



NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

JUL 10 2017

Mr. Kevin Noblet
 VP of Generation
 KCP&L GMO – Lake Road Station
 P.O. Box 418679
 Kansas City, MO 64141

RE: New Source Review Permit Amendment - Permit Number: 052015-014B
 Project Number: 2017-05-048; Installation Number: 021-0004

Dear Mr. Noblet:

During public notice of KCP&L GMO – Lake Road Station’s operating permit, it was brought to the Air Pollution Control Program’s attention that Construction Permit 052015-014A failed to include HAP emissions from fuel oil storage tanks in KCP&L GMO – Lake Road Station’s synthetic minor HAP limits; therefore, Construction Permit 052015-014A is being amended to include the fuel oil storage tanks in the synthetic minor HAP limits. The installation contains four fuel oil storage tanks as described in Table 1. A safety data sheet (SDS) submitted by KCP&L GMO – Lake Road Station indicates that the fuel oil #2/diesel used at the installation contains up to 0.9 weight percent (wt%) benzene, 1 wt% hexane, and 1 wt% toluene. Potential emissions from the tanks were determined using TANKS4.0.9d and the maximum fuel oil #2/diesel combustion rates for the installation’s boilers, turbine, jet engines, and emergency fire pump. The updated potential HAP emissions of the installation are available in Table 2.

Table 1: Lake Road Generating Station’s Diesel Storage Tanks

Emission Source	Description
18	1,466,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank
20	6,000 gallon Diesel Blend Vertical Fixed Roof Storage Tank
21	10,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank
35	10,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank

Table 2: Lake Road Generating Station’s HAP Potential to Emit

Pollutant	Potential to Emit (tons per year)
HAP	37.97
Hexane (110-54-3)	25.91
HCl (7647-01-0)	2.80
HF (7664-39-3)	3.38
Formaldehyde (50-00-0)	5.09
Manganese Compounds (20-12-2)	3.10
Cyanide Compounds (20-09-7)	0.21
Benzene (71-43-2)	1.32
Selenium Compounds (20-16-6)	0.26

Pollutant	Potential to Emit (tons per year)
Toluene (108-88-3)	0.94
Acetaldehyde (75-07-0)	0.21
Benzyl Chloride (100-44-7)	0.06
Lead Compounds (20-11-1)	0.13
Isophorone (78-59-1)	0.05
Xylene (1330-20-7)	0.25
Methyl Chloride (74-87-3)	0.04
Arsenic Compounds (20-01-9)	0.09
Propionaldehyde (123-38-6)	0.03
Chromium Compounds (20-06-4)	0.09
Ethylbenzene (100-41-4)	0.13
Nickel Compounds (20-14-4)	0.07
Acrolein (107-02-8)	0.05
Naphthalene (91-20-3)	0.14
Methylene Chloride (75-09-2)	0.02
Propylene Oxide (75-56-9)	0.11
Methyl Hydrazine (60-34-4)	0.01
Methyl Bromide (74-83-9)	0.01
Carbon Disulfide (75-15-0)	0.01
1,3-Butadiene (106-99-0)	0.06
Mercury Compounds (20-13-3)	0.02
Cadmium Compounds (20-04-2)	0.04
Cobalt Compounds (20-07-5)	0.01
DEHP (117-81-7)	0.01
Chloroform (67-66-3)	0.005
Dimethyl Sulfate (77-78-1)	0.004
Beryllium Compounds (20-03-1)	0.01
Tetrachloroethylene (127-18-4)	0.004
Ethyl Chloride (75-00-3)	0.004
Ethylene Dichloride (107-06-2)	0.003
Bromoform (75-25-2)	0.003
Methyl Tert Butyl Ether (1634-04-4)	0.003
Dichlorobenzene (106-46-7)	0.02
Styrene (100-42-5)	0.002
Other Individual HAPs	<0.002 each

Lake Road Generating Station's HAP PTE is based on the following:

- ♦ The worst-case fuel for each HAP.
- ♦ A HCl emission factor of 0.0019 lb/MMBtu for coal combustion in a boiler (October 2015 Stack Test).
- ♦ A HF emission factor of 0.0023 lb/MMBtu for coal combustion in a boiler (October 2015 Stack Test).
- ♦ Boiler #1, 192 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)] and/or fuel oil #2 [AP-42 Section 1.3 "Fuel Oil Combustion" (September 1999)].

- ◆ Boiler #2, 192 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)] and/or fuel oil #2 [AP-42 Section 1.3 "Fuel Oil Combustion" (September 1999)].
- ◆ Boiler #3, 238 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)].
- ◆ Boiler #4, 311 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)] and/or fuel oil #2 [AP-42 Section 1.3 "Fuel Oil Combustion" (September 1999)].
- ◆ Boiler #5, 336 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)] and/or coal [AP-42 Section 1.1 "Bituminous and Subbituminous Coal Combustion" (September 1998) for all HAPs except HCl and HF].
- ◆ Boiler #6, 1571 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)], coal [AP-42 Section 1.1 "Bituminous and Subbituminous Coal Combustion" (September 1998) for all HAPs except HCl and HF], and/or fuel oil #2 [AP-42 Section 1.3 "Fuel Oil Combustion" (September 1999)]. Fuel oil #2 combustion is limited to 3,611,111 gallons per year by Special Condition 1 of Construction Permit 052015-014.
- ◆ Boiler #8, 358 MMBtu/hr, natural gas [AP-42 Section 1.4 "Natural Gas Combustion" (July 1998)] and/or fuel oil #2 [AP-42 Section 1.3 "Fuel Oil Combustion" (September 1999)]. Boiler #8 is limited to 40 tons per year of NOx by Special Condition 2.A of Construction Permit 062006-001. Stack testing conducted in March of 2007 established NOx emission factors of 35.4 lb/MMscf and 11.5 lb/1,000 gallons restricting maximum annual operation to 6,438 hours of natural gas combustion or 2,681.5 hours of fuel oil combustion.
- ◆ Gas Turbine #5, 867 MMBtu/hr, natural gas and/or fuel oil #2 [AP-42 Section 3.1 "Stationary Gas Turbines" (April 2000)].
- ◆ #6 Jet Engine, 275 MMBtu/hr, and #7 Jet Engine, 296 MMBtu/hr, natural gas and/or fuel oil #2 [AP-42 Section 3.1 "Stationary Gas Turbines" (April 2000)]. These jet engines are limited to 40 tons per year NOx combined by Special Condition 1 of Construction Permit 0190-009, restriction maximum annual operation to 437.8 hours of natural gas combustion or 159.2 hours of fuel oil combustion.
- ◆ Emergency Fire Pump, 3.312 MMBtu/hr, fuel oil #2 [AP-42 Section 3.3 "Gasoline and Diesel Industrial Engines" (October 1996)]. This fire pump was evaluated at 500 hours of annual operation per EPA's guidance document "Calculating PTE for Emergency Generators" (September 1995).
- ◆ Fuel Oil #2/Diesel Storage Tanks maximum annual fuel oil #2/diesel throughput of 110,797,844 gallons per year based on the maximum hourly design rates of Boilers #1, #2, & #4, Gas Turbine #5 and 8,760 hours of annual operation, the maximum annual fuel oil restriction on Boiler #6 of 3,611,111 gallons per year, the maximum hourly design rate of #6 Jet Engine and #7 Jet Engine and 159.2 hours of limited annual fuel oil operation, the maximum hourly design rate of Boiler #8 and 2,681.5 hours of limited annual fuel oil operation, and the maximum hourly design rate of the Emergency Fire Pump and 500 hours of annual operation.

In order to achieve KCP&L's goal of being an area source of HAP, the Air Pollution Control Program has agreed to re-open Construction Permit 052015-014A to modify the federally enforceable synthetic minor HAP limit(s) on the Lake Road Generating Station (021-0004)¹. The synthetic minor HAP limit(s) is being taken voluntarily by KCP&L. Nothing in this amendment prohibits the installation from re-opening this permit again to remove the limit(s). Future removal of the synthetic minor HAP limit(s) may result in the installation becoming a major source of HAP emissions.

¹ Tracking sheets have been included for combined HAP, HF, HCl, and Hexane as these are the only HAPs which were calculated to exceed the major source threshold using AP-42 emission factors. If additional HAP emission sources are constructed in the future, additional individual HAPs may require tracking.

Mr. Kevin Noblet
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Construction Permit 052015-014A is amended by replacing Special Condition 4 and Attachments B and E with the conditions and attachments in this letter. All other conditions in Construction Permits 052015-014 and 052015-014A remain effective.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the Administrative Hearing Commission, Truman State Office Building, Jefferson City, Missouri 65102, www.ao.mo.gov/ahc. If you have questions regarding this amendment/correction, contact Alana Hess, the Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Kendall B. Hale
Permits Section Chief

KBH: ahj

Enclosures

c: Kansas City Regional Office
PAMS File: 2017-05-048

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Permit No.	052015-014B
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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

KCP&L GMO – Lake Road Station
Buchanan County, S30, T57N, R35W

4. HAP Emission Limitations

- A. KCP&L GMO – Lake Road Station shall emit less than 25.0 tons of combined HAPs from the entire installation (as identified in Table 1) in any consecutive 12-month rolling total period.

Table 1: HAP Emission Sources at KCPL GMO – Lake Road Station

Emission Source	Description
1	Boiler #1, 192 MMBtu/hr natural gas or fuel oil #2
2	Boiler #2, 192 MMBtu/hr natural gas or fuel oil #2
3	Boiler #3, 238 MMBtu/hr natural gas
4	Boiler #4, 311 MMBtu/hr natural gas or fuel oil #2
5	Boiler #5, 336 MMBtu/hr natural gas or subbituminous coal
6	Boiler #6, 1571 MMBtu/hr natural gas or fuel oil #2
7	Gas Turbine #5, 867 MMBtu/hr natural gas or fuel oil #2
8	#6 Jet Engine, 275 MMBtu/hr natural gas or fuel oil #2
9	#7 Jet Engine, 296 MMBtu/hr natural gas or fuel oil #2
10	Boiler #8, 358 MMBtu/hr natural gas or fuel oil #2
18	1,466,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank
20	6,000 gallon Diesel Blend Vertical Fixed Roof Storage Tank
21	10,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank
24	Emergency Fire Pump Engine, 3.312 MMBtu/hr fuel oil #2
35	10,000 gallon Fuel Oil #2 Vertical Fixed Roof Storage Tank

- B. KCP&L GMO – Lake Road Station shall emit less than 10.0 tons of each individual HAP from the entire installation (as identified in Table 1) in any consecutive 12-month rolling total period.
- C. KCP&L GMO – Lake Road Station shall maintain records of monthly and 12-month rolling total individual HAP emissions and combined HAP emissions from the entire installation using Attachments B, C, D, and E or equivalent forms approved by the Air Pollution Control Program.

Attachment B – Combined HAP Compliance Worksheet

KCP&L GMO – Lake Road Station
 Buchanan County, S30, T57N, R35W
 Project Number: 2017-05-048
 Installation ID Number: 021-0004
 Permit Number:

This sheet covers the period from _____ to _____.
 (month, year) (month, year)

Emission Source	Description	Fuel	Monthly Usage	Combined HAP Emission Factor	Monthly Combined HAP Emissions ² (tons)
1	Boiler #1	Fuel Oil #2	MMBtu	0.000515 lb/MMBtu	
		Natural Gas	MMscf	³	
2	Boiler #2	Fuel Oil #2	MMBtu	0.000515 lb/MMBtu	
		Natural Gas	MMscf	³	
3	Boiler #3	Natural Gas	MMscf	³	
4	Boiler #4	Fuel Oil #2	MMBtu	0.000515 lb/MMBtu	
		Natural Gas	MMscf	³	
5	Boiler #5	Coal	tons	⁴	
		Natural Gas	MMscf	³	
6	Boiler #6	Coal	tons	⁵	
		Fuel Oil #2	MMBtu	0.000515 lb/MMBtu	
		Natural Gas	MMscf	³	
7	Gas Turbine #5	Fuel Oil #2	MMBtu	0.00129 lb/MMBtu	
		Natural Gas	MMBtu	0.00103 lb/MMBtu	
8	#6 Jet Engine	Fuel Oil #2	MMBtu	0.00129 lb/MMBtu	
		Natural Gas	MMBtu	0.00103 lb/MMBtu	
9	#7 Jet Engine	Fuel Oil #2	MMBtu	0.00129 lb/MMBtu	
		Natural Gas	MMBtu	0.00103 lb/MMBtu	
10	Boiler #8	Fuel Oil #2	MMBtu	0.000515 lb/MMBtu	
		Natural Gas	MMscf	⁶	
24	Emergency Fire Pump	Fuel Oil #2	MMBtu	0.00387 lb/MMBtu	
18, 20, 21, & 35	Storage Tanks	Fuel Oil		Breathing losses	0.02
		#2/Diesel	Mgal	0.05446 lb/Mgal	
Installation Monthly Combined HAP Emissions⁷ (tons) =					
Installation 12-Month Rolling Total Combined HAP Emissions⁸ (tons) =					

² Monthly Combined HAP Emissions (tons) = Monthly Usage x Combined HAP Emission Factor x 0.0005 ton/lb.

³ Combined HAP Emission Factor = 0.0885 lb/MMscf + the Hexane emission factor obtained from Attachment E.

⁴ Combined HAP Emission Factor = 0.0122 lb/ton + the HCl emission factor obtained from Attachment C + the HF emission factor obtained from Attachment D.

⁵ Combined HAP Emission Factor = 0.0122 lb/ton + the HCl emission factor obtained from Attachment C + the HF emission factor obtained from Attachment D.

⁶ Combined HAP Emission Factor = 0.0885 lb/MMscf + the Hexane emission factor obtained from Attachment E.

⁷ Installation Monthly Combined HAP Emissions (tons) = the sum of each emission sources' Monthly Combined HAP Emissions (tons).

⁸ Installation 12-Month Rolling Total Combined HAP Emissions (tons) = the sum of the 12 most recent Installation Monthly Combined HAP Emissions (tons) + the sum of all start-up, shutdown, and malfunction Combined HAP Emissions from the installation during the same 12-month period as reported to the Air Pollution Control Program's Compliance/Enforcement Section.

Installation 12-Month Rolling Total Combined HAP Emissions of less than 25.0 tons indicates compliance with Special

Attachment E – Hexane Compliance Worksheet

KCP&L GMO – Lake Road Station
 Buchanan County, S30, T57N, R35W
 Project Number: 2017-05-048
 Installation ID Number: 021-0004
 Permit Number:

This sheet covers the period from _____ to _____.
 (month, year) (month, year)

Emission Source	Description	Fuel	Monthly Usage	Hexane Emission Factor	Monthly Hexane Emissions ⁹ (tons)
1	Boiler #1	Natural Gas	MMscf	¹⁰	
2	Boiler #2	Natural Gas	MMscf	¹⁰	
3	Boiler #3	Natural Gas	MMscf	¹⁰	
4	Boiler #4	Natural Gas	MMscf	¹⁰	
5	Boiler #5	Coal	tons	0.000067 lb/ton	
		Natural Gas	MMscf	¹⁰	
6	Boiler #6	Coal	tons	0.000067 lb/ton	
		Natural Gas	MMscf	¹⁰	
10	Boiler #8	Natural Gas	MMscf	10	
18, 20, 21, & 35	Storage Tanks	Fuel Oil #2/Diesel	Breathing losses		0.01
			Mgal	0.032529 lb/Mgal	
Installation Monthly Hexane Emissions¹¹ (tons) =					
Installation 12-Month Rolling Total Hexane Emissions¹² (tons) =					

Condition 4.

⁹ Monthly Hexane Emissions (tons) = Monthly Usage x Hexane Emission Factor x 0.0005 ton/lb.

¹⁰ The currently approved Hexane emission factor is 1.8 lb/MMscf (AP-42 Table 1.4-3) as the October 2015 stack test result for Hexane was approved for pre-survey purposes only and is not approved for demonstrating regulatory compliance. The installation may conduct performance testing under Special Condition 7 to establish a new site-specific hexane emission factor for the combustion of natural gas in a boiler. If Boiler #3 cannot be tested under Special Condition 7, Boiler #3 shall continue to use the AP-42 Table 1.4-3 hexane emission factor of 1.8 lb/MMscf while Boilers #1, #2, #4, #5, #6, and #8 shall use the new site-specific hexane emission factor.

¹¹ Installation Monthly Hexane Emissions (tons) = the sum of each emission sources' Monthly Hexane Emissions (tons).

¹² Installation 12-Month Rolling Total Hexane Emissions (tons) = the sum of the 12 most recent Installation Monthly Hexane Emissions (tons) + the sum of all start-up, shutdown, and malfunction Hexane Emissions from the installation during the same 12-month period as reported to the Air Pollution Control Program's Compliance/Enforcement Section. **Installation 12-Month Rolling Total Hexane Emissions of less than 10.0 tons indicates compliance with Special Condition 4.**