.29	0.96					
25	Lovett Auditorium 2 of 2	0.29	0.96					
26	Old Fine Arts Boiler 1 of 3	0.29	0.95					
27	Old Fine Arts Boiler 2 of 3	0.29	0.95					
28	Old Fine Arts Boiler 3 of 3	0.29	0.95					
29	Regents College (previously "Regents")	0.30	1.01					
30	Regents College Boiler 1 of 2 (previously "Regents")	0.29	0.95					
31	Regents College Boiler 2 of 2 (previously "Regents")	0.29	0.95					
32	Sparks Hall 1 of 2	0.30	0.99					
33	Sparks Hall 2 of 2	0.30	0.99					
34	Stewart Stadium	0.36	1.42					
35	Waterfield Library 1 of 2	0.29	0.97					
36	Waterfield Library 2 of 2	0.29	0.97					
37	White College (previously "White Hall")	0.31	1.04					
38	White College Boiler 1 of 2 (previously "White")	0.29	0.96					
39	White College Boiler 2 of 2 (previously "White")	0.29	0.96					
40	WM Bill Cherry Agriculture Exposition Center 1 of 2 (previously "Expo Center 1")	0.33	1.20					
41	WM Bill Cherry Agriculture Exposition Center 2 of 2 (previously "Expo Center 2")	0.33	1.20					
Opacity	20% opacity	401 KAR 59:015, Section 4 (2)						

Process Description:

EU05 - Emission Units:		Capacity (MMBtu/hr)	Date of Construction
1	Alexander Hall - Heating Boiler 1 of 2 (previously "Alexander 1")	2.9	2019
2	Alexander Hall - Heating Boiler 2 of 2 (previously "Alexander 2")	2.9	2019
3	Carr Health Boiler 1 of 3	2.0	2025

Emission Unit: EU05 Forty-One (41) Natural Gas Fired Indirect Heat Exchangers			
4	Carr Health Boiler 2 of 3	2.0	2025
5	Carr Health Boiler 3 of 3	2.0	2025
6	CFSB Center Boiler 1 of 3 (previously “CFSB”)	1.9	2019
7	CFSB Center Boiler 2 of 3 (previously “CFSB”)	1.9	2019
8	CFSB Center Boiler 3 of 3 (previously “CFSB”)	1.9	2019
9	Collins I&T Entire Building 1 of 2	3.0	2021
10	Collins I&T Entire Building 2 of 2	3.0	2021
11	Curris Center - Heating Boiler 1 of 2	1.5	2021
12	Curris Center - Heating Boiler 2 of 2	1.5	2021
13	Elizabeth College - Heating Boiler 1 of 2 (previously “Elizabeth Hall”)	1.25	2012
14	Elizabeth College - Heating Boiler 2 of 2 (previously “Elizabeth Hall”)	1.25	2012
15	General Services Building 1 of 2 (previously “General Services”)	2.0	2008
16	General Services Building 2 of 2 (previously “General Services”)	2.0	2008
17	Hart College - DWH Boiler (previously “Hart Hall”)	1.26	1999
18	Hester College 1 of 3	1.658	2009
19	Hester College 2 of 3	1.658	2009
20	Hester College 3 of 3	1.0	2013
21	Hollis Franklin College 1 of 3 (previously “HC Franklin 1”)	2.5	2015
22	Hollis Franklin College 2 of 3 (previously “HC Franklin 2”)	2.5	2015
23	Hollis Franklin College 3 of 3 (previously “HC Franklin 3”)	2.5	2015
24	Lovett Auditorium 1 of 2	1.5	2022
25	Lovett Auditorium 2 of 2	1.5	2022
26	Old Fine Arts Boiler 1 of 3	2.0	2025
27	Old Fine Arts Boiler 2 of 3	2.0	2025
28	Old Fine Arts Boiler 3 of 3	2.0	2025
29	Regents College (previously “Regents”)	1.47	2010
30	Regents College Boiler 1 of 2 (previously “Regents”)	4.0	2025 (Proposed)
31	Regents College Boiler 2 of 2 (previously “Regents”)	4.0	2025 (Proposed)
32	Sparks Hall 1 of 2	1.95	2014
33	Sparks Hall 2 of 2	1.95	2014

Emission Unit: EU05 Forty-One (41) Natural Gas Fired Indirect Heat Exchangers			
34	Stewart Stadium	5.95	1974
35	Waterfield Library 1 of 2	2.0	2016
36	Waterfield Library 2 of 2	2.0	2016
37	White College (previously “White Hall”)	1.47	2008
38	White College Boiler 1 of 2 (previously “White”)	4.0	2023
39	White College Boiler 2 of 2 (previously “White”)	4.0	2023
40	WM Bill Cherry Agriculture Exposition Center 1 of 2 (previously “Expo Center 1”)	2.73	1997
41	WM Bill Cherry Agriculture Exposition Center 2 of 2 (previously “Expo Center 2”)	2.73	1997
	TOTAL	**93.326**	

Applicable Regulation:

401 KAR 59:015, *New Indirect Heat Exchangers*

Emission Unit: EU06 – Six(6) Natural Gas Indirect Heat Exchangers						
Pollutant	**Emission Limit or Standard**			**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
		Name	**lb/MMBtu**			
PM	1	Biology Building - Boiler 1 of 6 (previously "Bio Sciences")	0.29	401 KAR 59:015, Section 4(1)(c)	7.6 lb/MMscf AP-42 Chapter	Assumed based upon natural gas combustion
	2	Biology Building - Boiler 2 of 6 (previously "Bio Sciences")	0.29			
	3	Biology Building - Boiler 3 of 6 (previously "Bio Sciences")	0.29			
	4	Biology Building - Boiler 4 of 6 (previously "Bio Sciences")	0.29			
	5	Biology Building - Boiler 5 of 6 (previously "Bio Sciences")	0.29			
	6	Biology Building - Boiler 6 of 6 (previously "Bio Sciences")	0.29			
	20% opacity			401 KAR 59:015, Section 4 (2)		
SO_2	1	Biology Building - Boiler 1 of 6 (previously "Bio Sciences")	0.95	401 KAR 59:015, Section 5(1)(c)2.b.	0.6 lb/MMscf AP-42 Chapter 1.4.	
	2	Biology Building - Boiler 2 of 6 (previously "Bio Sciences")	0.95			
	3	Biology Building - Boiler 3 of 6 (previously "Bio Sciences")	0.95			
	4	Biology Building - Boiler 4 of 6 (previously "Bio Sciences")	0.95			
	5	Biology Building - Boiler 5 of 6 (previously "Bio Sciences")	0.95			
	6	Biology Building - Boiler 6 of 6 (previously "Bio Sciences")	0.95			

Process Description:

EU06 - Emission Units:		Capacity (MMBtu/hr)	Date of Construction
1	Biology Building - Boiler 1 of 6 (previously "Bio Sciences")	4.0	2025 (Tentatively)
2	Biology Building - Boiler 2 of 6 (previously "Bio Sciences")	4.0	
3	Biology Building - Boiler 3 of 6 (previously "Bio Sciences")	4.0	
4	Biology Building - Boiler 4 of 6 (previously "Bio Sciences")	4.0	
5	Biology Building - Boiler 5 of 6 (previously "Bio Sciences")	4.0	
6	Biology Building - Boiler 6 of 6 (previously "Bio Sciences")	4.0	
	TOTAL	**24.0**	

Applicable Regulations:
401 KAR 59:015, *New Indirect Heat Exchangers*

401 KAR 60:005, Section 2(2)(d), implementing **40 CFR 60, Subpart Dc**, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*

Emission Unit: EU07 One(1) Existing Natural Gas Fired Indirect Heat Exchanger				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.37 lb/MMBtu	401 KAR 61:015 Section 4(1)(a) and (c)	7.6 lb/MMscf AP-42 Chapter 1.4.	Assumed based upon natural gas combustion
	20% opacity	401 KAR 61:015 Section 4(2)		
SO_2	4.83 lbs/MMBtu	401 KAR 61:015 Section 5	0.6 lb/MMscf AP-42 Chapter 1.4.	

Process Description:

Name	Description	Capacity	Date of Construction
Central Plant - East Heating Boiler (Boiler #1) (previously "Central Plant (Heating Boiler))	Existing Natural Gas Fired Indirect Heat Exchanger	20.085 MMBtu/hr	1970

Applicable Regulation:
401 KAR 61:015, *Existing Indirect Heat Exchangers*

Emission Unit: EU08 One(1) Natural Gas Fired Emergency Generators		
Process Description:		
Name	**Capacity (MMBtu/hr)**	**Date of Construction**
Facilities Management	0.656	2015

Applicable Regulation:
401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (**Subpart JJJJ**), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Emission Unit: EU09 One(1) Natural Gas Indirect Heat Exchangers				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.34 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	7.6 lb/MMscf AP-42 Chapter	Assumed based upon natural gas combustion
	20% opacity	401 KAR 59:015, Section 4 (2)		
SO_2	1.26 lb/MMBtu	401 KAR 59:015, Section 5(1)(c)2.b.	0.6 lb/MMscf AP-42 Chapter 1.4.	

Process Description:

Name	Description	Capacity	Date of Construction
Central Plant - West Heating Boiler (Boiler #2) (previously "Central Plant")	Natural Gas Fired Indirect Heat Exchanger	20.085 MMBtu/hr	1982

Applicable Regulations:
401 KAR 59:015, *New Indirect Heat Exchangers*

Emission Unit: EU10 One(1) Propane Indirect Heat Exchangers				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.30 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	7.6 lb/MMscf AP-42 Chapter	Assumed based upon propane combustion
	20% opacity	401 KAR 59:015, Section 4 (2)		
SO_2	0.98 lb/MMBtu	401 KAR 59:015, Section 5(1)(c)2.b.	0.6 lb/MMscf AP-42 Chapter 1.4.	

Process Description:

Name	Description	Capacity	Date of Construction
Hart College – Heating Boiler Rental Outside	Propane Fired Indirect Heat Exchanger	5.12 MMBtu/hr	2019

Applicable Regulations:
401 KAR 59:015, *New Indirect Heat Exchangers*

Comment: Replaced a natural gas boiler with this temporary rental Propane boiler, which is planned to be onsite until building is razed in the next 5 years

Emission Units	Description	Max. Engine Rating	Fuel	Manufacturer / Model (Model Year)	Construction Commenced
12	Emergency Fire Pump (Sparks Hall)	72 hp	Diesel	Clarke / JU4HF20 SMART P/N: L1211D MFG. S/N: PE4045D205148 Engine: John Deere Co., (12/2002)	2002

APPLICABLE REGULATIONS:
401 KAR 63:020 *Potentially Hazardous Matter or Toxic Substances*

PRECLUDED REGULATIONS:
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:
N/A

Table B - Summary of Applicable Regulations:

Applicable Regulation	Emission Unit
401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c through 60.48c (Subpart Dc), *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*	06
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	03, 08
401 KAR 59:015, *New indirect heat exchangers*	05, 06, 09, 10
401 KAR 61:015, *New indirect heat exchangers*	04, 07
401 KAR 60:005 Section 2(2)(dddd) 40 C.F.R. 60.4200 through 60.4219, Tables 1 through 8 (Subpart IIII,), *Standards of Performance for Stationary Compression Ignition Internal Combustion*	03
401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*	08
401 KAR 63:020, *Potentially hazardous matter or toxic substances*	01, 02, 12

Table C - Summary of Precluded Regulations:

Precluded Regulation	Emission Unit
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	01, 02, 12

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis
401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*
The Division for Air Quality (Division) has performed modeling using SCREEN View on June 24, 2025 of potentially hazardous matter or toxic substances (Formaldehyde, Benzene, Toluene, Xylene) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination
N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
		APE20090001			Mnr Source-Initial	
F-09-043		APE20090004			Cond Mjr-Initial	
		APE20090005			Application Withdrawal	
V-13-008	Initial	APE20130001	2/11/2013	6/19/2013	Initial Title V Permit	N/A
V-13-008 R1	Minor Revision	APE20160001	1/22/2017	6/16/2017	Minor Revision	N/A
V-18-003	Renewal	APE20170001	2/6/2018	10/13/2019	Clarification of EUs, addition of generator	N/A
	Title V off permit change	APE20180001	5/9/2018		Title V-off permit change	
	Title V off permit change	APE20190002			Title V-off permit change	

SECTION 6 – PERMIT APPLICATION HISTORY

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds

APPENDIX B – INDIRECT HEAT EXCHANGERS EMISSION LIMITATIONS

Name	Construction Date	Date: Removed or Replaced	Capacity MMBtu/hr	Total for Year (T) MMBTU/hr	PM Limit (Ep)* lb/MMBtu	SO_2 Limit (Es)** lb/MMBtu
Richmond	1960	Removed 2024	2.19	2.19	0.56	6
Hart	1965	2019 Replaced	9.8	22.45	0.4629	5.4183
White	1965	2023 Replaced	5.23	22.45	0.4629	5.4183
White	1965	2023 Replaced	5.23	22.45	0.4629	5.4183
Mason	1966		1.68	25.81	0.4479	5.3239
Mason	1966		1.68	25.81	0.4479	5.3239
Regents	1969	2025 Replaced	5.23	36.27	0.4134	5.1005
Regents	1969	2025 Replaced	5.23	36.27	0.4134	5.1005
Central Plant - East Heating Boiler (Boiler #1) (previously "Central Plant (Heating Boiler)")	1970		20.085	56.355	0.3726	4.8250
Stewart Stadium	1974		5.95	62.305	0.3639	1.4155
Central Plant - West Heating Boiler (Boiler #2) (previously "Central Plant")	1982		20.085	82.39	0.3407	1.2621
CFSB	1995	Removed 2019	1.8	87.11	0.3363	1.2335
CFSB	1995	2019 Replaced	1.8	87.11	0.3363	1.2335
CFSB	1995	2019 Replaced	1.8	87.11	0.3363	1.2335
CFSB	1995	2019 Replaced	1.8	87.11	0.3363	1.2335
WM Bill Cherry Agriculture Exposition Center 1 of 2 (previously "Expo Center 1")	1997		2.73	92.57	0.3315	1.2031
WM Bill Cherry Agriculture Exposition Center 2 of 2 (previously "Expo Center 2")	1997		2.73	92.57	0.3315	1.2031
Hart College - DWH Boiler (previously "Hart Hall")	1999		1.26	93.83	0.3305	1.1965
Alexander 1	2000	2019 Replaced	2	97.83	0.3272	1.1761
Alexander 2	2000	2019 Replaced	2	97.83	0.3272	1.1761
Richmond	2000	Removed 2024	1.26	99.09	0.3262	1.1700
Franklin Hall 1	2002	2015 Replaced	1.275	100.365	0.3253	1.1638
Bio Sciences	2003	2025 Replaced	12.56	112.925	0.3164	1.1088
Bio Sciences	2007	2025 Replaced	12.56	125.485	0.3086	1.0619
General Services 1	2008		2	130.955	0.3055	1.0434

Name	Construction Date	Date: Removed or Replaced	Capacity MMBtu/hr	Total for Year (T) MMBTU/hr	PM Limit (Ep)* lb/MMBtu	SO_2 Limit (Es)** lb/MMBtu
General Services 2	2008		2	130.955	0.3055	1.0434
White Hall	2008		1.47	130.955	0.3055	1.0434
Curris Center (1st floor Mech)	2009	2021 Replaced	1.004	138.829	0.3013	1.0187
Curris Center	2009	2021 Replaced	1.004	138.829	0.3013	1.0187
Franklin Hall 2	2009	2015 Replaced	1.275	138.829	0.3013	1.0187
Franklin Hall 3	2009	2015 Replaced	1.275	138.829	0.3013	1.0187
Hester College 1 of 3	2009		1.658	138.829	0.3013	1.0187
Hester College 2 of 3	2009		1.658	138.829	0.3013	1.0187
Regents	2010		1.47	140.299	0.3006	1.0143
Elizabeth College - Heating Boiler 1 of 2 (previously “Elizabeth Hall”)	2012		1.25	142.799	0.2993	1.0070
Elizabeth College - Heating Boiler 2 of 2 (previously “Elizabeth Hall”)	2012		1.25	142.799	0.2993	1.0070
Hester College 3 of 3	2013		1	143.799	0.2988	1.0041
Sparks Hall	2014		1.95	147.699	0.2970	0.9931
Sparks Hall	2014		1.95	147.699	0.2970	0.9931
Hollis Franklin College 1 of 3 (previously “HC Franklin 1”)	2015	Replacement for 2002 (1.275) unit	2.5	151.374	0.2952	0.9831
Hollis Franklin College 2 of 3 (previously “HC Franklin 2”)	2015	Replacement for 2009 (1.275) unit	2.5	151.374	0.2952	0.9831
Hollis Franklin College 3 of 3 (previously “HC Franklin 3”)	2015	Replacement for 2009 (1.275) unit	2.5	151.374	0.2952	0.9831
Waterfield Library 1 of 2	2016		2	155.374	0.2934	0.9727
Waterfield Library 2 of 2	2016		2	155.374	0.2934	0.9727
Alexander Hall - Heating Boiler 1 of 2 (previously “Alexander 1”)	2019	Replacement for 2000 (2.0) unit	2.9	150.994	0.2954	0.9842
Alexander Hall - Heating Boiler 2 of 2 (previously “Alexander 2”)	2019	Replacement for 2000 (2.0) unit	2.9	150.994	0.2954	0.9842
CFSB Center Boiler 1 of 3 (previously “CFSB”)	2019	Replacement for 1995 (1.8) unit	1.9	150.994	0.2954	0.9842

Name	Construction Date	Date: Removed or Replaced	Capacity MMBtu/hr	Total for Year (T) MMBTU/hr	PM Limit (Ep)* lb/MMBtu	SO_2 Limit (Es)** lb/MMBtu
CFSB Center Boiler 2 of 3 (previously "CFSB")	2019	Replacement for 1995 (1.8) unit	1.9	150.994	0.2954	0.9842
CFSB Center Boiler 3 of 3 (previously "CFSB")	2019	Replacement for 1995 (1.8) unit	1.9	150.994	0.2954	0.9842
Hart College – Heating Boiler Rental Outside	2019	Replacement for 1965 (9.8) unit	5.12	150.994	0.2954	0.9842
Collins I&T Entire Building 1 of 2	2021		3	157.986	0.2923	0.9660
Collins I&T Entire Building 2 of 2	2021		3	157.986	0.2923	0.9660
Curris Center - Heating Boiler 1 of 2	2021	Replacement for 2009 (1.004) unit	1.5	157.986	0.2923	0.9660
Curris Center - Heating Boiler 2 of 2	2021	Replacement for 2009 (1.004) unit	1.5	157.986	0.2923	0.9660
Lovett Auditorium 1 of 2	2022		1.5	160.986	0.2910	0.9586
Lovett Auditorium 2 of 2	2022		1.5	160.986	0.2910	0.9586
White College Boiler 1 of 2 (previously "White")	2023	Replacement for 1965 (5.23) unit	4	158.526	0.2921	0.9647
White College Boiler 2 of 2 (previously "White")	2023	Replacement for 1965 (5.23) unit	4	158.526	0.2921	0.9647
Biology Building - Boiler 1 of 6 (previously "Bio Sciences")	2025 (proposed)	Replacement for 2003 (12.56) unit	4	163.496	0.2899	0.9525
Biology Building - Boiler 2 of 6 (previously "Bio Sciences")	2025 (proposed)	Replacement for 2003 (12.56) unit	4	163.496	0.2899	0.9525
Biology Building - Boiler 3 of 6 (previously "Bio Sciences")	2025 (proposed)		4	163.496	0.2899	0.9525
Biology Building - Boiler 4 of 6 (previously "Bio Sciences")	2025 (proposed)		4	163.496	0.2899	0.9525
Biology Building - Boiler 5 of 6 (previously "Bio Sciences")	2025 (proposed)		4	163.496	0.2899	0.9525
Biology Building - Boiler 6 of 6 (previously "Bio Sciences")	2025 (proposed)		4	163.496	0.2899	0.9525
Carr Health Boiler 1 of 3	2025		2	163.496	0.2899	0.9525
Carr Health Boiler 2 of 3	2025		2	163.496	0.2899	0.9525

Name	Construction Date	Date: Removed or Replaced	Capacity MMBtu/hr	Total for Year (T) MMBTU/hr	PM Limit (Ep)* lb/MMBtu	SO_2 Limit (Es)** lb/MMBtu
Carr Health Boiler 3 of 3	2025		2	163.496	0.2899	0.9525
Old Fine Arts Boiler 1 of 3	2025		2	163.496	0.2899	0.9525
Old Fine Arts Boiler 2 of 3	2025		2	163.496	0.2899	0.9525
Old Fine Arts Boiler 3 of 3	2025		2	163.496	0.2899	0.9525
Regents College Boiler 1 of 2 (previously "Regents")	2025	Replacement for 1965 (5.23) unit	4	163.496	0.2899	0.9525
Regents College Boiler 2 of 2 (previously "Regents")	2025	Replacement for 1965 (5.23) unit	4	163.496	0.2899	0.9525

"Existing Indirect Heat Exchangers", before April 9,1972, [401 KAR 61:015], Ep*=Appendix A and Es**=Appendix B
"New Indirect Heat Exchangers", starting April 9,1972, [401 KAR 59:015], Ep* = 0.9634 ($T^{-0.2356}$) and Es**=7.7223 ($T^{-0.4106}$)