220 West Main Street
P.O. Box 32010
Louisville, Kentucky 40232

Submitted Via KY One Stop Portal

September 28, 2017

Mr. Ben Matar
Combustion Section Supervisor
Permit Review Branch
Kentucky Division for Air Quality
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

RE: Title V Air Permit Renewal Application
Kentucky Utilities Company-Ghent Generating Station (AI # 704)

Dear Mr. Matar:

Kentucky Utilities Company owns and operates the Ghent Generating Station in Carroll County, Kentucky. This electric generating facility is classified as a major source under the Title V operating permit program and it currently operates under permit V-12-028R1. As required by 401 KAR 52:020, Section 12 and noted in Section G (2) (a) of the current permit; KU is submitting an electronic copy of the Ghent Generating Station Title V renewal permit application via the KY One Stop Portal. The current permit was issued April 12, 2013 and it expires April 12, 2018.

The renewal application has been signed by Ralph Bowling, the responsible official (designated representative) for KU's Ghent Generating Station. If you have any questions, please feel free to call (502)-627-2343.

Sincerely,

Marlene Zeckner Pardee
Senior Environmental Scientist

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1. APPLICATION SUMMARY

1.1 PURPOSE OF APPLICATION

LG&E and KU Energy, LLC owns and operates the Ghent Station in Carroll County, Kentucky. This electrical generating facility is classified as a major source under the Title V operating permit program and currently operates in accordance with permit V-12-028 R1, issued by the Kentucky Division for Air Quality (KDAQ) on April 12, 2013 and last revised on October 16, 2015. This is the third Title V permit that has been in place for this facility, replacing the initial Title V permit (V-97-025) originally issued on February 14, 1997. As the current permit expires on April 12, 2018, a renewal application for the permit must be submitted at least six months prior to the permit expiration date, or by **October 12, 2017**. This application report and associated appendices constitutes the renewal application for the Ghent Station required under Condition G(2) of the existing permit.

1.2 SUMMARY OF APPLICATION CONTENTS

Following this introduction, a description of the operations at the Ghent Station is provided in Section 2. Section 3 notes the changes since the renewal permit was issued in October of 2015. Finally, in Section 4, an analysis of requirements under the Compliance Assurance Monitoring (CAM) program (40 CFR Part 64) is provided. The current CAM plans are provided in Appendix E.

A complete set of DEP7007 series application forms is provided in Appendix A. Supporting the application forms, an area map and site plan are provided in Appendix B, and process flow diagrams are provided in Appendix C. The basis of the emission factors and emission rates represented on the 7007N forms are fully documented in Appendix D. In Appendix F, a copy of the existing Title V permit is provided with markups showing revisions and/or additions to permit language being sought through this renewal action.

2. FACILITY AND OPERATIONS DESCRIPTION

2.1 FACILITY LOCATION

Ghent Station is located approximately 37 miles southwest of Cincinnati and 1.5 miles northeast of Ghent, Kentucky (Carroll County) on a strip of land between the Ohio River and U.S. Highway 42. The property encompasses and area of approximately 2,315 acres. Figure B-1 in Appendix B shows the facility location and the surrounding area on a topographical map. The Universal Transverse Mercator (UTM) coordinates of the facility are (approximately) 670.7 kilometers (km) East and 4,290.7 km North (Zone 16, NAD83). Figure B-2 provides an overall site plan for Ghent Station that illustrates the locations of the major emission points.

2.2 FACILITY OPERATIONS SUMMARY

Ghent Station is an electrical generating power plant that began construction in 1971. The primary emission units at the plant are four base load coal-fired utility boilers (Units 1, 2, 3, & 4) with a combined nominal net generating capacity of just under 2,000 MW.

A process flow diagram depicting the defined emission units and air pollution control equipment is provided in Appendix C (Figure C-1), which accompanies the emission unit descriptions provided in the following sections. A process flow diagram for the dry ash and gypsum handling system and landfill operations is also provided in Appendix C (Figure C-2).

2.2.1 UTILITY BOILERS

2.2.1.1 Generating Unit 1

Generating Units 1, 2, 3 and 4 are each pulverized coal-fired utility boilers. Unit 1, commenced construction in August, 1971 and began operation in February 1974. It is a dry bottom, tangentially-fired designed boiler with a heat input capacity of 5,500 MMBtu/hr. Unit 1 is equipped with low NO_X burners. The exhaust gas first passes through a selective catalytic reduction (SCR) unit and then through a pulse jet fabric filter (PJFF) which replaced the dry electrostatic precipitator (ESP) in 2015. It then is ducted to a wet limestone forced-oxidation SO_2 scrubber (WFGD). The old WFGD for Unit 1 (installed in 1994) was replaced by a new WFGD in 2009.

A dry sorbent material can be injected at two locations in the exhaust train to facilitate control of sulfuric acid mist (SAM), one upstream of the dry ESP and one upstream of the FGD. The treated exhaust gas is then directed to a dedicated 662-ft stack (EP 25) and out to the atmosphere.

2.2.1.2 Generating Unit 2

Generating Unit 2, which began operation in April 1977, has a dry bottom, tangentially-fired boiler design with a heat input capacity of 5,500 MMBtu/hr. Unit 2 is equipped

with low NO_X burners and a pulse jet fabric filter (PJFF). The PJFF replaced the ESP in 2015. In 2009, the old FGD from Unit 1 was installed on Unit 2 to treat exhaust gas for SO_2 control. This treated exhaust gas combines with Unit 3's exhaust and ducts out a 581 ft. stack (EP 03) for Unit 2 and 3.

Similar to Unit 1, Unit 2 is also equipped with dry sorbent injection systems to minimize the sulfuric acid mist emissions.

2.2.1.3 Generating Unit 3

Generating Unit 3 commenced construction prior to September 1978 and began operation in May 1981. It is a dry bottom, wall-fired boiler with a heat input capacity of 5,500 MMBtu/hr. Similar to Unit 1, it is equipped with low NO_X burners and SCR to control NO_X emissions. The exhaust flue gas from the boiler first passes through a dry ESP, a PJFF (installed in 2014), a SCR and is then is ducted to a WFGD. Dry sorbent injection systems are used to minimize the sulfuric acid mist. Unit 3 shares a 581 ft. stack (EP 03) with Unit 2.

2.2.1.4 Generating Unit 4

Generating Unit 4 commenced construction prior to September 1978 and began operation in August 1984. It is also a dry bottom, wall fired boiler with a heat input capacity of 5,500 MMBtu/hr. Similar to Unit 3, Unit 4 is equipped with low NO_X burners and SCR to control NO_X emissions; a dry ESP and a PJFF (installed in 2014) to control particulates; and a WFGD to minimize the SO_2 emission. Similar to Unit 3, it is configured with two dry sorbent injection points that are used to minimize the sulfuric acid mist. The exhaust gas from the WFGD is directed through a 662 ft. stack (EP 26)..

2.2.2 UTILITY BOILER SUPPORTING OPERATIONS

The supporting operations for the utility boilers at Ghent Station include (1) coal receiving, storage, conveying, and crushing operations, (2) a limestone receiving, storage, and processing system, (3) bottom and fly ash handling systems, (4) gypsum handling system, and (5) four mechanical draft cooling towers. Bottom ash, fly ash, and gypsum handling systems were upgraded and replaced with a new system in 2012 to serve as the new dry material disposal system.

2.2.2.1 Coal Handling and Processing System

Coal used as fuel in the Ghent Station utility boilers are received at the site via 1,500 ton capacity barges. The path of the coal from the barge to the utility boilers is best understood by reviewing the process flow diagram in Appendix C (Figure C-1).

The coal from the barges is unloaded using bucket receivers and is placed on conveyor belts that carry the material up from the barge unloading station to a sample house. From there, the coal is either transferred to an open storage pile using a reversible yard conveyor, or to one of the two Crusher Houses. An older network of conveyors (Emission Unit 7, installed before 1974) and a newer network of conveyors (Emission

Unit 9, operational in 1977) reclaims coal from stockpile using a reversible yard skirt and the coal which is then conveyed to Crusher House 1 (Emission Unit 6, installed in 1974). Another newer conveyor network (Emission Unit 11, installed in 1977) is used to reclaim coal from the pile by a grating over an underground hopper, from which the coal is conveyed to a storage silo and then to the Crusher House 2 (which is encompassed in Emission Unit 11).

From the Crusher Houses, the coal is conveyed on a network of conveyors to the enclosed traveling tripper conveyors located above the coal bunkers for each boiler. From the coal bunkers, the coal is fed into coal pulverizers and then into each boiler. It is also possible for coal from Crusher House 2 to be conveyed to Crusher House 1 via a connecting conveyer network and then onto the tripper conveyors.

The relatively high moisture content of the raw coal, along with the use of enclosed conveyors, minimizes the potential for fugitive dust emissions from the coal unloading, conveying, and transfer operations. The sample house and further downstream transfer houses and crusher houses are also equipped with filter systems to minimize the release of fugitive dust. The outdoor storage pile is equipped with a wet suppression system that can be used when needed to control fugitive emissions.

2.2.2.2 Limestone Handling and Preparation

A forced oxidation WFGD system is used to reduce SO_2 emissions from each of the four existing boilers. Limestone slurry is used as the reagent in the WFGD systems.

Limestone is received at the plant via barges and is unloaded in the limestone receiving hopper using a bucket loader. The limestone is then conveyed from the receiving hopper up to a stacking tube located at the center of an outdoor storage pile. The stacking tube is a large diameter concrete column with openings at various heights to allow the limestone deposited to spill out of the stacking tube at the lowest opening just above the height of the storage pile. This design minimizes the fugitive emissions that would otherwise be created by dropping the limestone from a fixed height at the end of a conveyor.

Limestone is reclaimed from the outdoor storage pile via two screen openings, located on the bottom of the pile, that feed the limestone onto one of two enclosed pipe conveyors. The reclaim conveyors transport the limestone to the top of the limestone processing building. Once transferred from the reclaim conveyors, the limestone is screened and crushed in a wet grinding process and is mixed to the desired slurry consistency. The slurry is then stored in one of two tanks before being pumped as needed to the WFGD system.

The processing of the limestone occurs entirely under roof and is a wet process. Therefore, the actual crushing and grinding operations are not a source of quantifiable emissions. The transfer point at the top of the stacking tube and the top of the two

reclaim conveyors are equipped with fabric filters to minimize PM emissions from this process.

2.2.2.3 Dry Ash and Gypsum Handling System

Bottom ash and fly ash are a by-product generated as part of the normal operations of the utility boilers. Historically, bottom ash generated in the utility boilers and fly ash captured in the dry ESP was collected in hoppers and transferred to (via water jet system) the ash treatment basin on-site.

The primary by-product of the WFGD system is gypsum, a material that can be beneficially reused. Currently, the slurry generated in the WFGD system is piped to an offsite dewatering facility.

KU is currently executing a multi-year plan to install and utilize a new dry ash and gypsum disposal system at Ghent Station. Completion is anticipated in mid to late 2018

An off-permit change notification letter was sent to KDAQ on January 30, 2012 that addressed the new bottom ash, fly ash, and gypsum handling processes. On February 8, 2012, KDAQ affirmed that the installation of the ash and gypsum handling processes (all insignificant activities) could be authorized through the off-permit change.

2.2.2.4 CCR Landfill Operations

The ash and gypsum handling system are one of the two main functional components of the dry material disposal system. The other component is the new 240.5 acre CCR landfill located on a parcel centered approximately 1.5 miles southeast of the plant and its associated material transfer operations. Construction commenced in October of 2012 and max production/operation began in May of 2014.

Combined bottom ash, fly ash, and gypsum material streams (coal combustion residue/CCR) from the new ash handling system is mechanically conveyed via a pipe conveyor to a new truck loading station located near the landfill. Within an elevated transfer tower, the material is transferred to a conveyor that carries to the landfill truck loading station where it is distributed to one of three load out conveyors. Two of the load out conveyors will transfer the material into the buckets of large landfill haul trucks. Large haul trucks transport the mixed ash and gypsum material received at the truck loading station to the active area of the new CCR landfill. A minor revision application covering the CCR landfill operations portion of the dry material disposal system was submitted to KDAQ on April 5, 2012. With the exception of fugitive emissions tied to CCR landfill haul trucks, all processes at the CCR landfill station and in the CCR landfill are insignificant activities.

2.2.2.5 Cooling Towers

Four mechanical draft cooling towers are used to dissipate heat to the atmosphere and recycle cooling water to each of the utility boilers. The heat is dissipated when the circulating water is sprayed into the cooling tower as a coarse mist, which then cascades

down a fill material contacting the air passing up through the tower cells. As the circulating water falls, there is a transfer of heat from the water to the cooler atmospheric air.

Particulate matter emissions may result from the operation of cooling towers due to the presence of dissolved solids in the cooling tower water that is released through the cooling tower vent fans. As the cooling tower water moves through the air away from the vent fans, the liquid water evaporates, leaving behind solid particles in the form of particulate matter. Each cooling tower is equipped with a set of drift eliminators to minimize the amount of PM released.

2.2.3 EMERGENCY USE ENGINES AND BACKUP GENERATORS

The Ghent Station has one (1) new Tier III (540 hp) diesel fired emergency air compressor engine installed in 2009 (Unit 34). One (1) new (53 hp) non-emergency diesel fired generator engine, installed in 2013 (Unit 41). Four (4) existing diesel-fired emergency engines serving the utility boilers (Units 36-39) and one (1) existing emergency firewater pump engine (Unit 40). Two new diesel emergency generator engines (Units 42 and 43) will be installed in late 2017. They will replace existing Units 38 and 39.

3. UPDATES FOR RENEWAL AIR PERMIT

During the current permit term, the Ghent permit was revised (V-12-028 R1) to incorporate a significant revision, the consent decree requirements/controls and a minor revision for the removal of ESPs, adding DSI and PJFFs and the MATs extensions for Units 1 & 2.

Off permit changes to add an insignificant activity for a fuel additive facility (conveyors, (2) silos, mixing and feed tanks) were added in August of 2015 and revised in October of 2016 to (conveyors, (2) silos, mix tank and feed hopper). An insignificant activity for liquid Hg control additives was also added. They are noted on DEP7007DD, as numbers 38 and 39.

In 2017 two additional insignificant activity, a 150 HP (<1 mmbtu/hr) Indirect Heat Exchanger and Paved and Unpaved Roads - Transport of CCR material during periods of maintenance and/or repair of CCRT facility were added. They are noted on DEP7007DD, as numbers 40 and 41.

Two new emergency diesel generators, Units 42 and 43, were added in August of 2017. Once these units are placed in operation KU will request the retirement of Units 38 and 39.

Permit change requests and comments are noted in Appendix F.

4. COMPLIANCE ASSURANCE MONITORING ANALYSIS

Under 40 CFR 64, the Compliance Assurance Monitoring (CAM) regulations, facilities are required to prepare and submit monitoring plans for certain emission units with a Title V application. The CAM plans are intended to document methods that will provide on-going and reasonable assurance of compliance with emission limits. Pursuant to §64.2(a), the CAM regulations apply to a pollutant-specific emissions unit (PSEU), as defined in §64.1, at a major Title V source if the following criteria are met:

1) the PSEU is subject to an emission limitation or standard for the regulated pollutant, other than an emission limitation or standard that is exempt under §64.2(b),
2) the PSEU uses a control device as defined in §64.1 to achieve compliance with the emission limitation, and
3) the PSEU has potential pre-controlled emissions of the applicable regulated air pollutant that are equal to or greater than Title V major source thresholds.

An analysis of applicability to CAM for each group of emission units at the Ghent Station is provided in the following sections.

4.1 UTILITY BOILERS CAM APPLICABILITY

4.1.1 CAM APPLICABILITY FOR PM, PM_{10}, AND $PM_{2.5}$

Each of the utility boilers at Ghent Station (Units 1, 2 3, & 4) employs a PJFF or a PJFF and a ESP, to control emissions of PM, PM_{10} and $PM_{2.5}$. The Unit 1 Boiler is an existing unit. The Unit 1 ESP was replaced with a PJFF in May of 2015 and is now subject to a 0.127 lb/MMBtu under 401 KAR 61:015. Unit 2, a new unit, whose ESP was replaced with a PJFF in November of 2015, is subject to a 0.10 lb/MMBtu under 40 CFR 60.42(a)(1).

The Unit 3 & 4 Boilers are each subject to a 0.10 lb/MMBtu under 40 CFR 60.42(a)(1). Unit 3 has an ESP and a PJFF which was installed in May of 2014. Unit 3 has an ESP and a PJFF which was installed in December of 2014.

Pursuant to 40 CFR 64.2(a), because the controls (ESPs, PJFFs) are used to achieve compliance with the PM emission limits and potential pre-controlled PM emissions exceed 100 tpy, CAM applies to the Unit 1, 2 3, & 4 Boilers for PM.

Currently, there are no PM_{10} or $PM_{2.5}$ emission standards that apply to any of the utility boilers. Thus, no CAM plans for PM_{10} or $PM_{2.5}$ are required.

4.1.2 CAM APPLICABILITY FOR SO_2

Each of the utility boilers employs a WFGD system for SO_2 control. Unit 1 Boiler is subject to a 5.67 lb/MMBtu based on a 24-hr average SO_2 emission limit under 401 KAR 61:015. Unit 2, 3 & 4 Boilers are each subject to a 1.2 lb/MMBtu SO_2 emission standard under NSPS Subpart D (40 CFR 60.42(a)(2)).

Pursuant to 40 CFR 64.2(a), because the WFGDs are used to achieve compliance with the SO_2 emission limits and potential pre-controlled SO_2 emissions exceed 100 tpy, CAM applies to the Unit 1, 2 3, & 4 Boilers for SO_2.

4.1.3 CAM APPLICABILITY FOR NO_X

Each of the utility boilers at Ghent Station are equipped with low-NO_X burners to minimize NO_X formation. However, low-NO_X burners are not classified as a control device as defined in §64.1 and thus they are not relevant for CAM applicability.

For the Unit 1 Boiler, an SCR system is located upstream of the dry ESP for control of NO_X. However, Unit 1 is currently a grandfathered unit with respect to NSPS Subpart D and 401 KAR 61:015 does not include a limit on NO_X emissions. Therefore, because there is no applicable NO_X emission standard that applies to Unit 1, no NO_X CAM plan is required.

The Unit 2 Boiler is subject to a 0.7 lb/MMBtu NO_X emission standard under NSPS Subpart D. However, Unit 2 is not currently equipped with any post-combustion NO_X controls. Therefore, since there is no control device present, CAM does not apply to Unit 2.

Units 3 and 4 are each equipped with an SCR system downstream of the dry ESP to control NO_X emissions. Like Unit 2, Units 3 & 4 are each subject to a 0.7 lb/MMBtu NO_X emission standard under NSPS Subpart D (40 CFR 60.44(a)(3)). Although potential pre-controlled NO_X emissions exceed 100 tpy of NO_X, the SCR systems may not be necessary to achieve compliance with the NO_X emission limits (i.e., the low-NO_X burners may only be necessary). Conservatively however, KU has provided a CAM plan for NO_X, which simply reflects the use of the existing NO_X CEMS.

4.1.4 CAM APPLICABILITY FOR SAM

Each of the utility boilers is equipped with an SO_3 mitigation system by which sorbent materials can be injected to reduce emissions for sulfuric acid mist (SAM).

Per Section VI, paragraph 23.b of the Consent Decree entered in *United States v. Kentucky Utilities Co.*, Case No: 3:12-cv-00076-GFVT for the Ghent Generating Station [see also, Title V operating permit V-12-028 R1, Section B, Emission Unit 01, Item

6(b)], Kentucky Utilities (KU) is required to submit to the Kentucky Division for Air Quality (KDAQ), for review and approval, any necessary revisions to its Compliance Assurance Monitoring (CAM) plan for sulfuric acid mist (SAM) Emission Rates within 60 days of completion of a Stack Test required by paragraph 22.b of the Consent Decree. The initial CAM plan was submitted to KDAQ on October 3, 2013. KDAQ approved the CAM plan on February 4, 2014. KU has subsequently submitted additional revisions of the CAM plan on April 21, 2014, July 11, 2014, November 21, 2014, January 30, 2015, May 6, 2015, July 10, 2015, December 14, 2015, February 15, 2016, and December 9, 2016 due to SAM testing that was conducted on the KU Ghent Units.

Following bi-annual stack testing that was conducted in fulfillment of paragraph 22.b of the Consent Decree [see also, Title V operating permit V-12-028 R1, Section B, Emission Units 01, Item 3(e)] on KU's Ghent Unit 3 (December 6-8, 2016), KU has identified that revisions to the alternate CAM indicator ranges for Ghent Unit 3 are not necessary. Therefore, the revised plan submitted on December 9, 2016 remains the current version of Ghent's CAM plan for SAM emissions as of this May 2017 submittal.

4.1.5 CAM APPLICABILITY FOR OTHER POLLUTANTS

For all other pollutants emitted by the utility boilers; they are covered under a MACT and/or have no control devices in place and thus no other CAM plans are required.

As documented in this section, a CAM plan is required for PM,SO_2 and SAM for Units 1, 2, 3 and 4 Boilers. In addition, a CAM plan is required for NO_X for Units 3 and 4. CAM plans for these pollutants reflecting the current control equipment and monitoring systems in place have been prepared in accordance with applicable provisions of 40 CFR 64. The CAM Plans are included in Appendix E of this application package.

4.2 COAL HANDLING AND PROCESSING OPERATIONS

As shown in the process flow diagram provided in Appendix C and described in Section 2.2.2, the receiving, conveying, storage, and processing of coal prior to its delivery to the utility boilers is encompassed by several defined emission units. CAM applicability for each grouping of coal handling equipment is documented in the following sections.

4.2.1 PRE-NSPS SUBPART Y EQUIPMENT

The original coal receiving and conveying equipment at Ghent Station (covered by Emission Units 05, 07, and 08), is grandfathered with respect to NSPS Subpart Y (Coal Preparation and Processing Plants). Fugitive PM emissions from these conveying and storage operations are subject only to 401 KAR 63:010. As there is no applicable PM emission standard, CAM does not apply to these emission units.

The coal crushing operations in Crusher House #1 (Emission Unit 06) are also grandfathered with respect to NSPS Subpart Y. The emissions from the Crusher House #1 wet scrubber are subject to 401 KAR 61:020, which sets a process-weight-based allowable PM emission rate. Based on the maximum process rate capacity of 1,800 ton/hr, the allowable PM emission rate under this rule is 85 lb/hr. Based on the existing uncontrolled PM emission factor in KyEIS, which is a Midwest Research Institute derived factor previously approved by KDAQ, uncontrolled PM emissions from Crusher House #1 are 36 lb/hr. Although no PM testing has been performed on this emission units, based on the characteristics of the operations covered, the pre-controlled emission rates historically represented appear to be conservative, and they are certainly less than 85 lb/hr. Since the wet scrubber in place is not used to achieve compliance with the applicable PM standard, CAM does not apply.

4.2.2 NSPS SUBPART Y APPLICABLE EQUIPMENT

Coal conveying and processing equipment installed after the October 27, 1974 applicability date for NSPS Subpart Y are encompassed under Emission Units 09, 10, and 11. These emission units are subject to an opacity standard of 20% pursuant to 40 CFR 60.254(a). No other emission standards apply under Subpart Y. CAM plans are not required for opacity since they are not mass emission-based standards. Therefore, these emissions units are not subject to CAM.

4.3 LIMESTONE HANDLING AND PROCESSING OPERATIONS

The limestone handling and processing operations covered by Emission Units 25-29 are subject only to opacity standards under NSPS Subpart OOO or general prohibitions on fugitive PM under 401 KAR 63:010. Therefore, CAM does not apply to any of these emission units.

4.4 COOLING TOWERS

The cooling towers at the station are equipped with drift eliminators but are not subject to any PM emission standards. Therefore, CAM does not apply to the cooling towers.

4.5 ENGINES

None of the engines at the facility use a control device to achieve compliance with an applicable standard. In addition, the emission standards applicable under NSPS Subpart IIII are exempt from CAM pursuant to 40 CFR 64.2(b)(1)(i), since this regulation was promulgated after November 15, 1990. Therefore, CAM does not apply to the engines.

APPENDIX A

DEP7007 APPLICATION FORMS

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601
(502) 564-3999
http://www.air.ky.gov

DEP7007AI

Administrative Information

Enter if known

AFS Plant ID#
Source ID 21-041-0010 (AI 704)

Agency Use Only

Date Received

Log#

Permit#

PERMIT APPLICATION

The completion of this form is required under Regulations 401 KAR 52:020, 52:030, and 52:040 pursuant to KRS 224. Applications are incomplete unless accompanied by copies of all plans, specifications, and drawings requested herein. Failure to supply information required or deemed necessary by the division to enable it to act upon the application shall result in denial of the permit and ensuing administrative and legal action. Applications shall be submitted in triplicate.

1) APPLICATION INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: *Kentucky Utilities Company – Ghent Station*

Title: *N/A* **Phone:** *(502) 627-2343*

(If applicant is an individual)

Mailing Address: *LG&E and KU Energy Company*
Company

Street or P.O. Box: *P.O. Box 32010*

City: *Louisville* **State:** *KY* **Zip Code:** *40232*

Is the applicant (check one): ☐ **Owner** ☐ **Operator** ☐ **Owner & Operator** ☒ **Corporation/LLC*** ☐ **LP****

* If the applicant is a Corporation or a Limited Liability Corporation, submit a copy of the current Certificate of Authority from the Kentucky Secretary of State.

** If the applicant is a Limited Partnership, submit a copy of the current Certificate of Limited Partnership from the Kentucky Secretary of State.

Person to contact for technical information relating to application:

Name: *Marlene Zeckner Pardee*

Title: *Senior Environmental Scientist* Phone: *(502) 627-2343*

2) OPERATOR INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: *Same as applicant*

Title: **Phone:**

Mailing Address:
Company

Street or P.O. Box:

City: **State:** **Zip Code:**

DEP7007AI
(Continued)

3) TYPE OF PERMIT APPLICATION

For new sources that currently *do not* hold *any* air quality permits in Kentucky and are required to obtain a permit prior to construction pursuant to 401 KAR 52:020, 52:030, or 52:040.

☐ Initial Operating Permit (the permit will authorize both construction and operation of the new source)

Type of Source (*Check all that apply*): ☐ Major ☐ Conditional Major ☐ Synthetic Minor ☐ Minor

For existing sources that do not have a source-wide Operating Permit required by 401 KAR 52:020, 52:030, or 52:040.

Type of Source (*Check all that apply*): ☐ Major ☐ Conditional Major ☐ Synthetic Minor ☐ Minor

(*Check one only*)

☐ Initial Source-wide Operating Permit ☐ Construction of New Facilities at Existing Plant

☐ Construction of New Facilities at Existing Plant ☐ Modification of Existing Facilities at Existing Plant

☐ Other (explain) _____

For existing sources that currently have a source-wide Operating Permit.

Type of Source (*Check all that apply*): ☒ Major ☐ Conditional Major ☐ Synthetic Minor ☐ Minor

Current Operating Permit # ***V-12-028-R1***

☐ **Administrative Revision** (describe type of revision requested, e.g. name change)**:** _____

☒ **Permit Renewal** ☐ **Significant Revision** ☐ **Minor Revision**

☐ Addition of New Facilities ☐ Modification of Existing Facilities

For all construction and modification requiring a permit pursuant to 401 KAR 52:020, 52:030, or 52:040.

Proposed Date for Start of Construction or Modification: ***NA- Only Renewal***

Proposed date for Operation Start-up: ***NA- Only Renewal***

4) SOURCE INFORMATION

Source Name: *Ghent Generating Station*

Source Street Address: *U.S. Highway 42*

City: *Ghent* **Zip Code:** *41045* **County:** *Carroll*

Primary Standard Industrial Classification (SIC) Category: *Generation & Transmission of Electricity* **Primary SIC #:** *4911*

Property Area (Acres or Square Feet): *2,312.4 acres* **Number of Employees:** *~200*

Description of Area Surrounding Source (*check one*)**:**

☐ Commercial Area ☐ Residential Area ☐ Industrial Area ☐ Industrial Park ☒ Rural Area ☐ Urban Area

Approximate Distance to Nearest Residence or Commercial Property: *500 feet*

UTM or Standard Location Coordinates: (*Include topographical map showing property boundaries*)

UTM Coordinates: Zone *16* Horizontal (km) *670.651* Vertical (km) *4290.740*

Standard Coordinates: Latitude *38* Degrees *44* Minutes *56* Seconds

Longitude *85* Degrees *2* Minutes *11* Seconds

Imber

DEP7007AI

(Continued)

4) SOURCE INFORMATION (CONTINUED)

Is any part of the source located on federal land? ☐ **Yes** ☒ **No**

What other environmental permits or registrations does this source currently hold in Kentucky?

KPDES Permit No. KY0002038, ACOE 404 Permit

Certification of Registration for Hazardous Waste Management Activity – EPA ID No. KYD-085-052-751

Special Waste Landfill Permit (#SW 02100024)

What other environmental permits or registrations does this source need to obtain in Kentucky?

5) OTHER REQUIRED INFORMATION

Indicate the type(s) and number of forms attached as part of this application.

13	DEP7007A	Indirect Heat Exchanger, Turbine, Internal Combustion Engine	___	DEP7007R	Emission Reduction Credit
			___	DEP7007S	Service Stations
1	DEP7007B	Manufacturing or Processing Operations	___	DEP7007T	Metal Plating & Surface Treatment Operations
___	DEP7007C	Incinerators & Waste Burners	___	DEP7007V	Applicable Requirements & Compliance Activities
___	DEP7007F	Episode Standby Plan			
___	DEP7007J	Volatile Liquid Storage	3	DEP7007Y	Good Engineering Practice (GEP) Stack Height Determination
___	DEP7007K	Surface Coating or Printing Operations			
1	DEP7007L	Concrete, Asphalt, Coal, Aggregate, Feed, Corn, Flour, Grain, & Fertilizer	___	DEP7007AA	Compliance Schedule for Noncomplying Emission Units
___	DEP7007M	Metal Cleaning Degreasers	___	DEP7007BB	Certified Progress Report
1	DEP7007N	Emissions, Stacks, and Controls Information	1	DEP7007CC	Compliance Certification
___	DEP7007P	Perchloroethylene Dry Cleaning Systems	1	DEP7007DD	Insignificant Activities

Check other attachments that are part of this application.

	Required Data		Supplemental Data
☐	Map or Drawing Showing Location	☐	Stack Test Report
☒	Process Flow Diagram and Description	☐	Certificate of Authority from the Secretary of State (for Corporations and Limited Liability Companies)
☐	Site Plan Showing Stack Data and Locations	☐	Certificate of Limited Partnership from the Secretary of State (for Limited Partnerships)
☒	Emission Calculation Sheets	☐	Claim of Confidentiality (See 400 KAR 1:060)
☐	Material Safety Data Sheets (MSDS)	☐	Other (Specify) _____

Indicate if you expect to emit, in any amount, hazardous or toxic materials or compounds or such materials into the atmosphere from any operation or process at this location.

☒	Pollutants regulated under 401 KAR 57:002 (NESHAP)	☒	Pollutants listed in 401 KAR 63:060 (HAPS)
☒	Pollutants listed in 40 CFR 68 Subpart F [112(r) pollutants]	☐	Other

Has your company filed an emergency response plan with local and/or state and federal officials outlining the measures that would be implemented to mitigate an emergency release?

☒ **Yes** ☐ **No**

Check whether your company is seeking coverage under a permit shield. If "Yes" is checked, applicable requirements must be identified on Form DEP7007V. Identify any non-applicable requirements for which you are seeking permit shield coverage on a separate attachment to the application.

☒ **Yes** ☐ **No** ☒ **A list of non-applicable requirements is attached**

DEP7007AI Number
(Continued)

6) OWNER INFORMATION

Note: If the applicant is the owner, write "same as applicant" on the name line.

Name: *Same as applicant*

Title: _____ **Phone:** _____

Mailing Address: _____
Company

Street or P.O. Box: _____

City: _____ **State:** _____ **Zip Code:** _____

List names of owners and officers of your company who have an interest in the company of 5% or more.

Name	Position (owner, partner, president, CEO, treasurer, etc.)
None	

(attach another sheet if necessary)

7) SIGNATURE BLOCK

I, the undersigned, hereby certify under penalty of law, that I am a responsible official, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

BY: Ralph Bowling
(Authorized Signature)

9-18-17
(Date)

Ralph Bowling
(Typed or Printed Name of Signatory)

Vice President Power Production
(Title of Signatory)

(Revised 06/00)

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # EO25
Emission Unit # 01

1) Type of Unit (Make, Model, Etc.): Combustion Engineering Pulverized Coal Boiler

Date Installed: Constructed: 1971 Installed : 2/19/1974 **Cost of Unit:** 22.6 million
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 01

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** X
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   ____ **Reciprocating engines**
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** 5,500
2. **Power output (hp):** ____
   Power output (MW): ____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

X **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** ____ **I. Other** (*specify*) ____

4) Secondary Fuel (*if any, specify type*): No. 2 Fuel Oil (Startup and Stabilization Only)

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary	12*	3.5*	8,000*	10,500*
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.
** Maximum percent ash and sulfur values listed are typical values.*

6) Maximum Annual Fuel Usage Rate (***please specify units)*:*** Not Applicable

7) Fuel Source or supplier: Numerous

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

24 hours/day   7 days/week   52 weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat ______% Process Heat ______ % Power ______ %

10) Control options for turbine/IC engine (*Check*)

- __ (1) Water Injection
- __ (3) Selective Catalytic Reduction (SCR)
- __ (5) Combustion Modification)
- __ (2) Steam Injection
- __ (3) Non-Selective Catalytic Reduction (NSCR)
- __ (5) Other (*Specify*) ______________

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

X Pulverized Coal Fired:

- X Dry Bottom
- __ Wet Bottom
- __ Wall Fired
- X Tangentially Fired

Fly Ash Rejection: ☐ Yes ☐ No

______ Cyclone Furnace

______ Spreader Stoker

______ Overfeed Stoker

______ Underfeed Stoker

______ Fluidized Bed Combustor:
- ______ Circulating Bed
- ______ Bubbling Bed

______ Hand-fed

______ Other (*specify*) ______________

12) Oil-Fired Unit

______ Tangentially (Corner) Fired   ______ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

______ Dutch Oven/Fuel Cell Oven   ______ Stoker   ______ Suspension Firing

______ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) **Combustion Air** **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) **Additional Stack Data**

A. **Are sampling ports provided?** ☒ **Yes** ☐ **No**
B. **If yes, are they located in accordance with 40 CFR 60*?** ☒ **Yes** ☐ **No**
C. **List other units vented to this stack** _____

_____

17) **Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.**

Specification sheets can be provided if necessary and requested by KDAQ.

18) **Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.**

Refer to Section 2.2.2 of Renewal Application.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # EO03
Emission Unit # 02

1) Type of Unit (Make, Model, Etc.): Combustion Engineering Pulverized Coal Boiler

Date Installed: Constructed: before 1978 Installed: 4/20/1977 **Cost of Unit:** $29 million
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 02

2a) Kind of Unit (Check one):

1. **Indirect Heat Exchanger** X
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   ____ **Reciprocating engines**
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)

1. **Fuel input (mmBTU/hr):** 5,500
2. **Power output (hp):** ____
   Power output (MW): ____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

X **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** ____ **I. Other** (*specify*) ____

4) Secondary Fuel (*if any, specify type*): No. 2 Fuel Oil (Startup and Stabilization Only)

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary	12*	3.5*	8,000*	10,500*
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.
** Max percent ash and sulfur are typical.*

6) Maximum Annual Fuel Usage Rate (***please specify units)*:*** Not Applicable

7) Fuel Source or supplier: Numerous

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

__24__ hours/day __7__ days/week __52__ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

__X__ Pulverized Coal Fired:

__X__ Dry Bottom __ Wall Fired
__ Wet Bottom __X__ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) **Combustion Air** **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) **Additional Stack Data**

A. **Are sampling ports provided?** ☒ **Yes** ☐ **No**
B. **If yes, are they located in accordance with 40 CFR 60*?** ☒ **Yes** ☐ **No**
C. **List other units vented to this stack** Unit 03

17) **Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.**

Specification sheets can be provided if necessary and requested by KDAQ.

18) **Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.**

Refer to Section 2.2.2 of Renewal Application

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # EO03
Emission Unit # 03

1) Type of Unit (Make, Model, Etc.): Foster Wheeler Pulverized Coal Boiler

Date Installed: Constructed: before 1978 Installed: 5/31/1981 **Cost of Unit:** $51.3 million
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 03

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** X
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   ____ **Reciprocating engines**
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** 5,500
2. **Power output (hp):** ____
   Power output (MW): ____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

X **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** ____ **I. Other** (*specify*) ____

4) Secondary Fuel (*if any, specify type*): No. 2 Fuel Oil (Startup and Stabilization Only)

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to:[c, d] Maximum Ash	Maximum Sulfur
Primary	12*	3.5*	8,000*	10,500*
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.
** Max percent ash and sulfur are typical.*

6) Maximum Annual Fuel Usage Rate (*please specify units*)*: Not Applicable

7) Fuel Source or supplier: Numerous

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

24 hours/day 7 days/week 52 weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

X Pulverized Coal Fired:

__ Dry Bottom X Wall Fired
__ Wet Bottom ___ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) **Combustion Air** **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) **Additional Stack Data**

A. **Are sampling ports provided?** ☒ **Yes** ☐ **No**
B. **If yes, are they located in accordance with 40 CFR 60*?** ☒ **Yes** ☐ **No**
C. **List other units vented to this stack** *Unit 02*

17) **Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.**

Specification sheets can be provided if necessary and requested by KDAQ.

18) **Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.**

Refer to Section 2.2.2 of Application Report

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber

INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # EO26
Emission Unit # 04

1) Type of Unit (Make, Model, Etc.): Foster Wheeler Pulverized Coal Boiler

Date Installed: Constructed: before 1977 Installed: 8/18/1984 **Cost of Unit:** $58 million
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 04

2a) Kind of Unit (Check one):

1. **Indirect Heat Exchanger** X
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   ____ **Reciprocating engines**
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)

1. **Fuel input (mmBTU/hr):** 5,500
2. **Power output (hp):** ____
   Power output (MW): ____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

X **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** ____ **I. Other** (*specify*) ____

4) Secondary Fuel (*if any, specify type*): No. 2 Fuel Oil (Startup and Stabilization Only)

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary	12*	3.5*	8,000*	10,500*
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

** Max percent ash and sulfur are typical.*

6) Maximum Annual Fuel Usage Rate (*please specify units*)*: Not Applicable

7) Fuel Source or supplier: Numerous

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

__24__ hours/day __7__ days/week __52__ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

__X__ Pulverized Coal Fired:

__X__ Dry Bottom __X__ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven _____ Stoker _____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☒ **Yes** ☐ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☒ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ.

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

Refer to Section 2.2.2 of Application Report

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 34
Emission Unit # 34

1) Type of Unit (Make, Model, Etc.): Caterpillar, C15, 4 stroke lean burn, Tier III Certified Emergency Diesel Engine
Date Installed: December 2009 **Cost of Unit:** $21,000
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 34 Emergency Air Compressor

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** ____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines** (Tier III Certified emergency diesel generator, 4 stroke lean burn, CI)
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn X
   (c) 4-cycle rich burn ____
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** ____
2. **Power output (hp):** 540
   Power output (MW): ____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

____ **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): ____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)****: Not Applicable

7) Fuel Source or supplier: Various

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

__ Dry Bottom __ Wall Fired
__ Wet Bottom _ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven _____ Stoker _____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 36
Emission Unit # 36

1) Type of Unit (Make, Model, Etc.): Caterpillar D-3412 Emergency Diesel Generator

Date Installed: 1980 **Cost of Unit:** _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 03 Emergency Engine (Emission Unit 36)

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** _____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines**
   (a) 2-cycle lean burn _____
   (b) 4-cycle lean burn _____
   (c) 4-cycle rich burn _____
4. **Industrial Engine** _____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** _____
2. **Power output (hp):** 755
   Power output (MW): _____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

_____ **A. Coal** _____ **B. Fuel Oil # (***Check one***)** _____ **1** _____ **2** _____ **3** _____ **4** _____ **5** _____ **6**

_____ **C. Natural Gas** _____ **D. Propane** _____ **E. Butane** _____ **F. Wood** _____ **G. Gasoline**

_____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): _____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)**:** Not Applicable

7) Fuel Source or supplier: Various

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

__ Dry Bottom __ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven _____ Stoker _____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 37
Emission Unit # 37

1) Type of Unit (Make, Model, Etc.): Caterpillar D-3412 Emergency Diesel Generator

Date Installed: 1983 **Cost of Unit:** _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 04 Emergency Engine (Emission Unit 37)

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** _____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines**
   (a) 2-cycle lean burn _____
   (b) 4-cycle lean burn _____
   (c) 4-cycle rich burn _____
4. **Industrial Engine** _____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** _____
2. **Power output (hp):** 755
   Power output (MW): _____

SECTION 1. FUEL

3) Type of Primary Fuel (*Check*):

_____ **A. Coal** _____ **B. Fuel Oil # (***Check one***)** _____ **1** _____ **2** _____ **3** _____ **4** _____ **5** _____ **6**

_____ **C. Natural Gas** _____ **D. Propane** _____ **E. Butane** _____ **F. Wood** _____ **G. Gasoline**

_____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): _____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)**:** Not Applicable

7) Fuel Source or supplier: Various

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

__ Dry Bottom __ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven _____ Stoker _____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 38
Emission Unit # 38

1) Type of Unit (Make, Model, Etc.): Caterpillar D-346 Emergency Diesel Generator

Date Installed: 1972 **Cost of Unit:** _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 01 Emergency Engine (Emission Unit 38)

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** _____
2. **Gas Turbine for Electricity Generation** _____
3. **Pipe Line Compressor Engines:**
   _____ **Gas Turbine**
   X **Reciprocating engines**
   (a) 2-cycle lean burn _____
   (b) 4-cycle lean burn _____
   (c) 4-cycle rich burn _____
4. **Industrial Engine** _____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** _____
2. **Power output (hp):** 505
   Power output (MW): _____

SECTION 1. FUEL

4) Type of Primary Fuel (*Check*):

_____ **A. Coal** _____ **B. Fuel Oil # (***Check one***)** _____ **1** _____ **2** _____ **3** _____ **4** _____ **5** _____ **6**

_____ **C. Natural Gas** _____ **D. Propane** _____ **E. Butane** _____ **F. Wood** _____ **G. Gasoline**

_____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): _____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (*please specify units*)*: Not Applicable

7) Fuel Source or supplier: Various

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:
__ Dry Bottom __ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:
☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 39
Emission Unit # 39

1) Type of Unit (Make, Model, Etc.): Caterpillar D-346 Emergency Diesel Generator

Date Installed: 1976 **Cost of Unit:** _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 02 Emergency Engine (Emission Unit 39)

2a) Kind of Unit (Check one):
1. Indirect Heat Exchanger ____
2. Gas Turbine for Electricity Generation ____
3. Pipe Line Compressor Engines:
   ____ Gas Turbine
   X Reciprocating engines
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. Industrial Engine ____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. Fuel input (mmBTU/hr): ____
2. Power output (hp): 505
   Power output (MW): ____

SECTION 1. FUEL

5) Type of Primary Fuel (*Check*):

____ A. Coal ____ B. Fuel Oil # *(Check one)* ____ 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6

____ C. Natural Gas ____ D. Propane ____ E. Butane ____ F. Wood ____ G. Gasoline

____ H. Diesel X I. Other (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): _____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)**:** Not Applicable

7) Fuel Source or supplier: Various

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:
__ Dry Bottom __ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:
☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air **Draft:** _____ **Natural** _____ **Induced**

Forced Pressure _____ **lbs/sq. in.**

Percent excess air (air supplied in excess of theoretical air) _____ **%**

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 40
Emission Unit # 40

1) Type of Unit (Make, Model, Etc.): Cummins NT-380-1F Emergency Fire Water Pump

Date Installed: 1972 **Cost of Unit:** _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 40 Ghent Station Fire Pump

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger** _____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines**
   (a) 2-cycle lean burn _____
   (b) 4-cycle lean burn _____
   (c) 4-cycle rich burn _____
4. **Industrial Engine** _____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr):** _____
2. **Power output (hp):** 340
   Power output (MW): _____

SECTION 1. FUEL

6) Type of Primary Fuel (*Check*):

_____ **A. Coal** _____ **B. Fuel Oil # (***Check one***)** _____ **1** _____ **2** _____ **3** _____ **4** _____ **5** _____ **6**

_____ **C. Natural Gas** _____ **D. Propane** _____ **E. Butane** _____ **F. Wood** _____ **G. Gasoline**

_____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): _____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		0.0015		
Secondary				

a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)**:** Not Applicable

7) Fuel Source or supplier: Various

DEP7007A (Continued)

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

10) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

__ Dry Bottom __ Wall Fired
__ Wet Bottom __ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven _____ Stoker _____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air Draft: _____ Natural _____ Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
C. List other units vented to this stack _____

_____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

Specification sheets can be provided if necessary and requested by KDAQ

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Natural Resources & Environmental Protection Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

Timber
DEP7007A
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 41
Emission Unit # 41

1) Type of Unit (Make, Model, Etc.): Magnum, (MMG 45), 33 KW (53 HP), Certified Interim Tier IV Non- Emergency Diesel Portable Generator

Date Installed: 2013 **Cost of Unit: $19,567**
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 41 Non-Emergency 53 HP Certified 4i Diesel Generator

2a) Kind of Unit (Check one):
1. **Indirect Heat Exchanger ____**
2. **Gas Turbine for Electricity Generation ____**
3. **Pipe Line Compressor Engines:**
   ____ Gas Turbine
   X Reciprocating engines (Tier IV non- emergency portable generator CI)
   (a) 2-cycle lean burn ____
   (b) 4-cycle lean burn ____
   (c) 4-cycle rich burn ____
4. **Industrial Engine ____**

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. **Fuel input (mmBTU/hr): ____**
2. **Power output (hp): 53**
   Power output (MW): ____

SECTION 1. FUEL

4) Type of Primary Fuel (*Check*):

____ A. Coal ____ B. Fuel Oil # *(Check one)* **____ 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6**

____ C. Natural Gas ____ D. Propane ____ E. Butane ____ F. Wood ____ G. Gasoline

____ H. Diesel **X I. Other** (*specify*) No. 2 Low Sulfur Diesel Fuel

4) Secondary Fuel (*if any, specify type*): ____

5) Fuel Composition

	Percent Ash[a]	Percent Sulfur[b]	Heat Content Corresponding to: [c, d]	
Type	Maximum	Maximum	Maximum Ash	Maximum Sulfur
Primary		0.015		
Secondary				

e. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
f. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
g. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
h. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (***please specify units)**:**

8) Fuel Source or supplier: Various

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

15) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week 52 weeks/year* (actual usage projected to less than 2000 hrs./year)

16) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power 100 %

17) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
__ (5) Other (S*pecify*) _____

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

18) Coal-Fired Units

_____ Pulverized Coal Fired:
_ Dry Bottom __ Wall Fired
__ Wet Bottom _ Tangentially Fired

Fly Ash Rejection:
☐ Yes ☐ No

_____ Cyclone Furnace
_____ Spreader Stoker
_____ Overfeed Stoker
_____ Underfeed Stoker
_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed
_____ Hand-fed
_____ Other (*specify*) _____

19) Oil-Fired Unit

_____ Tangentially (Corner) Fired
____ Horizontally Opposed (Normal) Fired

20) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven
_____ Stoker
_____ Suspension Firing
_____ Fluidized Bed Combustion (FBC)

21) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No
__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air Draft: _____ Natural _____ Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

19) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
D. List other units vented to this stack _____

_____

20) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

21) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Natural Resources & Environmental Protection Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber

INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 42
Emission Unit # 42

1) Type of Unit (Make, Model, Etc.): Caterpillar, , C13 ACERT Diesel Engine, 4 stroke, Tier III Certified Emergency Diesel Engine (Specs: 350ekW or 469 HP)

Date Installed: Upon approval **Cost of Unit:** @ $75,000 (cost of engine)
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 42 Emergency Diesel Generator (Tier 3 certified, 4-stroke lean burn) *(once installed, this will replace unit 38)*

2a) Kind of Unit (Check one):

1. **Indirect Heat Exchanger** ____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines** **(Tier III certified emergency diesel generator engine, CI engine)**
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)

1. **Fuel input (mmBTU/hr):** 3.92 mmbtu/hr (spec sheet/cals)
2. **Power output (hp):** 469 (or 350ekW/spec sheet)
   Power output (MW): ____

(a) 2-cycle lean burn ____
(b) 4-cycle lean burn X
(c) 4-cycle rich burn ____

SECTION 1. FUEL

5) Type of Primary Fuel (*Check*):

____ **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel (ULSD) 15 ppm sulfur

4) Secondary Fuel (*if any, specify type*): ____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		15 ppm (0.0015)		
Secondary				

i. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
j. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
k. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
l. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (*please specify units)*:* ***Emergency generator (cals based on 500 hrs.)***

9) Fuel Source or supplier: Numerous - changes frequently

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

22) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year **(emergency usage as needed, @ one hr/month for testing)**

23) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

24) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
X (5) Other (S*pecify*) (Tier III Certified)

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

25) Coal-Fired Units

_____ Pulverized Coal Fired:
_ Dry Bottom __ Wall Fired
__ Wet Bottom _ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:
☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

26) Oil-Fired Unit

_____ Tangentially (Corner) Fired

____ Horizontally Opposed (Normal) Fired

27) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

28) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air Draft: _____ Natural _____ Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

22) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
E. List other units vented to this stack _____

_____

23) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

24) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Natural Resources & Environmental Protection Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

(*Submit copies of this form for each individual unit.*
Make additional copies as needed)

DEP7007A Imber

INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 43
Emission Unit # 43

1) Type of Unit (Make, Model, Etc.): Caterpillar, C13 ACERT Diesel Engine, 4 stroke, Tier III Certified Emergency Diesel Engine (Specs: 350ekW or 469 HP)

Date Installed: Upon approval **Cost of Unit:** @ $75,000 (cost of engine)
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Unit 43 Emergency Diesel Generator (Tier 3 certified, 4-stroke lean burn) *(once installed, this will replace unit 39)*

2a) Kind of Unit (Check one):

1. **Indirect Heat Exchanger** ____
2. **Gas Turbine for Electricity Generation** ____
3. **Pipe Line Compressor Engines:**
   ____ **Gas Turbine**
   X **Reciprocating engines** **(Tier III certified emergency diesel generator engine, CI engine)**
4. **Industrial Engine** ____

2b) Rated Capacity: (Refer to manufacturer's specifications)

1. **Fuel input (mmBtu/hr):** 3.92 mmbtu/hr (spec sheet/cals)
2. **Power output (hp):** 469 (or 350ekW/spec sheet)
   Power output (MW): ____

(a) 2-cycle lean burn ____
(b) 4-cycle lean burn X
(c) 4-cycle rich burn ____

SECTION 1. FUEL

6) Type of Primary Fuel (*Check*):

____ **A. Coal** ____ **B. Fuel Oil # (***Check one***)** ____ **1** ____ **2** ____ **3** ____ **4** ____ **5** ____ **6**

____ **C. Natural Gas** ____ **D. Propane** ____ **E. Butane** ____ **F. Wood** ____ **G. Gasoline**

____ **H. Diesel** X **I. Other** (*specify*) Ultra Low Sulfur Diesel (ULSD) 15 ppm sulfur

4) Secondary Fuel (*if any, specify type*): ____

5) Fuel Composition

Type	Percent Ash[a] Maximum	Percent Sulfur[b] Maximum	Heat Content Corresponding to: [c, d] Maximum Ash	Maximum Sulfur
Primary		15 ppm (0.0015)		
Secondary				

m. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
n. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
o. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
p. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (*please specify units)*:* ***Emergency generator (cals based on 500 hrs.)***

10) Fuel Source or supplier: Numerous - changes frequently

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A (Continued)

29) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

___ hours/day _____ days/week _____ weeks/year **(emergency usage as needed, @ one hr/month for testing)**

30) If this unit is multipurpose, describe percent in each use category:

Space Heat _____% Process Heat _____ % Power _____ %

31) Control options for turbine/IC engine (C*heck*)

__ (1) Water Injection
__ (2) Steam Injection
__ (3) Selective Catalytic Reduction (SCR)
__ (3) Non-Selective Catalytic Reduction (NSCR)
__ (5) Combustion Modification)
X (5) Other (S*pecify*) (Tier III Certified)

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

32) Coal-Fired Units

_____ Pulverized Coal Fired:
_ Dry Bottom __ Wall Fired
__ Wet Bottom _ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
_____ Circulating Bed
_____ Bubbling Bed

Fly Ash Rejection:
☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (*specify*) _____

33) Oil-Fired Unit

_____ Tangentially (Corner) Fired

____ Horizontally Opposed (Normal) Fired

34) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

35) Natural Gas-Fired Units

__ Low NO_x Burners: ☐ Yes ☐ No

__ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

DEP7007A
(Continued)

15) Combustion Air Draft: _____ Natural _____ Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

25) Additional Stack Data

A. Are sampling ports provided? ☐ **Yes** ☒ **No**
B. If yes, are they located in accordance with 40 CFR 60*? ☐ **Yes** ☐ **No**
F. List other units vented to this stack _____

_____

26) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

27) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B
MANUFACTURING OR PROCESSING OPERATIONS

(Please read instructions before completing this form)

Emission Unit # (1)	Process Description (2)	Continuous or Batch (3)	Maximum Operating Schedule (Hours/Day, Days/Week, Weeks/Year) (4)	Process Equipment (Make, Model, Etc.) (5)	Date Installed (6)
22	Cooling Tower 1	C	24 hr/day, 7 days/week, 52 weeks/yr	N/A	N/A
22	Cooling Tower 2	C	24 hr/day, 7 days/week, 52 weeks/yr	N/A	N/A
22	Cooling Tower 3	C	24 hr/day, 7 days/week, 52 weeks/yr	N/A	N/A
22	Cooling Tower 4	C	24 hr/day, 7 days/week, 52 weeks/yr	N/A	N/A

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B
MANUFACTURING OR PROCESSING OPERATIONS

(***Please read instructions before completing this form***)

Emission Unit # (1)	Process Description	List Raw Material(s) Used (7)	Maximum Quantity Input Of Each Raw Material (Specify Units/Hour) (8) See Item 18	Type of Products (9) See Item 18	Quantity Output (Specify Units)	
					Maximum Hourly Rated Capacity (Specify Units) (10a)	Maximum Annual (Specify Units) (10b)
22	Cooling Tower 1	Water	11.46 MMgal/hr	None	11.46 MMgal/hr	N/A
22	Cooling Tower 2	Water	11.82 MMgal/hr	None	11.82 MMgal/hr	N/A
22	Cooling Tower 3	Water	10.32 MMgal/hr	None	10.32 MMgal/hr	N/A
22	Cooling Tower 4	Water	10.32 MMgal/hr	None	10.32 MMgal/hr	N/A

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B
MANUFACTURING OR PROCESSING OPERATIONS

(Please read instructions before completing this form)

Emission Unit # (1)	Process Description	Fuel Type for Process Heat (11)	Rated Burner Capacity (MMBTU/Hour) (12)	Fuel Composition		Fuel Usage Rates		Note:
				% Sulfur (13a)	% Ash (13b)	Maximum Hourly (14a)	Maximum Annual (14b)	If combustion products are emitted along with process emissions, indicate so by writing "combined." (15)
22	Cooling Tower 1	N/A	N/A	N/A	N/A	N/A	N/A	
22	Cooling Tower 2	N/A	N/A	N/A	N/A	N/A	N/A	
22	Cooling Tower 3	N/A	N/A	N/A	N/A	N/A	N/A	
22	Cooling Tower 4	N/A	N/A	N/A	N/A	N/A	N/A	

Commonwealth of Kentucky

Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007L Timber

Concrete, Asphalt, Coal, Aggregate, Feed, Corn, Flour, Grain, & Fertilizer

1) Type of Operation(s):
_____ Concrete _____ Asphalt __X__ Coal __X__ Aggregate Processing
_____ Feed, Corn & Flour _____ Grain _____ Fertilizer

2) Operating Schedule: __24__ Hours/day __7__ Days/Week __52__ Weeks/Year
Percent Annual Throughput: Dec.-Feb. __25__ % Mar.-May __25__ % June-Aug. __25__ %
Sept.-Nov. __25__ %

3) Paved Haul Road Length __Approx. 1 Miles__ Unpaved Haul Road Length __Approx. ½ Miles__
Describe Dust Control Method for Haul Road(s) and Yard Area _____Wet Suppression_____

Depending on the type of operation (*as checked in box 1*), complete the appropriate section(s). Also, attach a flow diagram showing all of the emission point numbers, and list the numbers on this form where applicable.

SECTION 1 CONCRETE OPERATION ONLY (*Ready-mix, Block, Pre-cast, or Terminate)*

4) Maximum Hourly Rated Capacity _____ cu. yd./hr. Max. Annual Rated Capacity* _____ cu. yd./hr.

5) _____ Wet Batch _____ Dry Batch

6) **Specify the Maximum Operating Rate of Each Applicable Facility and the Corresponding Control Equipment:**

Emission Point No.	Affected Facility (Specify Quantity)	Maximum Loading Rate (silos only) or Operating Rate(s)** (tons/hour)	Control Equipment***	Cost of Controls
	Cement Silo(s)			
	Fly Ash Silo(s)			
	Weight Hopper(s)			
	Drum Mixer(s)			
	Aggregate Handling And Stockpiles			
	Truck Loadout(s)			

***Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.**
****Where the loading rate for the silos is not known, a rated capacity of 30 tons/hour will be used.**
*****For baghouse(s), complete the details on DEP7007N, and submit documents to substantiate control efficiency.**

7) Describe briefly the disposal of particulates collected in the baghouse and/or other waste generated at the site.

_____

_____

DEP7007L
Continued

SECTION III COAL OPERATIONS ONLY

14) Specify the Maximum Operating Rate of Each Applicable Facility and the Corresponding Control Equipment:

Emission Point No.	Affected Facility (Specify quantity in blank)	Max. Capacity* (tons/hr.)	Max. Capacity* (tons/yr.)**	Control Equipment***	Cost of Controls
	Receiving Hopper(s) ____				
06 11a	Primary Crusher(s) 8	1800 1800		Enclosure, /Wet Scrubber Enclosure, /Wet Scrubber	NA
	Secondary Crusher(s) ____				
	Screen(s) _____				
07 08 09 10 11	Conveyor Transfer Point(s) 24	See Coal Handling Diagram		Enclosure/Fabric Filter/Wet Scrubber Enclosure/Fabric Filter/Wet Scrubber Enclosure/Fabric Filter/Wet Scrubber Enclosure/Fabric Filter/Wet Scrubber Enclosure/Fabric Filter/Wet Scrubber	NA
07	Stockpile(s) 3	3600		Compaction, Wet Suppression	NA
	Rail Loadout(s) _____				
05	Barge Loadout(s) 1	3600		Enclosure	NA
	Truck Loadout(s) _____				
	Thermal Dryer(s) _____				
	Other (specify) _____ _____				*Cost of controls included in cost of original coal handling equipment

Attach a flow diagram showing all of the emission point numbers, and list the emission point numbers on this form where applicable. This flow diagram should be used to supplement the above information. For example, if there are two conveyor transfer points at 500 tons/hour and three conveyor transfer points at 1000 tons/hour, this distinction can be made on the flow diagram rather than in the table above. If this type of clarification is necessary, please make a note to see the attached flow diagram in the "maximum capacity" column above.

***The maximum capacity should represent the maximum tons/hour that the piece of equipment was designed to physically handle. This number may be larger than you anticipate ever utilizing. For instance, a crusher may be able to handle 1000 tons/hour at its largest setting, but you may plan to operate the crusher at 800 tons/hour. In this case, 1000 tons/hour should still be used in the application. For "shop-made" conveyors or other equipment for which manufacturers' data would not be available, an estimate should be made as to the maximum hourly tonnage that the equipment can physically handle. Again, the maximum number should be used in place of what you may plan to actually use.**
****Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.**
*****Complete the details on DEP7007N, and submit documents to substantiate control efficiency.**

15) Describe briefly the disposal of particulates collected in the baghouse and/or other waste generated at the site.

Coal material collected in filters is discharged back onto the coal handling system's conveyors.

DEP7007L Number Continued

SECTION IV AGGREGATE OPERATIONS ONLY

16) Specify the Maximum Operating Rate of Each Applicable Facility and the Corresponding Control Equipment:

Emission Point No.	Affected Facility (specify quantity in blank)	Max. Capacity* (tons/hr.)	Max. Capacity* (tons/yr.)**	Control Equipment ***	Cost of Controls
25	Receiving Hopper(s) 1	1,000			NA
	Primary Crusher(s_____				
	Secondary Crusher(s) ____				
	Tertiary Crusher(s) _____				
29	Fines Mill(s) 3	200		Wet Process	NA
	Screen(s) 3				
26, 28	Conveyor Transfer Points 8	4 @ 1000 1 @550 3@ 225		Enclosure	NA
27	Stockpile(s) 1	1,000			NA
	Pug Mill(s) _____				
	Loadout(s) _____				
25	Other (specify) _____ Barge Unloading	1,000		Enclosure	NA

Attach a flow diagram showing all of the emission point numbers, and list the emission point numbers on this form where applicable. This flow diagram should be used to supplement the above information. For example, if there are two conveyor transfer points at 500 tons/hour and three conveyor transfer points at 1000 tons/hour, this distinction can be made on the flow diagram rather than in the table above. If this type of clarification is necessary, please make a note to see the attached flow diagram in the "maximum capacity" column above.

***The maximum capacity should represent the maximum tons/hour that the piece of equipment was designed to physically handle. This number may be larger than you anticipate ever utilizing. For instance, a crusher may be able to handle 1000 tons/hour at its largest setting, but you may plan to operate the crusher at 800 tons/hour. In this case, 1000 tons/hour should still be used in the application. For "shop-made" conveyors or other equipment for which manufacturers' data would not be available, as estimate should be made as to the maximum hourly tonnage that the equipment can physically handle. Again, this maximum number should be used in place of what you may plan to actually use.**

****Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.**

*****Complete the details on DEP7007N, and submit documents to substantiate control efficiency.**

17) Describe briefly the disposal of particulates collected in the baghouse and/or other waste generated at the site.

_____

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

Imber
DEP7007N

Emissions, Stacks, and Controls Information

Applicant Name: KU Ghent Station Log # _____

SECTION I. Emissions Unit and Emission Point Information

KyEIS ID #	Emissions Unit and Emission Point Descriptions	Maximum Operating Parameters		Permitted Operating Parameters		
		Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
	Emission Unit Name: Date Constructed: HAPs present? ☐ Yes ☐ No					
	Emission Point Name: Source ID: SCC Code: SCC Units: KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: Applicable Regulations:					
	Emission Point Name: Source ID: SCC Code: SCC Units: KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: Applicable Regulations:					

Refer to 7007N Form Supplement Table 1.

KyEIS ID#	KyEIS Process ID#	Emission Source Description	Date Construct	HAP present ?	KyEIS Stack #	SCC Code	SCC Units	Fuel Ash Content	Fuel Sulfur Content	Fuel Heat Content Ratio	Applicable Regulations	Maximum Operating Parameters		Permitted Operating Parameters		
												Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
01	1	Unit 1 Indirect Heat Exchanger	8/17/1971	Y	25	10100212	ton	9.7%	2.9%	11,419 Btu/lb	61:015,Regulation 7,401 KAR 52:060 ,CAIR,CAM, NESHAP UUUUU	240.8	8,760	na	na	na
02	1	Unit 2 Indirect Heat Exchanger	4/20/1977	Y	03	10100212	ton	9.7%	2.9%	11,406 Btu/lb	NSPS Subpart D,401 KAR 52:060 ,NESHAP UUUUU,CAIR,CAM	241.1	8,760	na	na	na
03	1	Unit 3 Indirect Heat Exchanger	9/18/1978	Y	03	10100202	ton	9.7%	2.9%	11,406 Btu/lb	NSPS Subpart D,401 KAR 52:060 ,NESHAP UUUUU,CAIR,CAM	241.1	8,760	na	na	na
04	1	Unit 4 Indirect Heat Exchanger	9/18/1978	Y	26	10100202	ton	9.7%	2.9%	11,415 Btu/lb	NSPS Subpart D,401 KAR 52:060 ,NESHAP UUUUU,CAIR,CAM	240.9	8,760	na	na	na
05	1	Barge Unloader (Coal Barge Unloading)	1973	N	Fugitive	30510403	ton	na	na	na	63:010	3,600	8,760	na	na	na
07	1	Coal Handling (Coal Stockpile)	1973	N	Fugitive	30510303	ton	na	na	na	63:010	3,600	8,760	na	na	na
07	2	Coal Handling (Coal Conveyors 1D, 1E, 1F)	1973	N	Fugitive	30510103	ton	na	na	na	63:010	10,800	8,760	na	na	na
07	3	Coal Handling (Coal Conveyor 1J)	1973	N	Fugitive	30510103	ton	na	na	na	63:010	900	8,760	na	na	na
07	4	Coal Handling (Coal Conveyor 1G)	1973	N	Fugitive	30510103	ton	na	na	na	63:010	1,500	8,760	na	na	na
07	5	Coal Handling (Coal Conveyor 1H)	1973	N	Fugitive	30510103	ton	na	na	na	63:010	1,800	8,760	na	na	na
08	1	Coal Handling (Coal Conveyors 1A, 1B, 1C)	1971	N	Fugitive	30510103	ton	na	na	na	63:010	10,800	8,760	na	na	na
09	1	Coal Handling (Coal Conveyor 2H)	1973	N	Fugitive	30510103	ton	na	na	na	NSPS Y	1,800	8,760	na	na	na
10	1	Coal Handling (Coal Conveyor 6H)	1980	N	Fugitive	30510103	ton	na	na	na	NSPS Y	1,800	8,760	na	na	na
06	1	Coal Crushing (Crusher House #1)	1974	N	Fugitive	30501010	ton	na	na	na	61:020	1,800	8,760	na	na	na
11a	1	Coal Crushing (Crusher House #2)	1980	N	Fugitive	30501010	ton	na	na	na	NSPS Y	1,800	8,760	na	na	na

KyEIS ID#	KyEIS Process ID#	Emission Source Description	Date Construct	HAP present ?	KyEIS Stack #	SCC Code	SCC Units	Fuel Ash Content	Fuel Sulfur Content	Fuel Heat Content Ratio	Applicable Regulations	Maximum Operating Parameters		Permitted Operating Parameters		
												Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
11b	1	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	1980	N	Fugitive	30510103	ton	na	na	na	NSPS Y	4,500	8,760	na	na	na
11b	2	Coal Handling (Coal Conveyor 2G)	1980	N	Fugitive	30510103	ton	na	na	na	NSPS Y	1,500	8,760	na	na	na
11b	3	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	1980	N	Fugitive	30510103	ton	na	na	na	NSPS Y	12,600	8,760	na	na	na
11b	4	Coal Handling (Coal Conveyor 3G & 4G)	1980	N	Fugitive	30510103	ton	na	na	na	NSPS Y	4,800	8,760	na	na	na
25	1	Barge Unloading (Limestone Barge Unloading)	2006	N	Fugitive	30510405	ton	na	na	na	63:010	1,000	8,760	na	na	na
25	2	Barge Unloading (Bucket of Recvg Hopper)	2006	N	Fugitive	30510405	ton	na	na	na	63:010	1,000	8,760	na	na	na
26	1	Limestone Handling (Limestone Hopper to L2)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	1,000	8,760	na	na	na
26	2	Limestone Handling (Limestone Conveyor L2 to L3)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	1,000	8,760	na	na	na
26	3	Limestone Handling (Limestone Conveyor L3 to Stockpile)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	1,000	8,760	na	na	na
27	1	Limestone Handling (Limestone West Stockpile)	2006	N	Fugitive	30510105	ton	na	na	na	63:010	1,000	8,760	na	na	na
28	1	Limestone Handling (Limestone Hopper L3 to L4)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	550	8,760	na	na	na
28	2	Limestone Handling (Limestone Conveyor L4)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	225	8,760	na	na	na
28	3	Limestone Handling (Limestone Conveyor L5)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	225	8,760	na	na	na
28	4	Limestone Handling (Limestone Conveyor L6)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	225	8,760	na	na	na
28	5	Limestone Handling (Limestone Conveyor L7)	2006	N	Fugitive	30510105	ton	na	na	na	NSPS OOO	225	8,760	na	na	na

KyEIS ID#	KyEIS Process ID#	Emission Source Description	Date Construct	HAP present ?	KyEIS Stack #	SCC Code	SCC Units	Fuel Ash Content	Fuel Sulfur Content	Fuel Heat Content Ratio	Applicable Regulations	Maximum Operating Parameters		Permitted Operating Parameters		
												Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
29	1	Limestone Handling (Wet Limestone Screens and Mills)	2006	N	Fugitive	30599999	ton	na	na	na	NSPS OOO	200	8,760	na	na	na
22	1	Cooling Tower 1	N/A	N	Fugitive	38500110	MMgal	na	na	na	63:010	11.5	8,760	na	na	na
22	2	Cooling Tower 2	N/A	N	Fugitive	38500110	MMgal	na	na	na	63:010	11.8	8,760	na	na	na
22	3	Cooling Tower 3	N/A	N	Fugitive	38500110	MMgal	na	na	na	63:010	10.3	8,760	na	na	na
22	4	Cooling Tower 4	N/A	N	Fugitive	38500110	MMgal	na	na	na	63:010	10.3	8,760	na	na	na
34	1	Emergency Air Compressor	2010	Y	na	20300101	1000 gal	na	na	137 MMBtu/1000gal	NSPS IIII; NESHAP ZZZZ	0.0276	8,760	na	na	na
35	1	CCR Landfill Operations (Haul Trucks)	2012	N	na	30532090	1000ton	na	na	na	63:010	0.262	8,760		na	na
36	1	Unit 3 Emergency Engine	1980	Y	na	20200401	1000 gal	na	na	137 MMBtu/1000gal	NESHAP ZZZZ	0.041	100	na	na	na
37	1	Unit 4 Emergency Engine	1983	Y	na	20200401	1000 gal	na	na	137 MMBtu/1000gal	NESHAP ZZZZ	0.041	100	na	na	na
38	1	Unit 1 Emergency Engine	1972	Y	na	20200102	1000 gal	na	na	137 MMBtu/1000gal	NESHAP ZZZZ	0.026	100	na	na	na
39	1	Unit 2 Emergency Engine	1976	Y	na	20200102	1000 gal	na	na	137 MMBtu/1000gal	NESHAP ZZZZ	0.026	100	na	na	na
40	1	Ghent Station Fire Pump	1972	Y	na	20200102	1000 gal	na	na	137 MMBtu/1000gal	NESHAP ZZZZ	0.017	100	na	na	na
41	1	Non-Emergency Diesel Gen Engine	2013	Y	na	20200102	1000 gal	na	na	137 MMBtu/1000gal	NSPS IIII; NESHAP ZZZZ	0.003	8,760	na	na	na
42	1	Unit 1 Emergency Engine	4th Quarter 2017	Y	na	20200401	1000 gal	na	na	137 MMBtu/1000gal	NSPS IIII; NESHAP ZZZZ	0.026	100	na	na	na
43	1	Unit 2 Emergency Engine	4th Quarter 2017	Y	na	20200401	1000 gal	na	na	137 MMBtu/1000gal	NSPS IIII; NESHAP ZZZZ	0.026	100	na	na	na
Process rate listed for EU35 (Landfill Operations) is an annual average. Total annual volume of material transported is 2,295,000 ton/yr.																

Form Number
DEP7007N
(continued)

SECTION I. Emission Units and Emission Point Information (continued)

KyEIS ID #	Emission Factors			Control Equipment		Hourly (lb/hr) Emissions			Annual (tons/yr) Emissions		
	Pollutant	Emission Factor (lb/SCC Units)	Emission Factor Basis	Control Equipment Association	Pollutant Overall Efficiency (%)	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable
				1st control device KyEIS Control ID #: Collection efficiency:							
				1st control device KyEIS Control ID #: Collection efficiency: 2nd control device KyEIS Control ID #: Collection efficiency:							

Refer to 7007N Form Supplement Table 2.

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
01	**1**	**Unit 1 Indirect Heat Exchanger**														
		CO	00630-08-0	0.500	lb/ton	AP42 1.1-3, 9/98; PC, dry b	na	na	na	240.8	120.4	na	na	527.4	na	na
		NOX	10102-44-0	15.000	lb/ton	AP42 1.1-3, 9/98	na	LNB,SCR	87.0%	240.8	3,612.4	469.6	na	15,822.3	2,056.9	na
		PM	na	96.600	lb/ton	AP42 1.1-4, 9/98	na	PJFF	99.9%	240.8	23,263.9	27.5	1,100	101,895.7	120.4	na
		PM10	na	22.218	lb/ton	AP42 1.1-4, 9/98	na	PJFF	99.9%	240.8	5,350.7	6.3	na	23,436.0	27.7	na
		PM2.5	na	5.796	lb/ton	AP42 1.1-6, 9/98	na	PJFF	99.8%	240.8	1,395.8	2.8	na	6,113.7	12.3	na
		SO2	07446-09-5	108.680	lb/ton	AP42 1.1-3, 9/98	na	FGD	98.1%	240.8	26,173.0	497.3	31,185	114,637.9	2,178.1	na
		VOC (TNMOC)	na	0.060	lb/ton	AP42 1.1-19, 9/98	na	na	na	240.8	14.4	na	na	63.3	na	na
		H2SO4	07664-93-9	1.575	lb/ton	1% conversion to SO3	na	DSI	60.0%	240.8	379.2	151.5	na	1,661.0	663.6	na
		CO2	na	4.70E+03	lb/ton	40 CFR 98 Table C-1	na	na	na	240.8	1.13E+06	na	na	4.96E+06	na	na
		CH4	na	5.54E-01	lb/ton	40 CFR 98 Table C-2	na	na	na	240.8	1.33E+02	na	na	5.84E+02	na	na
		N2O	na	8.06E-02	lb/ton	40 CFR 98 Table C-2	na	na	na	240.8	1.94E+01	na	na	8.50E+01	na	na
		CO2e	na	4.70E+03	lb/ton	40 CFR 98 Table A-1	na	na	na	240.8	1.13E+06	na	na	4.96E+06	na	na
		Antimony	07440-36-0	3.09E-04	lb/ton	AP42 1.1-16, 9/98	na	PJFF	98.6%	240.8	7.45E-02	1.07E-03	na	3.26E-01	4.67E-03	na
		Arsenic	07740-38-2	1.69E-02	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.7%	240.8	4.07E+00	1.32E-02	na	1.78E+01	5.79E-02	na
		Beryllium	07440-41-7	2.50E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.9%	240.8	6.01E-01	3.62E-04	na	2.63E+00	1.59E-03	na
		Cadmium	07440-43-9	5.35E-04	lb/ton	AP42 1.1-16, 9/98	na	PJFF	96.6%	240.8	1.29E-01	4.43E-03	na	5.64E-01	1.94E-02	na
		Chromium	07440-47-3	4.29E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	98.0%	240.8	1.03E+00	2.07E-02	na	4.52E+00	9.07E-02	na
		Cobalt	07440-48-4	2.07E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.0%	240.8	4.99E-01	4.77E-03	na	2.19E+00	2.09E-02	na
		Lead	07439-92-1	1.20E-02	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.5%	240.8	2.88E+00	1.31E-02	na	1.26E+01	5.74E-02	na
		Manganese	07439-96-5	6.42E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	98.2%	240.8	1.55E+00	2.71E-02	na	6.77E+00	1.19E-01	na
		Nickel	07440-02-0	2.70E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	96.1%	240.8	6.51E-01	2.56E-02	na	2.85E+00	1.12E-01	na
		Mercury	07439-97-6	4.00E-04	lb/ton	AP42 1.1-17, 9/98 / KYEIS	na	PJFF	97.0%	240.8	9.63E-02	2.89E-03	na	4.22E-01	1.27E-02	na
		Selenium	07782-49-2	4.00E-03	lb/ton	AP42 1.1-18, 9/98	na	PJFF	67.5%	240.8	9.63E-01	3.13E-01	na	4.22E+00	1.37E+00	na
		Biphenyl	00092-52-4	1.70E-06	lb/ton	AP42 1.1-13, 9/98	na	na	na	240.8	4.09E-04	na	na	1.79E-03	na	na
		Naphthalene	00091-20-3	1.30E-05	lb/ton	AP42 1.1-13, 9/98	na	na	na	240.8	3.13E-03	na	na	1.37E-02	na	na
		Acetaldehyde	00075-07-0	7.31E-05	lb/ton	PISCES	na	na	na	240.8	1.76E-02	na	na	7.71E-02	na	na
		Acetophenone	00098-86-2	2.74E-05	lb/ton	PISCES	na	na	na	240.8	6.60E-03	na	na	2.89E-02	na	na
		Acrolein	00107-02-8	4.34E-05	lb/ton	PISCES	na	na	na	240.8	1.05E-02	na	na	4.58E-02	na	na
		Benzene	00071-43-2	8.91E-05	lb/ton	PISCES	na	na	na	240.8	2.15E-02	na	na	9.40E-02	na	na
		Benzyl chloride	00100-44-7	6.39E-06	lb/ton	PISCES	na	na	na	240.8	1.54E-03	na	na	6.75E-03	na	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Bis(2-ethylhexyl)phthalate	00117-81-7	8.22E-05	lb/ton	PISCES	na	na	na	240.8	1.98E-02	na	na	8.67E-02	na	na
		Bromoform	00075-25-2	3.90E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	9.39E-03	na	na	4.11E-02	na	na
		Carbon disulfide	00075-15-0	2.51E-05	lb/ton	PISCES	na	na	na	240.8	6.05E-03	na	na	2.65E-02	na	na
		2-Chloroacetophenone	00532-27-4	7.00E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	1.69E-03	na	na	7.38E-03	na	na
		Chlorobenzene	00108-90-7	3.65E-06	lb/ton	PISCES	na	na	na	240.8	8.80E-04	na	na	3.85E-03	na	na
		Chloroform	00067-66-3	1.83E-05	lb/ton	PISCES	na	na	na	240.8	4.40E-03	na	na	1.93E-02	na	na
		Cumene	00098-82-8	5.30E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	1.28E-03	na	na	5.59E-03	na	na
		Cyanide	00057-12-5	2.50E-03	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	6.02E-01	na	na	2.64E+00	na	na
		Dimethyl sulfate	00077-78-1	4.80E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	1.16E-02	na	na	5.06E-02	na	na
		2,4-Dinitrotoluene	00121-14-2	4.57E-06	lb/ton	PISCES	na	na	na	240.8	1.10E-03	na	na	4.82E-03	na	na
		Ethylbenzene	00100-41-4	1.83E-05	lb/ton	PISCES	na	na	na	240.8	4.40E-03	na	na	1.93E-02	na	na
		Ethyl chloride	00075-00-3	1.21E-05	lb/ton	PISCES	na	na	na	240.8	2.92E-03	na	na	1.28E-02	na	na
		Ethylene dibromide	00106-93-4	5.94E-05	lb/ton	PISCES	na	na	na	240.8	1.43E-02	na	na	6.26E-02	na	na
		Ethylene dichloride	00107-06-2	4.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	9.63E-03	na	na	4.22E-02	na	na
		Formaldehyde	00050-00-0	5.94E-05	lb/ton	PISCES	na	na	na	240.8	1.43E-02	na	na	6.26E-02	na	na
		Hexane	00110-54-3	1.12E-05	lb/ton	PISCES	na	na	na	240.8	2.70E-03	na	na	1.18E-02	na	na
		Isophorone	00078-59-1	2.74E-05	lb/ton	PISCES	na	na	na	240.8	6.60E-03	na	na	2.89E-02	na	na
		Methyl bromide	00074-83-9	2.03E-05	lb/ton	PISCES	na	na	na	240.8	4.90E-03	na	na	2.14E-02	na	na
		Methyl chloride	00074-87-3	2.51E-05	lb/ton	PISCES	na	na	na	240.8	6.05E-03	na	na	2.65E-02	na	na
		Methyl ethyl ketone	00078-93-3	3.90E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	9.39E-02	na	na	4.11E-01	na	na
		Methyl hydrazine	00060-34-4	1.70E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	4.09E-02	na	na	1.79E-01	na	na
		Methyl methacrylate	00080-62-6	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	4.82E-03	na	na	2.11E-02	na	na
		Methyl tert butyl ether	01634-04-4	3.50E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	8.43E-03	na	na	3.69E-02	na	na
		Methylene chloride	00075-09-2	6.17E-05	lb/ton	PISCES	na	na	na	240.8	1.49E-02	na	na	6.50E-02	na	na
		Phenol	00108-95-2	7.54E-05	lb/ton	PISCES	na	na	na	240.8	1.82E-02	na	na	7.95E-02	na	na
		Propionaldehyde	00123-38-6	4.34E-05	lb/ton	PISCES	na	na	na	240.8	1.05E-02	na	na	4.58E-02	na	na
		Styrene	00100-42-5	1.60E-05	lb/ton	PISCES	na	na	na	240.8	3.85E-03	na	na	1.69E-02	na	na
		Tetrachloroethylene	00127-18-4	9.59E-06	lb/ton	PISCES	na	na	na	240.8	2.31E-03	na	na	1.01E-02	na	na
		Toluene	00108-88-3	3.88E-05	lb/ton	PISCES	na	na	na	240.8	9.35E-03	na	na	4.10E-02	na	na
		1,1,1-Trichloroethane	00079-00-5	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.8	4.82E-03	na	na	2.11E-02	na	na
		Vinyl acetate	00108-05-4	7.08E-06	lb/ton	PISCES	na	na	na	240.8	1.71E-03	na	na	7.47E-03	na	na
		m/p-Xylene	00108-38-3	1.87E-05	lb/ton	PISCES	na	na	na	240.8	4.51E-03	na	na	1.98E-02	na	na
		o-Xylene	00095-47-6	1.00E-05	lb/ton	PISCES	na	na	na	240.8	2.42E-03	na	na	1.06E-02	na	na
		POM	na	5.48E-05	lb/ton	AP42 1.1-17, 9/98	na	na	na	240.8	1.32E-02	na	na	5.78E-02	na	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Hydrogen Chloride	07647-01-0	1.44E+00	lb/ton	PISCES	na	na	80.1%	240.8	346.7	68.9	na	1,518.7	302.0	na
		Hydrogen Fluoride	07664-39-3	1.68E-01	lb/ton	PISCES	na	na	86.4%	240.8	40.6	5.5	na	177.7	24.2	na
02	1	**Unit 2 Indirect Heat Exchanger**														
		CO	00630-08-0	0.500	lb/ton	AP42 1.1-3, 9/98	na	na	na	241.1	120.6	na	na	528.0	na	na
		NOX	10102-44-0	15.000	lb/ton	AP42 1.1-3, 9/98	na	LNB	25.0%	241.1	3,616.5	2,712.4	3,850	15,840.3	11,880.3	na
		PM	na	96.800	lb/ton	AP42 1.1-4, 9/98	na	PJFF	99.8%	241.1	23,338.6	55.0	1,100	102,223.0	240.9	na
		PM10	na	22.264	lb/ton	AP42 1.1-4, 9/98	na	PJFF	99.8%	241.1	5,367.9	12.7	na	23,511.3	55.4	na
		PM2.5	na	5.808	lb/ton	AP42 1.1-6, 9/98	na	PJFF	99.6%	241.1	1,400.3	5.6	na	6,133.4	24.6	na
		SO2	07446-09-5	109.060	lb/ton	AP42 1.1-3, 9/98	na	FGD	95.2%	241.1	26,294.5	1,262.1	6,600	115,169.9	5,528.2	na
		VOC (TNMOC)	na	0.060	lb/ton	AP42 1.1-19, 9/98	na	na	na	241.1	14.5	na	na	63.4	na	na
		H2SO4	07664-93-9	1.580	lb/ton	1% conversion to SO3	na	DSI	50.7%	241.1	381.0	188.0	na	1,668.7	823.2	na
		CO2	na	4.70E+03	lb/ton	40 CFR 98 Table C-1	na	na	na	241.1	1.13E+06	na	na	4.96E+06	na	na
		CH4	na	5.53E-01	lb/ton	40 CFR 98 Table C-2	na	na	na	241.1	1.33E+02	na	na	5.84E+02	na	na
		N2O	na	8.05E-02	lb/ton	40 CFR 98 Table C-2	na	na	na	241.1	1.94E+01	na	na	8.50E+01	na	na
		CO2e	na	4.70E+03	lb/ton	40 CFR 98 Table A-1	na	na	na	241.1	1.13E+06	na	na	4.96E+06	na	na
		Antimony	07440-36-0	3.09E-04	lb/ton	AP42 1.1-16, 9/98	na	PJFF	97.8%	241.1	7.45E-02	1.65E-03	na	3.26E-01	7.21E-03	na
		Arsenic	07740-38-2	1.69E-02	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.4%	241.1	4.07E+00	2.38E-02	na	1.78E+01	1.04E-01	na
		Beryllium	07440-41-7	2.50E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.9%	241.1	6.02E-01	7.74E-04	na	2.64E+00	3.39E-03	na
		Cadmium	07440-43-9	5.34E-04	lb/ton	AP42 1.1-16, 9/98	na	PJFF	95.1%	241.1	1.29E-01	6.26E-03	na	5.64E-01	2.74E-02	na
		Chromium	07440-47-3	4.29E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	97.0%	241.1	1.03E+00	3.09E-02	na	4.53E+00	1.35E-01	na
		Cobalt	07440-48-4	2.07E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	98.5%	241.1	5.00E-01	7.68E-03	na	2.19E+00	3.36E-02	na
		Lead	07439-92-1	1.20E-02	lb/ton	AP42 1.1-16, 9/98	na	PJFF	99.2%	241.1	2.88E+00	2.28E-02	na	1.26E+01	9.99E-02	na
		Manganese	07439-96-5	6.42E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	97.3%	241.1	1.55E+00	4.10E-02	na	6.77E+00	1.80E-01	na
		Nickel	07440-02-0	2.70E-03	lb/ton	AP42 1.1-16, 9/98	na	PJFF	94.5%	241.1	6.51E-01	3.57E-02	na	2.85E+00	1.56E-01	na
		Mercury	07439-97-6	4.00E-04	lb/ton	AP42 1.1-18, 9/98	na	PJFF	95.0%	241.1	9.64E-02	4.82E-03	na	4.22E-01	2.11E-02	na
		Selenium	07782-49-2	4.00E-03	lb/ton	AP42 1.1-18, 9/98	na	PJFF	67.5%	241.1	9.64E-01	3.13E-01	na	4.22E+00	1.37E+00	na
		Biphenyl	00092-52-4	1.70E-06	lb/ton	AP42 1.1-13, 9/98	na	na	na	241.1	4.10E-04	na	na	1.80E-03	na	na
		Naphthalene	00091-20-3	1.30E-05	lb/ton	AP42 1.1-13, 9/98	na	na	na	241.1	3.13E-03	na	na	1.37E-02	na	na
		Acetaldehyde	00075-07-0	7.30E-05	lb/ton	PISCES	na	na	na	241.1	1.76E-02	na	na	7.71E-02	na	na
		Acetophenone	00098-86-2	2.74E-05	lb/ton	PISCES	na	na	na	241.1	6.60E-03	na	na	2.89E-02	na	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Emission Factors				Control Equipment			Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions			Annual (tons/yr) Emissions		
		Pollutant	CAS#	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Basis	Cont. Equip. #	Control Device	Control Efficiency		Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable
		Acrolein	00107-02-8	4.33E-05 lb/ton	PISCES	na	na	na	241.1	1.05E-02	na	na	4.58E-02	na	na
		Benzene	00071-43-2	8.90E-05 lb/ton	PISCES	na	na	na	241.1	2.15E-02	na	na	9.40E-02	na	na
		Benzyl chloride	00100-44-7	6.39E-06 lb/ton	PISCES	na	na	na	241.1	1.54E-03	na	na	6.75E-03	na	na
		Bis(2-ethylhexyl)phthalate	00117-81-7	8.21E-05 lb/ton	PISCES	na	na	na	241.1	1.98E-02	na	na	8.67E-02	na	na
		Bromoform	00075-25-2	3.90E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.40E-03	na	na	4.12E-02	na	na
		Carbon disulfide	00075-15-0	2.51E-05 lb/ton	PISCES	na	na	na	241.1	6.05E-03	na	na	2.65E-02	na	na
		2-Chloroacetophenone	00532-27-4	7.00E-06 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.69E-03	na	na	7.39E-03	na	na
		Chlorobenzene	00108-90-7	3.65E-06 lb/ton	PISCES	na	na	na	241.1	8.80E-04	na	na	3.85E-03	na	na
		Chloroform	00067-66-3	1.82E-05 lb/ton	PISCES	na	na	na	241.1	4.40E-03	na	na	1.93E-02	na	na
		Cumene	00098-82-8	5.30E-06 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.28E-03	na	na	5.60E-03	na	na
		Cyanide	00057-12-5	2.50E-03 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	6.03E-01	na	na	2.64E+00	na	na
		Dimethyl sulfate	00077-78-1	4.80E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.16E-02	na	na	5.07E-02	na	na
		2,4-Dinitrotoluene	00121-14-2	4.56E-06 lb/ton	PISCES	na	na	na	241.1	1.10E-03	na	na	4.82E-03	na	na
		Ethylbenzene	00100-41-4	1.82E-05 lb/ton	PISCES	na	na	na	241.1	4.40E-03	na	na	1.93E-02	na	na
		Ethyl chloride	00075-00-3	1.21E-05 lb/ton	PISCES	na	na	na	241.1	2.92E-03	na	na	1.28E-02	na	na
		Ethylene dibromide	00106-93-4	5.93E-05 lb/ton	PISCES	na	na	na	241.1	1.43E-02	na	na	6.26E-02	na	na
		Ethylene dichloride	00107-06-2	4.00E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.64E-03	na	na	4.22E-02	na	na
		Formaldehyde	00050-00-0	5.93E-05 lb/ton	PISCES	na	na	na	241.1	1.43E-02	na	na	6.26E-02	na	na
		Hexane	00110-54-3	1.12E-05 lb/ton	PISCES	na	na	na	241.1	2.70E-03	na	na	1.18E-02	na	na
		Isophorone	00078-59-1	2.74E-05 lb/ton	PISCES	na	na	na	241.1	6.60E-03	na	na	2.89E-02	na	na
		Methyl bromide	00074-83-9	2.03E-05 lb/ton	PISCES	na	na	na	241.1	4.90E-03	na	na	2.14E-02	na	na
		Methyl chloride	00074-87-3	2.51E-05 lb/ton	PISCES	na	na	na	241.1	6.05E-03	na	na	2.65E-02	na	na
		Methyl ethyl ketone	00078-93-3	3.90E-04 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.40E-02	na	na	4.12E-01	na	na
		Methyl hydrazine	00060-34-4	1.70E-04 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.10E-02	na	na	1.80E-01	na	na
		Methyl methacrylate	00080-62-6	2.00E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.82E-03	na	na	2.11E-02	na	na
		Methyl tert butyl ether	01634-04-4	3.50E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	8.44E-03	na	na	3.70E-02	na	na
		Methylene chloride	00075-09-2	6.16E-05 lb/ton	PISCES	na	na	na	241.1	1.49E-02	na	na	6.50E-02	na	na
		Phenol	00108-95-2	7.53E-05 lb/ton	PISCES	na	na	na	241.1	1.82E-02	na	na	7.95E-02	na	na
		Propionaldehyde	00123-38-6	4.33E-05 lb/ton	PISCES	na	na	na	241.1	1.05E-02	na	na	4.58E-02	na	na
		Styrene	00100-42-5	1.60E-05 lb/ton	PISCES	na	na	na	241.1	3.85E-03	na	na	1.69E-02	na	na
		Tetrachloroethylene	00127-18-4	9.58E-06 lb/ton	PISCES	na	na	na	241.1	2.31E-03	na	na	1.01E-02	na	na
		Toluene	00108-88-3	3.88E-05 lb/ton	PISCES	na	na	na	241.1	9.35E-03	na	na	4.10E-02	na	na
		1,1,1-Trichloroethane	00079-00-5	2.00E-05 lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.82E-03	na	na	2.11E-02	na	na
		Vinyl acetate	00108-05-4	7.07E-06 lb/ton	PISCES	na	na	na	241.1	1.71E-03	na	na	7.47E-03	na	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		m/p-Xylene	00108-38-3	1.87E-05	lb/ton	PISCES	na	na	na	241.1	4.51E-03	na	na	1.98E-02	na	na
		o-Xylene	00095-47-6	1.00E-05	lb/ton	PISCES	na	na	na	241.1	2.42E-03	na	na	1.06E-02	na	na
		POM	na	5.47E-05	lb/ton	AP42 1.1-17, 9/98	na	na	na	241.1	1.32E-02	na	na	5.78E-02	na	na
		Hydrogen Chloride	07647-01-0	1.44E+00	lb/ton	PISCES	na	na	80.1%	241.1	347.1	68.9	na	1,520.5	302.0	na
		Hydrogen Fluoride	07664-39-3	1.68E-01	lb/ton	PISCES	na	na	86.4%	241.1	40.6	5.5	na	177.9	24.2	na
03	**1**	**Unit 3 Indirect Heat Exchanger**														
		CO	00630-08-0	0.500	lb/ton	AP42 1.1-3, 9/98	na	na	na	241.1	120.6	na	na	528.0	na	na
		NOX	10102-44-0	22.000	lb/ton	AP42 1.1-3, 9/98	na	LNB,SCR	90.0%	241.1	5,304.2	530.4	na	23,232.5	2,323.3	na
		PM	na	96.800	lb/ton	AP42 1.1-4, 9/98	na	ESP/PJFF	99.8%	241.1	23,338.6	55.0	1,100	102,223.0	240.9	na
		PM10	na	22.264	lb/ton	AP42 1.1-4, 9/98	na	ESP/PJFF	99.8%	241.1	5,367.9	12.7	na	23,511.3	55.4	na
		PM2.5	na	5.808	lb/ton	AP42 1.1-6, 9/98	na	ESP/PJFF	99.6%	241.1	1,400.3	5.6	na	6,133.4	24.6	na
		SO2	07446-09-5	108.680	lb/ton	AP42 1.1-3, 9/98	na	FGD	96.1%	241.1	26,202.9	1,021.9	6,600	114,768.6	4,476.0	na
		VOC (TNMOC)	na	0.060	lb/ton	AP42 1.1-19, 9/98	na	na	na	241.1	14.5	na	na	63.4	na	na
		H2SO4	07664-93-9	1.575	lb/ton	1% conversion to SO3	na	DSI	30.7%	241.1	379.6	263.1	na	1,662.9	1,152.5	na
		CO2	na	4.70E+03	lb/ton	40 CFR 98 Table C-1	na	na	na	241.1	1.13E+06	na	na	4.96E+06	na	na
		CH4	na	5.53E-01	lb/ton	40 CFR 98 Table C-2	na	na	na	241.1	1.33E+02	na	na	5.84E+02	na	na
		N2O	na	8.05E-02	lb/ton	40 CFR 98 Table C-2	na	na	na	241.1	1.94E+01	na	na	8.50E+01	na	na
		CO2e	na	4.70E+03	lb/ton	40 CFR 98 Table A-1	na	na	na	241.1	1.13E+06	na	na	4.96E+06	na	na
		Antimony	07440-36-0	3.09E-04	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.8%	241.1	7.45E-02	1.65E-03	na	3.26E-01	7.21E-03	na
		Arsenic	07740-38-2	1.69E-02	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.4%	241.1	4.07E+00	2.38E-02	na	1.78E+01	1.04E-01	na
		Beryllium	07440-41-7	2.50E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.9%	241.1	6.02E-01	7.74E-04	na	2.64E+00	3.39E-03	na
		Cadmium	07440-43-9	5.34E-04	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	95.1%	241.1	1.29E-01	6.26E-03	na	5.64E-01	2.74E-02	na
		Chromium	07440-47-3	4.29E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.0%	241.1	1.03E+00	3.09E-02	na	4.53E+00	1.35E-01	na
		Cobalt	07440-48-4	2.07E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	98.5%	241.1	5.00E-01	7.68E-03	na	2.19E+00	3.36E-02	na
		Lead	07439-92-1	1.20E-02	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.2%	241.1	2.88E+00	2.28E-02	na	1.26E+01	9.99E-02	na
		Manganese	07439-96-5	6.42E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.3%	241.1	1.55E+00	4.10E-02	na	6.77E+00	1.80E-01	na
		Nickel	07440-02-0	2.70E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	94.5%	241.1	6.51E-01	3.57E-02	na	2.85E+00	1.56E-01	na
		Mercury	07439-97-6	4.00E-04	lb/ton	AP42 1.1-18, 9/98	na	ESP/PJFF	95.0%	241.1	9.64E-02	4.82E-03	na	4.22E-01	2.11E-02	na
		Selenium	07782-49-2	4.00E-03	lb/ton	AP42 1.1-18, 9/98	na	ESP/PJFF	67.5%	241.1	9.64E-01	3.13E-01	na	4.22E+00	1.37E+00	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Biphenyl	00092-52-4	1.70E-06	lb/ton	AP42 1.1-13, 9/98	na	na	na	241.1	4.10E-04	na	na	1.80E-03	na	na
		Naphthalene	00091-20-3	1.30E-05	lb/ton	AP42 1.1-13, 9/98	na	na	na	241.1	3.13E-03	na	na	1.37E-02	na	na
		Acetaldehyde	00075-07-0	7.30E-05	lb/ton	PISCES	na	na	na	241.1	1.76E-02	na	na	7.71E-02	na	na
		Acetophenone	00098-86-2	2.74E-05	lb/ton	PISCES	na	na	na	241.1	6.60E-03	na	na	2.89E-02	na	na
		Acrolein	00107-02-8	4.33E-05	lb/ton	PISCES	na	na	na	241.1	1.05E-02	na	na	4.58E-02	na	na
		Benzene	00071-43-2	8.90E-05	lb/ton	PISCES	na	na	na	241.1	2.15E-02	na	na	9.40E-02	na	na
		Benzyl chloride	00100-44-7	6.39E-06	lb/ton	PISCES	na	na	na	241.1	1.54E-03	na	na	6.75E-03	na	na
		Bis(2-ethylhexyl)phthalate	00117-81-7	8.21E-05	lb/ton	PISCES	na	na	na	241.1	1.98E-02	na	na	8.67E-02	na	na
		Bromoform	00075-25-2	3.90E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.40E-03	na	na	4.12E-02	na	na
		Carbon disulfide	00075-15-0	2.51E-05	lb/ton	PISCES	na	na	na	241.1	6.05E-03	na	na	2.65E-02	na	na
		2-Chloroacetophenone	00532-27-4	7.00E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.69E-03	na	na	7.39E-03	na	na
		Chlorobenzene	00108-90-7	3.65E-06	lb/ton	PISCES	na	na	na	241.1	8.80E-04	na	na	3.85E-03	na	na
		Chloroform	00067-66-3	1.82E-05	lb/ton	PISCES	na	na	na	241.1	4.40E-03	na	na	1.93E-02	na	na
		Cumene	00098-82-8	5.30E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.28E-03	na	na	5.60E-03	na	na
		Cyanide	00057-12-5	2.50E-03	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	6.03E-01	na	na	2.64E+00	na	na
		Dimethyl sulfate	00077-78-1	4.80E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	1.16E-02	na	na	5.07E-02	na	na
		2,4-Dinitrotoluene	00121-14-2	4.56E-06	lb/ton	PISCES	na	na	na	241.1	1.10E-03	na	na	4.82E-03	na	na
		Ethylbenzene	00100-41-4	1.82E-05	lb/ton	PISCES	na	na	na	241.1	4.40E-03	na	na	1.93E-02	na	na
		Ethyl chloride	00075-00-3	1.21E-05	lb/ton	PISCES	na	na	na	241.1	2.92E-03	na	na	1.28E-02	na	na
		Ethylene dibromide	00106-93-4	5.93E-05	lb/ton	PISCES	na	na	na	241.1	1.43E-02	na	na	6.26E-02	na	na
		Ethylene dichloride	00107-06-2	4.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.64E-03	na	na	4.22E-02	na	na
		Formaldehyde	00050-00-0	5.93E-05	lb/ton	PISCES	na	na	na	241.1	1.43E-02	na	na	6.26E-02	na	na
		Hexane	00110-54-3	1.12E-05	lb/ton	PISCES	na	na	na	241.1	2.70E-03	na	na	1.18E-02	na	na
		Isophorone	00078-59-1	2.74E-05	lb/ton	PISCES	na	na	na	241.1	6.60E-03	na	na	2.89E-02	na	na
		Methyl bromide	00074-83-9	2.03E-05	lb/ton	PISCES	na	na	na	241.1	4.90E-03	na	na	2.14E-02	na	na
		Methyl chloride	00074-87-3	2.51E-05	lb/ton	PISCES	na	na	na	241.1	6.05E-03	na	na	2.65E-02	na	na
		Methyl ethyl ketone	00078-93-3	3.90E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	9.40E-02	na	na	4.12E-01	na	na
		Methyl hydrazine	00060-34-4	1.70E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.10E-02	na	na	1.80E-01	na	na
		Methyl methacrylate	00080-62-6	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.82E-03	na	na	2.11E-02	na	na
		Methyl tert butyl ether	01634-04-4	3.50E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	8.44E-03	na	na	3.70E-02	na	na
		Methylene chloride	00075-09-2	6.16E-05	lb/ton	PISCES	na	na	na	241.1	1.49E-02	na	na	6.50E-02	na	na
		Phenol	00108-95-2	7.53E-05	lb/ton	PISCES	na	na	na	241.1	1.82E-02	na	na	7.95E-02	na	na
		Propionaldehyde	00123-38-6	4.33E-05	lb/ton	PISCES	na	na	na	241.1	1.05E-02	na	na	4.58E-02	na	na

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KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Styrene	00100-42-5	1.60E-05	lb/ton	PISCES	na	na	na	241.1	3.85E-03	na	na	1.69E-02	na	na
		Tetrachloroethylene	00127-18-4	9.58E-06	lb/ton	PISCES	na	na	na	241.1	2.31E-03	na	na	1.01E-02	na	na
		Toluene	00108-88-3	3.88E-05	lb/ton	PISCES	na	na	na	241.1	9.35E-03	na	na	4.10E-02	na	na
		1,1,1-Trichloroethane	00079-00-5	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	241.1	4.82E-03	na	na	2.11E-02	na	na
		Vinyl acetate	00108-05-4	7.07E-06	lb/ton	PISCES	na	na	na	241.1	1.71E-03	na	na	7.47E-03	na	na
		m/p-Xylene	00108-38-3	1.87E-05	lb/ton	PISCES	na	na	na	241.1	4.51E-03	na	na	1.98E-02	na	na
		o-Xylene	00095-47-6	1.00E-05	lb/ton	PISCES	na	na	na	241.1	2.42E-03	na	na	1.06E-02	na	na
		POM	na	4.74E-05	lb/ton	AP42 1.1-17, 9/98	na	na	na	241.1	1.14E-02	na	na	5.01E-02	na	na
		Hydrogen Chloride	07647-01-0	1.44E+00	lb/ton	PISCES	na	na	80.1%	241.1	347.1	68.9	na	1,520.5	302.0	na
		Hydrogen Fluoride	07664-39-3	1.68E-01	lb/ton	PISCES	na	na	86.4%	241.1	40.6	5.5	na	177.9	24.2	na
04	**1**	**Unit 4 Indirect Heat Exchanger**														
		CO	00630-08-0	0.500	lb/ton	AP42 1.1-3, 9/98	na	na	na	240.9	120.5	na	na	527.6	na	na
		NOX	10102-44-0	22.000	lb/ton	AP42 1.1-3, 9/98	na	LNB, SCR	90.0%	240.9	5,300.0	530.0	na	23,214.2	2,321.4	na
		PM	na	96.700	lb/ton	AP42 1.1-4, 9/98	na	ESP/PJFF	99.8%	240.9	23,296.1	49.5	1,100	102,036.9	216.8	na
		PM10	na	22.241	lb/ton	AP42 1.1-4, 9/98	na	ESP/PJFF	99.8%	240.9	5,358.1	11.4	na	23,468.5	49.9	na
		PM2.5	na	5.802	lb/ton	AP42 1.1-6, 9/98	na	ESP/PJFF	99.6%	240.9	1,397.8	5.1	na	6,122.2	22.2	na
		SO2	07446-09-5	109.060	lb/ton	AP42 1.1-3, 9/98	na	FGD	98.0%	240.9	26,273.8	525.5	6,600	115,079.1	2,301.6	na
		VOC (TNMOC)	na	0.060	lb/ton	AP42 1.1-19, 9/98	na	na	na	240.9	14.5	na	na	63.3	na	na
		H2SO4	07664-93-9	1.580	lb/ton	1% conversion to SO3	na	DSI	66.1%	240.9	380.7	129.2	na	1,667.4	565.7	na
		CO2	na	4.70E+03	lb/ton	40 CFR 98 Table C-1	na	na	na	240.9	1.13E+06	na	na	4.96E+06	na	na
		CH4	na	5.54E-01	lb/ton	40 CFR 98 Table C-2	na	na	na	240.9	1.33E+02	na	na	5.84E+02	na	na
		N2O	na	8.05E-02	lb/ton	40 CFR 98 Table C-2	na	na	na	240.9	1.94E+01	na	na	8.50E+01	na	na
		CO2e	na	4.70E+03	lb/ton	40 CFR 98 Table A-1	na	na	na	240.9	1.13E+06	na	na	4.96E+06	na	na
		Antimony	07440-36-0	3.09E-04	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.9%	240.9	7.45E-02	0.0	na	3.26E-01	6.76E-03	na
		Arsenic	07740-38-2	1.69E-02	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.5%	240.9	4.07E+00	0.0	na	1.78E+01	9.53E-02	na
		Beryllium	07440-41-7	2.50E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.9%	240.9	6.01E-01	0.0	na	2.63E+00	3.02E-03	na
		Cadmium	07440-43-9	5.35E-04	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	95.4%	240.9	1.29E-01	0.0	na	5.64E-01	2.60E-02	na
		Chromium	07440-47-3	4.29E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.2%	240.9	1.03E+00	0.0	na	4.53E+00	1.28E-01	na
		Cobalt	07440-48-4	2.07E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	98.6%	240.9	4.99E-01	0.0	na	2.19E+00	3.13E-02	na
		Lead	07439-92-1	1.20E-02	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	99.3%	240.9	2.88E+00	0.0	na	1.26E+01	9.19E-02	na
		Manganese	07439-96-5	6.42E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	97.5%	240.9	1.55E+00	0.0	na	6.77E+00	1.69E-01	na

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KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Nickel	07440-02-0	2.70E-03	lb/ton	AP42 1.1-16, 9/98	na	ESP/PJFF	94.8%	240.9	6.51E-01	0.0	na	2.85E+00	1.49E-01	na
		Mercury	07439-97-6	4.00E-04	lb/ton	AP42 1.1-18, 9/98	na	ESP/PJFF	97.0%	240.9	9.64E-02	0.0	na	4.22E-01	1.27E-02	na
		Selenium	07782-49-2	4.00E-03	lb/ton	AP42 1.1-18, 9/98	na	ESP/PJFF	67.5%	240.9	9.64E-01	0.3	na	4.22E+00	1.37E+00	na
		Biphenyl	00092-52-4	1.70E-06	lb/ton	AP42 1.1-13, 9/98	na	na	na	240.9	4.10E-04	na	na	1.79E-03	na	na
		Naphthalene	00091-20-3	1.30E-05	lb/ton	AP42 1.1-13, 9/98	na	na	na	240.9	3.13E-03	na	na	1.37E-02	na	na
		Acetaldehyde	00075-07-0	7.31E-05	lb/ton	PISCES	na	na	na	240.9	1.76E-02	na	na	7.71E-02	na	na
		Acetophenone	00098-86-2	2.74E-05	lb/ton	PISCES	na	na	na	240.9	6.60E-03	na	na	2.89E-02	na	na
		Acrolein	00107-02-8	4.34E-05	lb/ton	PISCES	na	na	na	240.9	1.05E-02	na	na	4.58E-02	na	na
		Benzene	00071-43-2	8.90E-05	lb/ton	PISCES	na	na	na	240.9	2.15E-02	na	na	9.40E-02	na	na
		Benzyl chloride	00100-44-7	6.39E-06	lb/ton	PISCES	na	na	na	240.9	1.54E-03	na	na	6.75E-03	na	na
		Bis(2-ethylhexyl)phthalate	00117-81-7	8.22E-05	lb/ton	PISCES	na	na	na	240.9	1.98E-02	na	na	8.67E-02	na	na
		Bromoform	00075-25-2	3.90E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	9.40E-03	na	na	4.12E-02	na	na
		Carbon disulfide	00075-15-0	2.51E-05	lb/ton	PISCES	na	na	na	240.9	6.05E-03	na	na	2.65E-02	na	na
		2-Chloroacetophenone	00532-27-4	7.00E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	1.69E-03	na	na	7.39E-03	na	na
		Chlorobenzene	00108-90-7	3.65E-06	lb/ton	PISCES	na	na	na	240.9	8.80E-04	na	na	3.85E-03	na	na
		Chloroform	00067-66-3	1.83E-05	lb/ton	PISCES	na	na	na	240.9	4.40E-03	na	na	1.93E-02	na	na
		Cumene	00098-82-8	5.30E-06	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	1.28E-03	na	na	5.59E-03	na	na
		Cyanide	00057-12-5	2.50E-03	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	6.02E-01	na	na	2.64E+00	na	na
		Dimethyl sulfate	00077-78-1	4.80E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	1.16E-02	na	na	5.06E-02	na	na
		2,4-Dinitrotoluene	00121-14-2	4.57E-06	lb/ton	PISCES	na	na	na	240.9	1.10E-03	na	na	4.82E-03	na	na
		Ethylbenzene	00100-41-4	1.83E-05	lb/ton	PISCES	na	na	na	240.9	4.40E-03	na	na	1.93E-02	na	na
		Ethyl chloride	00075-00-3	1.21E-05	lb/ton	PISCES	na	na	na	240.9	2.92E-03	na	na	1.28E-02	na	na
		Ethylene dibromide	00106-93-4	5.94E-05	lb/ton	PISCES	na	na	na	240.9	1.43E-02	na	na	6.26E-02	na	na
		Ethylene dichloride	00107-06-2	4.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	9.64E-03	na	na	4.22E-02	na	na
		Formaldehyde	00050-00-0	5.94E-05	lb/ton	PISCES	na	na	na	240.9	1.43E-02	na	na	6.26E-02	na	na
		Hexane	00110-54-3	1.12E-05	lb/ton	PISCES	na	na	na	240.9	2.70E-03	na	na	1.18E-02	na	na
		Isophorone	00078-59-1	2.74E-05	lb/ton	PISCES	na	na	na	240.9	6.60E-03	na	na	2.89E-02	na	na
		Methyl bromide	00074-83-9	2.03E-05	lb/ton	PISCES	na	na	na	240.9	4.90E-03	na	na	2.14E-02	na	na
		Methyl chloride	00074-87-3	2.51E-05	lb/ton	PISCES	na	na	na	240.9	6.05E-03	na	na	2.65E-02	na	na
		Methyl ethyl ketone	00078-93-3	3.90E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	9.40E-02	na	na	4.12E-01	na	na
		Methyl hydrazine	00060-34-4	1.70E-04	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	4.10E-02	na	na	1.79E-01	na	na
		Methyl methacrylate	00080-62-6	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	4.82E-03	na	na	2.11E-02	na	na
		Methyl tert butyl ether	01634-04-4	3.50E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	8.43E-03	na	na	3.69E-02	na	na

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		Methylene chloride	00075-09-2	6.16E-05	lb/ton	PISCES	na	na	na	240.9	1.49E-02	na	na	6.50E-02	na	na
		Phenol	00108-95-2	7.53E-05	lb/ton	PISCES	na	na	na	240.9	1.82E-02	na	na	7.95E-02	na	na
		Propionaldehyde	00123-38-6	4.34E-05	lb/ton	PISCES	na	na	na	240.9	1.05E-02	na	na	4.58E-02	na	na
		Styrene	00100-42-5	1.60E-05	lb/ton	PISCES	na	na	na	240.9	3.85E-03	na	na	1.69E-02	na	na
		Tetrachloroethylene	00127-18-4	9.59E-06	lb/ton	PISCES	na	na	na	240.9	2.31E-03	na	na	1.01E-02	na	na
		Toluene	00108-88-3	3.88E-05	lb/ton	PISCES	na	na	na	240.9	9.35E-03	na	na	4.10E-02	na	na
		1,1,1-Trichloroethane	00079-00-5	2.00E-05	lb/ton	AP42 1.1-14, 9/98	na	na	na	240.9	4.82E-03	na	na	2.11E-02	na	na
		Vinyl acetate	00108-05-4	7.08E-06	lb/ton	PISCES	na	na	na	240.9	1.71E-03	na	na	7.47E-03	na	na
		m/p-Xylene	00108-38-3	1.87E-05	lb/ton	PISCES	na	na	na	240.9	4.51E-03	na	na	1.98E-02	na	na
		o-Xylene	00095-47-6	1.00E-05	lb/ton	PISCES	na	na	na	240.9	2.42E-03	na	na	1.06E-02	na	na
		POM	na	4.75E-05	lb/ton	AP42 1.1-17, 9/98	na	na	na	240.9	1.14E-02	na	na	5.01E-02	na	na
		Hydrogen Chloride	07647-01-0	1.44E+00	lb/ton	PISCES	na	na	80.1%	240.9	346.9	68.9	na	1,519.3	302.0	na
		Hydrogen Fluoride	07664-39-3	1.68E-01	lb/ton	PISCES	na	na	86.4%	240.9	40.6	5.5	na	177.8	24.2	na
05		**Barge Unloader - Coal Use**														
05	**1**	**Coal Barge Unloading**														
		PM	na	0.02000	lb/ton	MRI; 2004 Title V App	na	Moist Matrl	90%	3,600	72.000	7.200	na	315.360	31.536	na
		PM10	na	0.01000	lb/ton	MRI; 2004 Title V App	na	Moist Matrl	90%	3,600	36.000	3.600	na	157.680	15.768	na
		PM2.5	na	0.00200	lb/ton	Estimated 20% of PM10	na	Moist Matrl	90%	3,600	7.200	0.720	na	31.536	3.154	na
07		**Coal Handling Operations**														
07	**1**	**Coal Stockpile**														
		PM	na	0.00275	lb/ton	AP42 & EPA450/3-88-008	na	Wet Suppres	70%	3,600	9.887	2.966	na	43.304	12.991	na
		PM10	na	0.00133	lb/ton	Estimated 50% of PM	na	Wet Suppres	70%	3,600	4.798	1.439	na	21.015	6.305	na
		PM2.5	na	0.00027	lb/ton	Estimated 20% of PM10	na	Wet Suppres	70%	3,600	0.960	0.288	na	4.203	1.261	na
07	**2**	**Coal Conveyors 1D, 1E, 1F**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	10,800	3.240	0.324	na	14.191	1.419	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	10,800	3.240	0.324	na	14.191	1.419	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Enclosures	90%	10,800	0.648	0.065	na	2.838	0.284	na
07	**3**	**Coal Conveyor 1J**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	900	0.270	0.027	na	1.183	0.118	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	900	0.270	0.027	na	1.183	0.118	na

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		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Enclosures	90%	900	0.054	0.005	na	0.237	0.024	na
07	4	**Coal Conveyor 1G**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	1,500	0.450	0.045	na	1.971	0.197	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	1,500	0.450	0.045	na	1.971	0.197	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Enclosures	90%	1,500	0.090	0.009	na	0.394	0.039	na
07	5	**Coal Conveyor 1H**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Enclosures	90%	1,800	0.108	0.011	na	0.473	0.047	na
08		**Coal Handling Operations**														
08	1	**Coal Conveyors 1A, 1B, 1C**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	10,800	3.240	0.324	na	14.191	1.419	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Enclosures	90%	10,800	3.240	0.324	na	14.191	1.419	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Enclosures	90%	10,800	0.648	0.065	na	2.838	0.284	na
09		**Coal Handling Operations**														
09	1	**Coal Conveyor 2H**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	sures & bagh	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	sures & bagh	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	sures & bagh	90%	1,800	0.108	0.011	na	0.473	0.047	na
10		**Coal Handling Operations**														
10	1	**Coal Conveyor 6H**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	sures & bagh	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	sures & bagh	90%	1,800	0.540	0.054	na	2.365	0.237	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	sures & bagh	90%	1,800	0.108	0.011	na	0.473	0.047	na
06		**Coal Crushing Operations**														
06	1	**Crusher House #1**														
		PM	na	0.02000	lb/ton	MRI; 2004 Title V App	na	Wet Scrubber	99.7%	1,800	36.000	0.108	85.4	157.680	0.473	na
		PM10	na	0.01000	lb/ton	MRI; 2004 Title V App	na	Wet Scrubber	99.7%	1,800	18.000	0.054	na	78.840	0.237	na
		PM2.5	na	0.00200	lb/ton	Estimated 20% of PM10	na	Wet Scrubber	99.7%	1,800	3.600	0.011	na	15.768	0.047	na

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KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
11a		**Coal Crushing Operations**														
11a	**1**	**Crusher House #2**														
		PM	na	0.02000	lb/ton	MRI; 2004 Title V App	na	Wet Scrubber	99.7%	1,800	36.000	0.108	na	157.680	0.473	na
		PM10	na	0.01000	lb/ton	MRI; 2004 Title V App	na	Wet Scrubber	99.7%	1,800	18.000	0.054	na	78.840	0.237	na
		PM2.5	na	0.00200	lb/ton	Estimated 20% of PM10	na	Wet Scrubber	99.7%	1,800	3.600	0.011	na	15.768	0.047	na
11b		**Coal Handling Operations**														
11b	**1**	**Coal Conveyors 2J, 3J, 4J, 3M, 4M**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	4,500	1.350	0.135	na	5.913	0.591	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	4,500	1.350	0.135	na	5.913	0.591	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM	na	Fabric Filter	90%	4,500	0.270	0.027	na	1.183	0.118	na
11b	**2**	**Coal Conveyor 2G**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	1,500	0.450	0.045	na	1.971	0.197	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	1,500	0.450	0.045	na	1.971	0.197	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Fabric Filter	90%	1,500	0.090	0.009	na	0.394	0.039	na
11b	**3**	**Coal Conveyor 5G-8G, 3H-5H**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	12,600	3.780	0.378	na	16.556	1.656	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	12,600	3.780	0.378	na	16.556	1.656	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Fabric Filter	90%	12,600	0.756	0.076	na	3.311	0.331	na
11b	**4**	**Coal Conveyor 3G & 4G**														
		PM	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	4,800	1.440	0.144	na	6.307	0.631	na
		PM10	na	0.00030	lb/ton	MRI; 2004 Title V App	na	Fabric Filter	90%	4,800	1.440	0.144	na	6.307	0.631	na
		PM2.5	na	0.00006	lb/ton	Estimated 20% of PM10	na	Fabric Filter	90%	4,800	0.288	0.029	na	1.261	0.126	na
25		**Barge Unloading - Limestone Use**														
25	**1**	**Limestone Barge Unloading**														
		PM	na	0.00140	lb/ton	Eng. Estimate	na	Moist Matrl	70%	1,000	1.400	0.420	na	6.132	1.840	na
		PM10	na	0.00140	lb/ton	Eng. Estimate	na	Moist Matrl	70%	1,000	1.400	0.420	na	6.132	1.840	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Moist Matrl	70%	1,000	0.210	0.063	na	0.920	0.276	na

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25	**2**	**Bucket of Recvg Hopper**														
		PM	na	0.01271	lb/ton	Eng. Estimate	na	Enclosure	90%	1,000	12.710	1.271	na	55.670	5.567	na
		PM10	na	0.01271	lb/ton	Eng. Estimate	na	Enclosure	90%	1,000	12.710	1.271	na	55.670	5.567	na
		PM2.5	na	0.00191	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	1,000	1.907	0.191	na	8.350	0.835	na
26		**Limestone Handling and Processing**														
26	**1**	**Limestone Hopper to L2**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	1,000	0.210	0.021	na	0.920	0.092	na
26	**2**	**Limestone Conveyor L2 to L3**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	1,000	0.210	0.021	na	0.920	0.092	na
26	**3**	**Limestone Conveyor L3 to Stockpile**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	1,000	1.400	0.140	na	6.132	0.613	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	1,000	0.210	0.021	na	0.920	0.092	na
27		**Limestone Handling and Processing**														
27	**1**	**Limestone West Stockpile**														
		PM	na	0.00004	lb/ton	Eng. Estimate	na	Moist Mat	70%	1,000	0.037	0.011	na	0.162	0.049	na
		PM10	na	0.00004	lb/ton	Eng. Estimate	na	Moist Mat	70%	1,000	0.037	0.011	na	0.162	0.049	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Moist Mat	90%	1,000	0.210	0.021	na	0.920	0.092	na
28		**Limestone Handling and Processing**														
28	**1**	**Limestone Hopper L3 to L4**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	550	0.770	0.077	na	3.373	0.337	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	550	0.770	0.077	na	3.373	0.337	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	550	0.116	0.012	na	0.506	0.051	na

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28	**2**	**Limestone Conveyor L4**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	225	0.047	0.005	na	0.207	0.021	na
28	**3**	**Limestone Conveyor L5**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	225	0.047	0.005	na	0.207	0.021	na
28	**4**	**Limestone Conveyor L6**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	225	0.047	0.005	na	0.207	0.021	na
28	**5**	**Limestone Conveyor L7**														
		PM	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM10	na	0.00140	lb/ton	MRI	na	Enclosure	90%	225	0.315	0.032	na	1.380	0.138	na
		PM2.5	na	0.00021	lb/ton	Estimated 15% of PM10	na	Enclosure	90%	225	0.047	0.005	na	0.207	0.021	na
29		**Limestone Handling and Processing**														
29	**1**	**Wet Limestone Screens and Mills**														
		PM	na	0.00000	lb/ton	Enclosed/Wet Process	na	Enclsd/Wet	na	200	0.000	na	na	0.000	na	na
		PM10	na	0.00000	lb/ton	Enclosed/Wet Process	na	Enclsd/Wet	na	200	0.000	na	na	0.000	na	na
		PM2.5	na	0.00000	lb/ton	Enclosed/Wet Process	na	Enclsd/Wet	na	200	0.000	na	na	0.000	na	na

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22		**Cooling Tower 1**														
22	**1**	**Cooling Tower 1**														
		PM	na	3.52407	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.5	40.386	na	na	176.890	na	na
		PM10	na	3.52407	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.5	40.386	na	na	176.890	na	na
		PM2.5	na	3.52407	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.5	40.386	na	na	176.890	na	na
22		**Cooling Tower 2**														
22	**2**	**Cooling Tower 2**														
		PM	na	0.02126	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.8	0.251	na	na	1.101	na	na
		PM10	na	0.02126	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.8	0.251	na	na	1.101	na	na
		PM2.5	na	0.02126	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	11.8	0.251	na	na	1.101	na	na
22		**Cooling Tower 3**														
22	**3**	**Cooling Tower 3**														
		PM	na	0.40251	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	4.154	na	na	18.194	na	na
		PM10	na	0.40251	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	4.154	na	na	18.194	na	na
		PM2.5	na	0.40251	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	4.154	na	na	18.194	na	na
22		**Cooling Tower 4**														
22	**4**	**Cooling Tower 4**														
		PM	na	0.37014	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	3.820	na	na	16.731	na	na
		PM10	na	0.37014	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	3.820	na	na	16.731	na	na
		PM2.5	na	0.37014	lb/MMgal	AP42 13.4 (1/1995)	na	na	na	10.3	3.820	na	na	16.731	na	na

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34		**Emergency Air Compressor**														
34	**1**	**540 HP Air Compressor Engine**														
		NOX	10102-44-0	311.31	lb/1000 gal	Subpart IIII- 60.4205(c)	na	na	na	0.0276	8.589	na	na	0.429	na	na
		CO	00630-08-0	112.18	lb/1000 gal	Subpart IIII- 60.4205(c)	na	na	na	0.0276	3.095	na	na	0.155	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0276	0.006	na	na	2.86E-04	na	na
		PM	na	17.26	lb/1000 gal	Subpart IIII- 60.4205(c)	na	na	na	0.0276	0.476	na	na	0.024	na	na
		PM10	na	17.26	lb/1000 gal	Subpart IIII- 60.4205(c)	na	na	na	0.0276	0.476	na	na	0.024	na	na
		PM2.5	na	17.26	lb/1000 gal	Equal to PM10	na	na	na	0.0276	0.476	na	na	0.024	na	na
		VOC	na	25.25	lb/1000 gal	Subpart IIII- 60.4205(c)	na	na	na	0.0276	0.697	na	na	0.035	na	na
		CO2	na	22338.15	lb/1000 gal	40 CFR 98 Table C-1	na	na	na	0.0276	616.337	na	na	30.817	na	na
		CH4	na	0.91	lb/1000 gal	40 CFR 98 Table C-2	na	na	na	0.0276	0.025	na	na	0.001	na	na
		N2O	na	0.18	lb/1000 gal	40 CFR 98 Table C-2	na	na	na	0.0276	0.005	na	na	2.50E-04	na	na
		CO2e	na	22413.36	lb/1000 gal	40 CFR 98 Table A-1	na	na	na	0.0276	618.412	na	na	30.921	na	na
		Acetaldehyde	00075-07-0	0.1051	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	2.90E-03	na	na	1.45E-04	na	na
		Acrolein	00107-02-8	0.0127	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	3.50E-04	na	na	1.75E-05	na	na
		Benzene	00071-43-2	0.1278	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	3.53E-03	na	na	1.76E-04	na	na
		1,3-Butadiene	00106-99-0	0.0054	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	1.48E-04	na	na	7.39E-06	na	na
		Formaldehyde	00050-00-0	0.1617	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	4.46E-03	na	na	2.23E-04	na	na
		Naphthalene	00091-20-3	0.0116	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	3.21E-04	na	na	1.60E-05	na	na
		Toluene	00108-88-3	0.0560	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	1.55E-03	na	na	7.73E-05	na	na
		Xylenes	01330-20-7	0.0390	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0276	1.08E-03	na	na	5.39E-05	na	na
35		**CCR Landfill Operations (Haul Trucks)**														
35	**1**	**Haul Trucks**														
		PM	na	18.932	lb/1000ton	AP42 13.2.1 & 13.2.2	na	na	na	0.2620	0.235	na	na	21.725	na	na
		PM10	na	4.291	lb/1000ton	AP42 13.2.1 & 13.2.2	na	na	na	0.2620	0.057	na	na	4.924	na	na
		PM2.5	na	0.650	lb/1000ton	AP42 13.2.1 & 13.2.2	na	na	na	0.2620	0.006	na	na	0.746	na	na

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36		**Unit 3 Emergency Engine**														
36	**1**	**755 HP Emergency Engine**														
		NOX	10102-44-0	438.40	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	18.120	na	na	0.906	na	na
		CO	00630-08-0	100.47	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	4.153	na	na	0.208	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0413	0.009	na	na	0.000	na	na
		PM	na	12.79	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	0.529	na	na	0.026	na	na
		PM10	na	12.79	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	0.529	na	na	0.026	na	na
		PM2.5	na	12.79	lb/1000 gal	Equal to PM10	na	na	na	0.0413	0.529	na	na	0.026	na	na
		VOC	na	12.88	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0413	0.532	na	na	0.027	na	na
		CO2	na	22338.15	lb/1000 gal	Subpart C, Table C-1	na	na	na	0.0413	923.283	na	na	46.164	na	na
		CH4	na	0.91	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0413	0.037	na	na	0.002	na	na
		N2O	na	0.18	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0413	0.007	na	na	0.000	na	na
		CO2e	na	22413.36	lb/1000 gal	Subpart A, Table A-2	na	na	na	0.0413	926.392	na	na	46.320	na	na
		Acetaldehyde	00075-07-0	0.00	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Acrolein	00107-02-8	0.00	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.11	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.004	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.01	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.02	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.001	na	na	0.000	na	na
		Toluene	00108-88-3	0.04	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.002	na	na	0.000	na	na
		Xylenes	01330-20-7	0.03	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.001	na	na	0.000	na	na
37		**Unit 4 Emergency Engine**														
37	**1**	**755 HP Emergency Engine**														
		NOX	10102-44-0	438.40	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	18.120	na	na	0.906	na	na
		CO	00630-08-0	100.47	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	4.153	na	na	0.208	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0413	0.009	na	na	0.000	na	na
		PM	na	12.79	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	0.529	na	na	0.026	na	na
		PM10	na	12.79	lb/1000 gal	AP42 Table 3.4-1	na	na	na	0.0413	0.529	na	na	0.026	na	na
		PM2.5	na	12.79	lb/1000 gal	Equal to PM10	na	na	na	0.0413	0.529	na	na	0.026	na	na
		VOC	na	12.88	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0413	0.532	na	na	0.027	na	na
		CO2	na	22338.15	lb/1000 gal	Subpart C, Table C-1	na	na	na	0.0413	923.283	na	na	46.164	na	na
		CH4	na	0.91	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0413	0.037	na	na	0.002	na	na
		N2O	na	0.18	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0413	0.007	na	na	0.000	na	na
		CO2e	na	22413.36	lb/1000 gal	Subpart A, Table A-2	na	na	na	0.0413	926.392	na	na	46.320	na	na

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KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Acetaldehyde	00075-07-0	0.00	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Acrolein	00107-02-8	0.00	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.11	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.004	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.01	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.000	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.02	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.001	na	na	0.000	na	na
		Toluene	00108-88-3	0.04	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.002	na	na	0.000	na	na
		Xylenes	01330-20-7	0.03	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0413	0.001	na	na	0.000	na	na
38		**Unit 1 Emergency Engine**														
38	**1**	**505 HP Emergency Engine**														
		NOX	10102-44-0	606.71	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	15.655	na	na	0.783	na	na
		CO	00630-08-0	130.74	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	3.373	na	na	0.169	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0258	0.005	na	na	0.000	na	na
		PM	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.111	na	na	0.056	na	na
		PM10	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.111	na	na	0.056	na	na
		PM2.5	na	43.06	lb/1000 gal	Equal to PM10	na	na	na	0.0258	1.111	na	na	0.056	na	na
		VOC	na	49.20	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.270	na	na	0.063	na	na
		CO2	na	22338.15	lb/1000 gal	40 CFR 98, Table C-1	na	na	na	0.0258	576.390	na	na	28.819	na	na
		CH4	na	0.91	lb/1000 gal	40 CFR 98, Table C-2	na	na	na	0.0258	0.023	na	na	0.001	na	na
		N2O	na	0.18	lb/1000 gal	40 CFR 98, Table C-3	na	na	na	0.0258	0.005	na	na	0.000	na	na
		CO2e	na	22413.36	lb/1000 gal	40 CFR 98, Table A-2	na	na	na	0.0258	578.330	na	na	28.917	na	na
		Acetaldehyde	00075-07-0	0.11	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.003	na	na	0.000	na	na
		Acrolein	00107-02-8	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.13	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.003	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.16	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.004	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	0.06	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.001	na	na	0.000	na	na
		Xylenes	01330-20-7	0.04	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.001	na	na	0.000	na	na

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KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
39		**Unit 2 Emergency Engine**														
39	**1**	**505 HP Emergency Engine**														
		NOX	10102-44-0	606.71	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	15.655	na	na	0.783	na	na
		CO	00630-08-0	130.74	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	3.373	na	na	0.169	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0258	0.005	na	na	0.000	na	na
		PM	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.111	na	na	0.056	na	na
		PM10	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.111	na	na	0.056	na	na
		PM2.5	na	43.06	lb/1000 gal	Equal to PM10	na	na	na	0.0258	1.111	na	na	0.056	na	na
		VOC	na	49.20	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0258	1.270	na	na	0.063	na	na
		CO2	na	22338.15	lb/1000 gal	40 CFR 98, Table C-1	na	na	na	0.0258	576.390	na	na	28.819	na	na
		CH4	na	0.91	lb/1000 gal	40 CFR 98, Table C-3	na	na	na	0.0258	0.023	na	na	0.001	na	na
		N2O	na	0.18	lb/1000 gal	40 CFR 98, Table C-2	na	na	na	0.0258	0.005	na	na	0.000	na	na
		CO2e	na	22413.36	lb/1000 gal	40 CFR 98, Table A-2	na	na	na	0.0258	578.330	na	na	28.917	na	na
		Acetaldehyde	00075-07-0	0.11	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.003	na	na	0.000	na	na
		Acrolein	00107-02-8	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.13	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.003	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.16	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.004	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	0.06	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.001	na	na	0.000	na	na
		Xylenes	01330-20-7	0.04	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0258	0.001	na	na	0.000	na	na
40		**Ghent Station Fire Pump**														
40	**1**	**340 HP Fire Pump Engine**														
		NOX	10102-44-0	606.71	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0174	10.540	na	na	0.527	na	na
		CO	00630-08-0	130.74	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0174	2.271	na	na	0.114	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0174	0.004	na	na	0.000	na	na
		PM	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0174	0.748	na	na	0.037	na	na
		PM10	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0174	0.748	na	na	0.037	na	na
		PM2.5	na	43.06	lb/1000 gal	Equal to PM10	na	na	na	0.0174	0.748	na	na	0.037	na	na
		VOC	na	49.20	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0174	0.855	na	na	0.043	na	na
		CO2	na	22338.15	lb/1000 gal	40 CFR 98, Table C-1	na	na	na	0.0174	388.064	na	na	19.403	na	na
		CH4	na	0.91	lb/1000 gal	40 CFR 98, Table C-2	na	na	na	0.0174	0.016	na	na	0.001	na	na
		N2O	na	0.18	lb/1000 gal	40 CFR 98, Table C-3	na	na	na	0.0174	0.003	na	na	0.000	na	na
		CO2e	na	22413.36	lb/1000 gal	40 CFR 98, Table A-2	na	na	na	0.0174	389.371	na	na	19.469	na	na

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KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Acetaldehyde	00075-07-0	0.11	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.002	na	na	0.000	na	na
		Acrolein	00107-02-8	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.13	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.002	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.16	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.003	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	0.06	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.001	na	na	0.000	na	na
		Xylenes	01330-20-7	0.04	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0174	0.001	na	na	0.000	na	na
41		**Non-Emergency Diesel Gen Engine**														
41	**1**	**53 HP Non-Emergency Engine**														
		NOX	10102-44-0	150.88	lb/1000 gal	EPA Tier 4 Data	na	na	na	0.0027	0.409	na	na	1.790	na	na
		CO	00630-08-0	159.50	lb/1000 gal	EPA Tier 4 Data	na	na	na	0.0027	0.432	na	na	1.892	na	na
		SO2	07446-09-5	0.21	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0027	0.001	na	na	0.002	na	na
		PM	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0027	0.117	na	na	0.511	na	na
		PM10	na	43.06	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0027	0.117	na	na	0.511	na	na
		PM2.5	na	43.06	lb/1000 gal	Equal to PM10	na	na	na	0.0027	0.117	na	na	0.511	na	na
		VOC	na	49.20	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0027	0.133	na	na	0.584	na	na
		CO2	na	22338.15	lb/1000 gal	40 CFR 98, Table C-1	na	na	na	0.0027	60.492	na	na	264.957	na	na
		CH4	na	0.91	lb/1000 gal	40 CFR 98, Table C-2	na	na	na	0.0027	0.002	na	na	0.011	na	na
		N2O	na	0.18	lb/1000 gal	40 CFR 98, Table C-3	na	na	na	0.0027	0.000	na	na	0.002	na	na
		CO2e	na	22413.36	lb/1000 gal	40 CFR 98, Table A-2	na	na	na	0.0027	60.696	na	na	265.849	na	na
		Acetaldehyde	00075-07-0	0.11	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.001	na	na
		Acrolein	00107-02-8	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.13	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.002	na	na
		1,3-Butadiene	00106-99-0	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	0.16	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.002	na	na
		Naphthalene	00091-20-3	0.01	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	0.06	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.001	na	na
		Xylenes	01330-20-7	0.04	lb/1000 gal	AP42 Table 3.3-2	na	na	na	0.0027	0.000	na	na	0.000	na	na
42		**Unit 1 Emergency Engine**														
42	**1**	**469 HP Emergency Engine**														
		NOX	10102-44-0	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	4.653	na	na	0.233	na	na
		CO	00630-08-0	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	1.448	na	na	0.072	na	na
		SO2	07446-09-5	0.00	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0257	0.005	na	na	0.000	na	na

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KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		PM	na	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	0.103	na	na	0.005	na	na
		PM10	na	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	0.103	na	na	0.005	na	na
		PM2.5	na	0.00	lb/1000 gal	Equal to PM10	na	na	na	0.0257	0.103	na	na	0.005	na	na
		VOC	na	0.00	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0257	0.331	na	na	0.017	na	na
		CO2	na	0.00	lb/1000 gal	Subpart C, Table C-1	na	na	na	0.0257	573.536	na	na	28.677	na	na
		CH4	na	0.00	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0257	0.023	na	na	0.001	na	na
		N2O	na	0.00	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0257	0.005	na	na	0.000	na	na
		CO2e	na	0.00	lb/1000 gal	Subpart A, Table A-2	na	na	na	0.0257	575.467	na	na	28.773	na	na
		Acetaldehyde	00075-07-0	49.20	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Acrolein	00107-02-8	22338.15	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	0.91	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.003	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.18	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	22413.36	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Naphthalene	00091-20-3	0.00	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	0.11	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.001	na	na	0.000	na	na
		Xylenes	01330-20-7	0.01	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.001	na	na	0.000	na	na
43		**Unit 2 Emergency Engine**														
43	**1**	**469 HP Emergency Engine**														
		NOX	10102-44-0	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	4.653	na	na	0.233	na	na
		CO	00630-08-0	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	1.448	na	na	0.072	na	na
		SO2	07446-09-5	0.00	lb/1000 gal	15 ppm; AP42 Tbl 3.4-1	na	na	na	0.0257	0.005	na	na	0.000	na	na
		PM	na	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	0.103	na	na	0.005	na	na
		PM10	na	0.00	lb/1000 gal	Vendor	na	na	na	0.0257	0.103	na	na	0.005	na	na
		PM2.5	na	0.00	lb/1000 gal	Equal to PM10	na	na	na	0.0257	0.103	na	na	0.005	na	na
		VOC	na	0.00	lb/1000 gal	AP42 Table 3.3-1	na	na	na	0.0257	0.331	na	na	0.017	na	na
		CO2	na	0.00	lb/1000 gal	Subpart C, Table C-1	na	na	na	0.0257	573.536	na	na	28.677	na	na
		CH4	na	0.00	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0257	0.023	na	na	0.001	na	na
		N2O	na	0.00	lb/1000 gal	Subpart C, Table C-2	na	na	na	0.0257	0.005	na	na	0.000	na	na
		CO2e	na	0.00	lb/1000 gal	Subpart A, Table A-2	na	na	na	0.0257	575.467	na	na	28.773	na	na
		Acetaldehyde	00075-07-0	(lb/1000gal)	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Acrolein	00107-02-8	606.71	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Benzene	00071-43-2	130.74	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.003	na	na	0.000	na	na
		1,3-Butadiene	00106-99-0	0.21	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Formaldehyde	00050-00-0	43.06	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na

7007N Form Supplement Table 2 (Section I Part 2)

KU Ghent Generating Station

KyEIS ID #	Process ID(s)	Pollutant	CAS#	Emission Factors: Uncontrolled Emission Factor (lb/SCC Units)		Emission Factors: Emission Factor Basis	Control Equipment: Cont. Equip. #	Control Equipment: Control Device	Control Equipment: Control Efficiency	Hourly Operating Rate (SCC Units/hr)	Hourly (lb/hr) Emissions: Uncontrolled Unlimited Potential	Hourly (lb/hr) Emissions: Controlled Limited Potential	Hourly (lb/hr) Emissions: Allowable	Annual (tons/yr) Emissions: Uncontrolled Unlimited Potential	Annual (tons/yr) Emissions: Controlled Limited Potential	Annual (tons/yr) Emissions: Allowable
		Naphthalene	00091-20-3	43.06	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.000	na	na	0.000	na	na
		Toluene	00108-88-3	43.06	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.001	na	na	0.000	na	na
		Xylenes	01330-20-7	49.20	lb/1000 gal	AP42 Table 3.4-3	na	na	na	0.0257	0.001	na	na	0.000	na	na

Imber
DEP7007N
(continued)

SECTION II. Stack Information

KyEIS Stack ID #	Stack Description	Stack Physical Data			Stack Geographic Data			Stack Gas Stream Data		
		Height (ft)	Diameter (ft)	Vent Height (ft)	Vertical Coordinate	Horizontal Coordinate	Coordinate Collection Method Code	Flowrate (acfm)	Temperature (^{o}F)	Exit Velocity (ft/sec)

Refer to 7007N Form Supplement Table 3.

KyEIS ID #	Emission Point ID	Stack Description	Stack Physical Data[1]			Stack Geographic Data			Stack Gas Stream Data		
			Height (ft)	Width (ft)	Vent Height (ft)	Vertical Coordinate	Horizontal Coordinate	Collection Method Code	Flowrate (acfm)	Temperature (F)	Exit Velocity (ft/sec)
01	25	Unit 1 Indirect Heat Exchanger (UNIT 1 - Coal Use)	592.5	26.5	na	670,336	4,290,537	INI	1,583,488	129	47.8
02	03	Unit 2 Indirect Heat Exchanger (UNIT 2 - Coal Use)	581.0	37.0	na	670,548	4,290,708	INI	2,750,172	129	42.6
03	03	Unit 3 Indirect Heat Exchanger (UNIT 3 - Coal Use)	581.0	37.0	na	670,548	4,290,708	INI	2,750,172	129	42.6
04	26	Unit 4 Indirect Heat Exchanger (UNIT 4 - Coal Use)	592.5	26.5	na	670,761	4,290,825	INI	1,349,853	129	40.8
05	Fugitive	Barge Unloader - Coal Use (Coal Barge Unloading)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	70	Fugitive
07	Fugitive	Coal Handling Operations (Coal Stockpile)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
07	Fugitive	Coal Handling Operations (Coal Conveyors 1D, 1E, 1F)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
07	Fugitive	Coal Handling Operations (Coal Conveyor 1J)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
07	Fugitive	Coal Handling Operations (Coal Conveyor 1G)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
07	Fugitive	Coal Handling Operations (Coal Conveyor 1H)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
08	Fugitive	Coal Handling Operations (Coal Conveyors 1A, 1B, 1C)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
09	Fugitive	Coal Handling Operations (Coal Conveyor 2H)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
10	Fugitive	Coal Handling Operations (Coal Conveyor 6H)	Fugitive	Fugitive	81.0	na	na	na	Fugitive	77	Fugitive
06	Fugitive	Coal Crushing Operations (Crusher House #1)	Fugitive	Fugitive	20.0	na	na	na	Fugitive	75	Fugitive
11a	Fugitive	Coal Crushing Operations (Crusher House #2)	Fugitive	Fugitive	20.0	na	na	na	Fugitive	75	Fugitive
11b	Fugitive	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
11b	Fugitive	Coal Handling (Coal Conveyor 2G)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
11b	Fugitive	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
11b	Fugitive	Coal Handling (Coal Conveyor 3G & 4G)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	77	Fugitive
25	Fugitive	Barge Unloading - (Limestone Barge Unloading)	Fugitive	Fugitive	20.0	na	na	na	Fugitive	75	Fugitive
25	Fugitive	Barge Unloading - (Bucket of Recvg Hopper)	Fugitive	Fugitive	20.0	na	na	na	Fugitive	75	Fugitive
26	Fugitive	Limestone Handling (Limestone Hopper to L2)	Fugitive	Fugitive	10.0	na	na	na	Fugitive	75	Fugitive
26	Fugitive	Limestone Handling (Limestone Conveyor L2 to L3)	Fugitive	Fugitive	20.0	na	na	na	Fugitive	75	Fugitive
26	Fugitive	Limestone Handling (Limestone Conveyor L3 to	Fugitive	Fugitive	55.0	na	na	na	Fugitive	75	Fugitive
27	Fugitive	Limestone Handling (Limestone West Stockpile)	Fugitive	Fugitive	16.0	na	na	na	Fugitive	75	Fugitive
28	Fugitive	Limestone Handling (Limestone Hopper L3 to L4)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
28	Fugitive	Limestone Handling (Limestone Conveyor L4)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
28	Fugitive	Limestone Handling (Limestone Conveyor L5)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
28	Fugitive	Limestone Handling (Limestone Conveyor L6)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
28	Fugitive	Limestone Handling (Limestone Conveyor L7)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
29	Fugitive	Limestone Handling (Wet Limestone Screens and Mills)	Fugitive	Fugitive	15.0	na	na	na	Fugitive	75	Fugitive
22	Fugitive	Cooling Tower 1 (Cooling Tower 1)	na	na	na	na	na	na	na	na	na
22	Fugitive	Cooling Tower 2 (Cooling Tower 2)	na	na	na	na	na	na	na	na	na
22	Fugitive	Cooling Tower 3 (Cooling Tower 3)	na	na	na	na	na	na	na	na	na
22	Fugitive	Cooling Tower 4 (Cooling Tower 4)	na	na	na	na	na	na	na	na	na
34	na	Emergency Air Comp (540 HP Air Compressor	7.3	0.5	na	na	na	na	na	na	na
35	na	CCR Landfill Opera (Haul Trucks)	Fugitive	Fugitive	10.0	na	na	na	Fugitive	na	Fugitive
36	na	Unit 3 Emergency E (755 HP Emergency Engine)	14.0	1.0	na	na	na	na	na	na	na
37	na	Unit 4 Emergency E (755 HP Emergency Engine)	14.0	1.0	na	na	na	na	na	na	na
38	na	Unit 1 Emergency E (505 HP Emergency Engine)	19.0	1.0	na	na	na	na	na	na	na
39	na	Unit 2 Emergency E (505 HP Emergency Engine)	19.0	1.0	na	na	na	na	na	na	na
40	na	Ghent Station Fire (340 HP Fire Pump Engine)	13.0	0.5	na	na	na	na	na	na	na
41	na	Non-Emergency Dies (53 HP Non-Emergency	6.0	0.3	na	na	na	na	na	na	na
42	na	Unit 1 Emergency E (469 HP Emergency Engine)	10.0	0.5	na	na	na	na	na	na	na
43	na	Unit 2 Emergency E (469 HP Emergency Engine)	10.0	0.5	na	na	na	na	na	na	na

[1] Vent height only listed for fugitive emission sources.

Emission Point Number

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Low NOx Burners (Unit 1)*	*Combustion Engineering*	*Low NOx Concentric Fired (SOFA) System*	*1997*	*7M*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
NA ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Low NOx coal and air nozzles with seperated over-fired air. 35% NOx control efficiency.

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
NA	*NOX*	*35.0%*

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Filter

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Pulse Jet Fabric Filter (Unit 1)*	*Clyde Bergemann Power*	*Custom Built*	*April 2015 (new)*	*NA*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
~330 ° F _____ ° C	*~2,100,000 acfm*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of filter unit:	Dimensions of filter unit (specify units):	Filtering material:
Fabric Filter	Filtering area: *~403,000 ft² per casing* Unit total width: _____ Unit total height: _____	*22 oz. fiberglass, acid resistant, PTFE membrane*

Cleaning method:
- ☐ Shaker
- ☐ Pulse Air
- ☐ Reverse Air
- ☑ Pulse Jet
- ☐ Other (specify) _____

Gas cooling method: *NA*
- ☐ Ductwork: Length _____ ft. Diameter _____ inches
- ☐ Heat Exchanger
- ☐ Bleed-in Air _____ scfm (@ 68° F)
- ☐ Water Spray _____ gpm
- ☐ Other (specify) _____

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
~6	*PM/PM10/PM2.5* *Mercury*	*99.3% PM* *>93.1% Mercury* *Mfg guarantee for Hg removal is 1.0 lb/Tbtu*

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Selective Catalytic Reduction (Unit 1)*	*Riley Power*	*NA*	*2004*	*$ 60,228,334*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
700 ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Selective Catalytic Reduction (SCR) System with SO3 Mitigation System

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
9 inches	*NOX*	*80.0%*

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Wet Limestone Forced-Oxidation Sulfur Dioxide (Unit 1)	Babcock Power Environmental Inc	Custom Built	2009	112M

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
129 ° F ____ ° C	Approx. 1,583,488	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type: None
- ☐ Packed bed — Packing type: None — Packing height (inches): ____
- ☑ Spray tower — Number of nozzles: 228 — Nozzle pressure (psig): 12
- ☐ Other (specify): ____

Type of Flow:
- ☐ Concurrent
- ☑ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow: 75 ft
- Cross-sectional area: 2 @ 1257 sq.ft
- Venturi throat velocity: NA ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
Tray	Cross-sectional area: 2@1257 sq.ft	

Chemical composition of scrubbing liquid:	Scrubbing liquid flowrate: 2@>90,000 gal/min Fresh liquid makeup rate: 2@2,000 gal/min	Disposal method of scrubber effluent:
Limestone slurry		Gypsum

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
6.6	SO2	98% - SO2

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Low NOx Burners (Unit 2)*	*Combustion Engineering*	*Level 3CE*	*2002*	*4M*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
NA ° F ____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Low NOx coal and air nozzles with seperated over-fired air. 25% NOx control efficiency.

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
NA	*NOX*	*25.0%*

Ember
DEP7007N
(continued)

SECTION III. Control Equipment Information for Filter

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Pulse Jet Fabric Filter (Unit 2)*	*Clyde Bergemann Power*	*Custom Built*	*Nov 2015 (new)*	*NA*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
~350 ° F _____ ° C	*~2,100,000 acfm*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of filter unit:	Dimensions of filter unit (specify units):	Filtering material:
Fabric Filter	Filtering area: *~403,000 ft^2 per casing* Unit total width: _____ Unit total height: _____	*22 oz. fiberglass, acid resistant, PTFE membrane*

Cleaning method:
- ☐ Shaker
- ☐ Pulse Air
- ☐ Reverse Air
- ☑ Pulse Jet
- ☐ Other (specify) _____

Gas cooling method: *NA*
- ☐ Ductwork: Length _____ ft. Diameter _____ inches
- ☐ Heat Exchanger
- ☐ Bleed-in Air _____ scfm (@ 68° F)
- ☐ Water Spray _____ gpm
- ☐ Other (specify) _____

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
~5	*PM/PM10/PM2.5* *Mercury*	*>99.4% - PM* *>93.1% - Mercury* *Mfg guarantee for Hg removal is 1.0 lb/Tbtu*

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Wet Limestone Forced-Oxidation Sulfur Dioxide (Unit 2)	Babcock & Wilcox	Custom Built	May 2009	112M

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
129 ° F _____ ° C	Approx. 2,750,172	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type _____
- ☐ Packed bed — Packing type _____ Packing height (inches) _____
- ☑ Spray tower — Number of nozzles NA Nozzle pressure (psig) NA
- ☐ Other (specify) _____

Type of Flow:
- ☐ Concurrent
- ☑ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow NA ft
- Cross-sectional area NA sq.ft
- Venturi throat velocity NA ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
FRP with high temp flame resistant resin (vertical flow design)	Cross-sectional area NA sq.ft	Designed to remove 99.5% of droplets > 40 um

Chemical composition of scrubbing liquid:		Disposal method of scrubber effluent:
Limestone slurry	Scrubbing liquid flowrate: 2@>90,000 gal/min Fresh liquid makeup rate: 2@2,000 gal/min	Gypsum

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
6.6	SO2 PM HCl HF	95% - SO2

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Low NOx Burners (Unit 3)*	*ABT*	*NA*	*2000*	*4M*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
NA ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Low NOx burners with seperated over-fired air. 50% NOx control efficiency.

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
NA	*NOX*	*50.0%*

Imber
DEP7007N
(continued)

SECTION III. Control Equipment Information for Electrostatic Precipitator

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Electrostatic Precipitator (Unit 3)*	*GE Environmental Services*	*BAB1-6X32N3443-6.2P*	*5/1/1981*	*10.896M*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
750 ° F _____ ° C	*1,879,000*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of ESP: *Pick one:*	Dimensions of ESP (specify units):	Number of stages:	Number of plates per stage:
☑ Dry, negative corona ☐ Wet, negative corona ☐ Wet, positive corona	Collection plate height *36 ft* Length of collection plate in direction of gas flow *24 ft* ESP total width *308 ft* ESP total height *36 ft*	*28 Sections in direction of gas flow; 12 section across gas flow; 168 total sections/384 gas passages*	*32 total plates*

Particle migration (drift) velocity:	Particle resistivity:	Voltage across plates:
Unknown	*Typically 1 x 10^{10} to 1 x 10^{11} ohm-cm*	*28 kV*

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
0.5	*PM/PM10/PM2.5* *Metal HAPs*	*99.4%*

Ember
DEP7007N
(continued)

SECTION III. Control Equipment Information for Filter

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Pulse Jet Fabric Filter (Unit 3)*	*Clyde Bergemann Power*	*Custom Built*	*5/1/2014 (new)*	*NA*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
275-350 F _____ ° C	*2,304,019 acfm at 316F*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of filter unit:	Dimensions of filter unit (specify units):	Filtering material:
Fabric Filter	Filtering area: *363,042 ft^2 per casing* Unit total width: _____ Unit total height: _____	*22 oz. fiberglass, acid resistant, PTFE membrane*

Cleaning method:
- ☐ Shaker
- ☐ Pulse Air
- ☐ Reverse Air
- ☑ Pulse Jet
- ☐ Other (specify) _____

Gas cooling method: *NA*
- ☐ Ductwork: Length _____ ft. Diameter _____ inches
- ☐ Heat Exchanger
- ☐ Bleed-in Air _____ scfm (@ 68° F)
- ☐ Water Spray _____ gpm
- ☐ Other (specify) _____

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
~5	*PM/PM10/PM2.5* *Mercury*	*99.3% - PM (vendor guarantee/performance test)* *>93.1% - Mercury* *Mfg guarantee for Hg removal is 1.0 lb/Tbtu*

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Selective Catalytic Reduction (Unit 3)*	*Riley Power*	*NA*	*4/1/2004*	*$ 54,588,897*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
750 ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Selective Catalytic Reduction (SCR) System with SO3 Mitigation System

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
9 inches	*NOX*	*80.0%*

Imber
DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Wet Limestone Forced-Oxidation Sulfur Dioxide (Unit 3)	Babcock Power Environmental Inc	Custom Built	May 2007	112M

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
129 ° F ____ ° C	Approx. 2,750,172	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type ____
- ☐ Packed bed — Packing type ____ Packing height (inches) ____
- ☑ Spray tower — Number of nozzles NA Nozzle pressure (psig) NA
- ☐ Other (specify) ____

Type of Flow:
- ☐ Concurrent
- ☑ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow NA ft
- Cross-sectional area NA sq.ft
- Venturi throat velocity NA ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
FRP with high temp flame resistant resin (vertical flow design)	Cross-sectional area NA sq.ft	Designed to remove 99.5% of droplets > 40 um

Chemical composition of scrubbing liquid:		Disposal method of scrubber effluent:
Limestone slurry	Scrubbing liquid flowrate: 2@>90,000 gal/min Fresh liquid makeup rate: 2@2,000 gal/min	Gypsum

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
6.6	SO2 PM HCl HF	96% - SO2

Imber

DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Low NOx Burners (Unit 4)*	*ABT*	*NA*	*2000*	*4M*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
NA ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Low NOx burners with seperated over-fired air. 50% NOx control efficiency.

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
NA	*NOX*	*50.0%*

Emission Point Number: **DEP7007N** (continued)

SECTION III. Control Equipment Information for Electrostatic Precipitator

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Electrostatic Precipitator (Unit 4)	GE Environmental Services	BAB1-6X32N3443-6.2P	Jun 1984	10.896M

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
750 ° F _____ ° C	1,879,000	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of ESP: *Pick one:*	Dimensions of ESP (specify units):	Number of stages:	Number of plates per stage:
☑ Dry, negative corona ☐ Wet, negative corona ☐ Wet, positive corona	Collection plate height: 36 ft Length of collection plate in direction of gas flow: 24 ft ESP total width: 308 ft ESP total height: 36 ft	28 Sections in direction of gas flow; 12 section across gas flow; 168 total sections/384 gas passages	32 total plates

Particle migration (drift) velocity:	Particle resistivity:	Voltage across plates:
NA	Typically 1 x 10^{10} to 1 x 10^{11} ohm-cm	28 kV

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
0.5	PM/PM10/PM2.5 Metal HAPs	99.5%

Ember
DEP7007N
(continued)

SECTION III. Control Equipment Information for Electrostatic Precipitator

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Pulse Jet Fabric Filter (Unit 4)*	*Clyde Bergemann Power*	*Custom Built*	*12/1/2014 (new)*	*NA*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
275-350 F _____ C	*2,203,859 acfm at 305F*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of filter unit:	Dimensions of filter unit (specify units):	Filtering material:
Fabric Filter	Filtering area: *363,042 ft^2 per casing* Unit total width: _____ Unit total height: _____	*22 oz. fiberglass, acid resistant, PTFE membrane*

Cleaning method:
- ☐ Shaker
- ☐ Pulse Air
- ☐ Reverse Air
- ☑ Pulse Jet
- ☐ Other (specify) _____

Gas cooling method: *NA*
- ☐ Ductwork: Length _____ ft. Diameter _____ inches
- ☐ Heat Exchanger
- ☐ Bleed-in Air _____ scfm (@ 68° F)
- ☐ Water Spray _____ gpm
- ☐ Other (specify) _____

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
~5	*PM/PM10/PM2.5* *Mercury*	*99.4% - PM (Actual from vendor guarantee performance test)* *>93.1% - Mercury* *Mfg guarantee for Hg removal is 1.0 lb/Tbtu*

Imber
DEP7007N
(continued)

SECTION III. Control Equipment Information for Other Type of Control Equipment

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	*Selective Catalytic Reduction (Unit 4)*	*Riley Power*	*NA*	*4/1/2004*	*$ 48,225,030*

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
750 ° F _____ ° C	*NA*	*NA*	*NA*	*NA*

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of control equipment (give descriptions and a sketch with dimensions):

Selective Catalytic Reduction (SCR) System with SO3 Mitigation System

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
9 inches	*NOX*	*80.0%*

Imber
DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Wet Limestone Forced-Oxidation Sulfur Dioxide (Unit 4)	Babcock Power Environmental Inc	Custom Built	May 2008	112M

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
129 °F ____ °C	Approx. 1,349,853	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type ____
- ☐ Packed bed — Packing type ____ Packing height (inches) ____
- ☑ Spray tower — Number of nozzles NA Nozzle pressure (psig) NA
- ☐ Other (specify) ____

Type of Flow:
- ☐ Concurrent
- ☑ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow NA ft
- Cross-sectional area NA sq.ft
- Venturi throat velocity NA ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
FRP with high temp flame resistant resin (vertical flow design)	Cross-sectional area NA sq.ft	Designed to remove 99.5% of droplets > 40 um

Chemical composition of scrubbing liquid:		Disposal method of scrubber effluent:
Limestone slurry	Scrubbing liquid flowrate: 2@>90,000 gal/min Fresh liquid makeup rate: 2@2,000 gal/min	Gypsum

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
6.6	SO2 PM HCl HF	98% - SO2

Ember

DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
	Wet Scrubber for Coal Crusher #1 (Unit 06)	*Engart*	*Type 46 Dust Extractor*	*Replaced 1973 Fabric Filter with Wet Scrubber in late 2017*	

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
Amb ° F ____ ° C	~55,000			

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type ____
- ☐ Packed bed — Packing type ____ Packing height (inches) ____
- ☑ Spray tower — Number of nozzles ____ Nozzle pressure (psig) ____
- ☐ Other (specify) ____

Type of Flow:
- ☐ Concurrent
- ☐ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow ____ ft
- Cross-sectional area ____ sq.ft
- Venturi throat velocity ____ ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
	Cross-sectional area ____ sq.ft	

Chemical composition of scrubbing liquid:	Scrubbing liquid flowrate: 13 gal/min Fresh liquid makeup rate: ____ gal/min	Disposal method of scrubber effluent:
Water		Discharge to west coal pond which goes to Ash Treatment Basin (ATB-1)

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
	PM/PM10/PM2.5	99.7%

Ember

DEP7007N
(continued)

SECTION III. Control Equipment Information for Filter

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
0	Dust Collector for EP-09	American Air Filter/Flexkleen	10-64, 10-96 - 100WM240III	1973	NA

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft^3):	Particle density (lb/ft^3) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
Amb. ° F _____ ° C	94,800	NA	NA	NA

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of filter unit:	Dimensions of filter unit (specify units):	Filtering material:
FabricFilter	Filtering area: 7,409 ft^2 Unit total width: _____ Unit total height: _____	16 oz. Polyester

Cleaning method:
- ☐ Shaker
- ☐ Pulse Air
- ☐ Reverse Air
- ☑ Pulse Jet
- ☐ Other (specify) _____

Gas cooling method: na
- ☐ Ductwork: Length _____ ft. Diameter _____ inches
- ☐ Heat Exchanger
- ☐ Bleed-in Air _____ scfm (@ 68° F)
- ☐ Water Spray _____ gpm
- ☐ Other (specify) _____

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
Unknown	PM/PM10/PM2.5	99.0%

Ember

DEP7007N
(continued)

SECTION III. Control Equipment Information for Scrubber

KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Date Installed	Cost
	Wet Scrubber for Coal Crusher #2 (Unit 11)	*Engart*	*Type 46 Dust Extractor*	*Replace 1973 Fabric Filter with Wet Scrubber Feb 2017*	

Inlet Gas Stream Data

Temperature:	Flowrate (scfm at 68°F):	Gas density (lb/ft³):	Particle density (lb/ft³) or Specific Gravity:	Average particle diameter (μm): *(or attach a particle size distribution table)*
Amb ° F _____ ° C	~55,000			

Equipment Physical Data

The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.

Type of scrubber:
- ☐ Venturi — Throat type _____
- ☐ Packed bed — Packing type _____ Packing height (inches) _____
- ☑ Spray tower — Number of nozzles _____ Nozzle pressure (psig) _____
- ☐ Other (specify) _____

Type of Flow:
- ☐ Concurrent
- ☐ Countercurrent
- ☐ Crossflow

Dimensions of scrubber:
- Length in direction of gas flow _____ ft
- Cross-sectional area _____ sq.ft
- Venturi throat velocity _____ ft/s

Type of mist eliminator:	Dimensions of mist eliminator:	Pressure drop across mist eliminator (in. H_2O):
	Cross-sectional area _____ sq.ft	

Chemical composition of scrubbing liquid:	Scrubbing liquid flowrate: 13 gal/min	Disposal method of scrubber effluent:
Water	Fresh liquid makeup rate: _____ gal/min	Discharge to west coal pond which goes to Ash Treatment Basin (ATB-1)

Equipment Operational Data

Pressure drop across unit (inches water gauge):	Pollutants collected/controlled:	Pollutant removal/destruction efficiency (%):
	PM/PM10/PM2.5	99.7%

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

Imber
DEP7007V

Applicable Requirements & Compliance Activities

APPLICANT NAME: Kentucky Utilities Company - Ghent Generating Station

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)

SECTION II. MONITORING REQUIREMENTS

SECTION III. RECORDKEEPING REQUIREMENTS

SECTION IV. REPORTING REQUIREMENTS

SECTION V. TESTING REQUIREMENTS

IN ADDITION TO THE FOLLOWING DEP7007V FORMS, PLEASE SEE THE SUGGESTED PERMIT LANGUAGE AND COMMENTS

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

Imber
DEP7007V

Applicable Requirements & Compliance Activities

APPLICANT NAME: Kentucky Utilities Company - Ghent Generating Station

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)

KYEIS	Emission Unit		Origin of Requirement	Applicable Requirement, Standard, Restriction,	Method of Determining Compliance with the
KyEIS ID#	Emission Source Description	Contaminant[3]	or Standard[4]	Limitation, or Exemption[5]	Emission and Operating Requirement(s)[6]
01	Unit 1 Indirect Heat Exchanger	PM, SO2, Opacity, SAM PM, SO2, Hg	401 KAR 61:015, Section 4(1) (PM); 401 KAR 61:015, Section 2 (opacity); 401 KAR 51:015, Section 5(1) (SO2); Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	**PM - 0.20 lb/MMBtu (based on 3-hr avg);** **Opacity - 40% based on 6-min avg except that a max. of 60% opacity is allowed for a period or aggregate of periods not more than 6 min in any 60 min during building a new fire, cleaning firebox, or blowing soot;** **SO2 - 5.67 lb/MMBtu (based on 24-hr avg);** **SAM - 5 ppmvd (at 3% O2);** **NOx - 0.45 lb/MMBtu (KU system wide NOx averaging plan)** **MATS - PM (filterable) - 0.030 lb/mmbtu (30-day, avg group with Ghent 2, 3, and 4); SO2 (as alt to HCL) - 0.020 lb/mmbtu (30-day, avg group with Ghent 4); Hg - 0.013 lb/GWh(30-day, avg group with Ghent 2, 3, and 4)**	**PM** - Stack test **SO2** - CEM; **Opacity** - Method 9 **SAM -** Stack tests **MATS: PM -** PM CEM & Stack Test; **SO2 -** CEM & Stack Test ; **Hg -** Sorbent Traps & Stack Test
02	Unit 2 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	**PM** - 0.10 lb/MMBtu (based on 3-hr avg); **Opacity** - 20% based on 6-min avg except that a max. of 27% opacity is allowed for a period or aggregate of periods not more than 6 min in any 60 min during building a new fire, cleaning firebox, or blowing soot; **SO2** - 1.2 lb/MMBtu (based on 3-hr avg); **NOx -** 0.70 lb/MMBtu (based on 3-hr avg); **SAM -** 5 ppmvd (at 3% O2) stack tests; **MATS - PM** (filterable) - 0.030 lb/mmbtu (30-day, avg group with Ghent 1, 3, and 4); **HCL** - 0.020 lb/mmbtu (quarterly stack testing); **Hg** - 0.013 lb/GWh (30-day, avg group with Ghent 1, 3, and 4) NSPS limit NOx - 0.40 lb/MMBtu (KU system wide NOx averaging plan):	**PM** - Stack test **SO2** - CEM; **Opacity** - Method 9 **NOx** - CEM **SAM -** Stack tests **MATS: PM -** PM CEM & Stack Test; **HCL -** Stack Tests ; **Hg -** Sorbent Traps & Stack Test
03	Unit 3 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	**PM** - 0.10 lb/MMBtu (based on 3-hr avg); **Opacity** - 20% based on 6-min avg except that a max. of 27% opacity is allowed for a period or aggregate of periods not more than 6 min in any 60 min during building a new fire, cleaning firebox, or blowing soot; **SO2** - 1.2 lb/MMBtu (based on 3-hr avg); **NOx -** 0.70 lb/MMBtu (based on 3-hr avg); **SAM -** 5 ppmvd (at 3% O2) stack tests; **MATS - PM** (filterable) - 0.030 lb/mmbtu (30-day, avg group with Ghent 1, 2, and 4); **HCL** - 0.020 lb/mmbtu (quarterly stack testing); **Hg** - 0.013 lb/GWh (30-day, avg group with Ghent 1, 2, and 4) NSPS limit NOx - 0.40 lb/MMBtu (KU system wide NOx averaging plan):	**PM** - Stack test **SO2** - CEM; **Opacity** - Method 9 **NOx** - CEM **SAM -** Stack tests **MATS: PM -** PM CEM & Stack Test; **HCL -** Stack Tests ; **Hg -** Sorbent Traps & Stack Test

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)					Imber
KYEIS	Emission Unit		**Origin of Requirement**	**Applicable Requirement, Standard, Restriction,**	**Method of Determining Compliance with the**
04	Unit 4 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	**PM** - 0.10 lb/MMBtu (based on 3-hr avg); **Opacity** - 20% based on 6-min avg except that a max. of 27% opacity is allowed for a period or aggregate of periods not more than 6 min in any 60 min during building a new fire, cleaning firebox, or blowing soot; **SO2** - 1.2 lb/MMBtu (based on 3-hr avg); **NOx -** 0.70 lb/MMBtu (based on 3-hr avg); **SAM -** 5 ppmvd (at 3% O2) stack tests; **MATS - PM** (filterable) - 0.030 lb/mmbtu (30-day, avg group with Ghent 1, 2, and 3); **SO2** - 0.020 lb/mmbtu (30-day, avg group with Ghent 4); **Hg** - 0.013 lb/GWh (30-day, avg group with Ghent 1, 2 and 3) NSPS limit NOx - 0.40 lb/MMBtu (KU system wide NOx averaging plan):	**PM** - Stack test **SO2** - CEM; **Opacity** - Method 9 **NOx** - CEM **SAM -** Stack tests **MATS: PM -** PM CEM & Stack Test; **SO2 - CEM &** Stack Test ; **Hg -** Sorbent Traps & Stack Test
05	Barge Unloader (Coal Barge Unloading)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
07	Coal Handling (Coal Stockpile)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
07	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
07	Coal Handling (Coal Conveyor 1J)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
07	Coal Handling (Coal Conveyor 1G)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
07	Coal Handling (Coal Conveyor 1H)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
08	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures,wet suppressants, fabric filters)
09	Coal Handling (Coal Conveyor 2H)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
10	Coal Handling (Coal Conveyor 6H)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
06	Coal Crushing (Crusher House #1)	PM, Opacity	401 KAR 61:020, Section 3(1)(a) 401 KAR 61:020, Section 3(2)	**PM -** Shall not exceed 85.4 lb/hr based on a 3-hr average: **Opacity** - Shall not exceed 40% (based on 6-min avg.)	Weekly qual visuals/Method 9 if triggered;
11a	Coal Crushing (Crusher House #2)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
11b	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
11b	Coal Handling (Coal Conveyor 2G)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
11b	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)					Imber
KYEIS	Emission Unit		**Origin of Requirement**	**Applicable Requirement, Standard, Restriction,**	**Method of Determining Compliance with the**
11b	Coal Handling (Coal Conveyor 3G & 4G)	Opacity	40 CFR 60.254(a)	**Opacity** - Shall not exceed 20%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
25	Barge Unloadin (Limestone Barge Unloading)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures and wet suppressants)
25	Barge Unloadin (Bucket of Recvg Hopper)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (enclosures and wet suppressants)
26	Limestone Hand (Limestone Hopper to L2)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
26	Limestone Hand (Limestone Conveyor L2 to L3)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
26	Limestone Hand (Limestone Conveyor L3 to Stockpile)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
27	Limestone Hand (Limestone West Stockpile)	Fugitive	401 KAR 63:010	**Fugitive emissions** - Reasonable precautions, discharge of visible fugitive dust emissions beyond property line is prohibited.	Use of controls (wet suppressants)
28	Limestone Hand (Limestone Hopper L3 to L4)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
28	Limestone Hand (Limestone Conveyor L4)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
28	Limestone Hand (Limestone Conveyor L5)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
28	Limestone Hand (Limestone Conveyor L6)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
28	Limestone Hand (Limestone Conveyor L7)	Opacity	40 CFR 60.672(b)	**Opacity** - Shall not exceed 10%. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
29	Limestone Hand (Wet Limestone Screens and Mills)	Opacity	401 KAR 59.010, Section 3(10(b)	**Opacity** - Shall not exceed 20%. Shall not remain visible beyond property line. Weekly qual visuals/log and method 9 if triggered	Weekly qual visuals/log and method 9 if triggered
22	Cooling Tower (Cooling Tower 1)	Fugitive	401 KAR 63:010, Section 3	**Fugitive emissions** - Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fugitive dust emissions beyond property line is prohibited.	Recordkeeping
22	Cooling Tower (Cooling Tower 2)	Fugitive	401 KAR 63:010, Section 3	**Fugitive emissions** - Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fugitive dust emissions beyond property line is prohibited.	Recordkeeping
22	Cooling Tower (Cooling Tower 3)	Fugitive	401 KAR 63:010, Section 3	**Fugitive emissions** - Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fugitive dust emissions beyond property line is prohibited.	Recordkeeping
22	Cooling Tower (Cooling Tower 4)	Fugitive	401 KAR 63:010, Section 3	**Fugitive emissions** - Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fugitive dust emissions beyond property line is prohibited.	Recordkeeping
34	Emergency Air (540 HP Air Compressor Engine)	NA	NA	**NA**	NA

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)					Imber
KYEIS	Emission Unit		**Origin of Requirement**	**Applicable Requirement, Standard, Restriction,**	**Method of Determining Compliance with the**
35	CCR Landfill O (Haul Trucks)	Fugitive	401 KAR 63:010, Section 2	**Fugitive emissions** - Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fugitive dust emissions beyond property line is prohibited. 15 mph sign for roads, enforce speed limit Operating Limitations: Landfill shall only receive coal related material, CCR material (bottom ash, fly ash, gypsum). Reasonable precautions shall be taken to prevent PM from becoming airborne. Discharge of visible fug dust emissions beyond property line is prohibited. Additional controls may be required is operations cause a nuisance. Trucks operating outside company property, with material likely to become airborne, shall be covered. Material cannot be deposited on roadways.	Follow good procedures (water roads as needed, use enclsoures), post a 15 mph sign and enforce speed limit. Monitor rate of material haulded (tons, VMT, Gallons/hr) on paved and unpaved roads. Visual observation each operating day.
36	Unit 3 Emergen (755 HP Emergency Engine)	NA	NA	**NA**	NA
37	Unit 4 Emergen (755 HP Emergency Engine)	NA	NA	**NA**	NA
38	Unit 1 Emergen (505 HP Emergency Engine)	NA	NA	**NA**	NA
39	Unit 2 Emergen (505 HP Emergency Engine)	NA	NA	**NA**	NA
40	Ghent Station (340 HP Fire Pump Engine)	NA	40 CFR 63.6605(a) &(b); 40 CFR 63.6625(e)(2) &(h); 40 CFR 63.6640(f)	Work and operational practices	Recordkeeping
41	Non-Emergency (53 HP Non-Emergency Engine)	NA	40 CFR 60.4204(b); 40 CFR 60.4206; 40 CFR 60.4207(b)	Certified engine	Recordkeeping /Certified Engine
42	Unit 1 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)	Certified engine	Recordkeeping /Certified Engine
43	Unit 2 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)	Certified engine	Recordkeeping /Certified Engine

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APPLICANT NAME:		Kentucky Utilities Company - Ghent Generating Station				continued
SECTION II. MONITORING REQUIREMENTS						
KYEIS No.[1]	**Emission Unit Description[2]**	**Contaminant[3]**	**Origin of Requirement or Standard[4]**	**Parameter Monitored[7]**	**Description of Monitoring[8]**	
01	Unit 1 Indirect Heat Exchanger	PM, SO2, Opacity, SAM PM, SO2, Hg	401 KAR 61:015, Section 4(1) (PM); 401 KAR 61:015, Section 2 (opacity); 401 KAR 51:015, Section 5(1) (SO2); Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM NOX SO2 Oxygen or CO2 For Solid Fuel (Coal): Sulfur Content, Fuel Usage, Ash %, BTU Value, Min and Max Generation Rates CEM Requirements SAM/CAM/DSI injection rates MATS: Hg, PM, SO2 Method 9 Start ups	CEM monitors/CEM Requirements/MATs; Fuel - sulfur content, usage, BTU, ash %, max and min generation rates; SAM/CAM plan; DSI injection rates; Method 9's; Startups	
02	Unit 2 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM NOX SO2 Oxygen or CO2 CEM Requirements SAM/CAM/DSI injection rates MATS: Hg, PM Method 9 Startups	CEM monitors/CEM Requirements/MATs; SAM/CAM plan; DSI injection rates; Method 9's; Startups	
03	Unit 3 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM NOX SO2 Oxygen or CO2 CEM Requirements SAM/CAM/DSI injection rates MATS: Hg, PM Method 9 Startups	CEM monitors/CEM Requirements/MATs; SAM/CAM plan; DSI injection rates; Method 9's; Startups	

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Monitored[7]	Description of Monitoring[8]
04	Unit 4 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM NOX SO2 Oxygen or CO2 CEM Requirements SAM/CAM/DSI injection rates MATS: Hg, PM, SO2 Method 9 Startups	CEM monitors/CEM Requirements/MATs; SAM/CAM plan; DSI injection rates; Method 9's; Startups
05	Barge Unloader (Coal Barge Unloading)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
07	Coal Handling (Coal Stockpile)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
07	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
07	Coal Handling (Coal Conveyor 1J)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
07	Coal Handling (Coal Conveyor 1G)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
07	Coal Handling (Coal Conveyor 1H)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
08	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
09	Coal Handling (Coal Conveyor 2H)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
10	Coal Handling (Coal Conveyor 6H)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
06	Coal Crushing (Crusher House #1)	PM, Opacity	401 KAR 61:020, Section 3(1)(a) 401 KAR 61:020, Section 3(2)	Operating rates & hours; QVs	Operating rates and hours daily; QVs
11a	Coal Crushing (Crusher House #2)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
11b	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
11b	Coal Handling (Coal Conveyor 2G)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
11b	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
11b	Coal Handling (Coal Conveyor 3G & 4G)	Opacity	40 CFR 60.254(a)	Coal tons; QVs	Coal tons, monthly; QVs
25	Barge Unloadin (Limestone Barge Unloading)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
25	Barge Unloadin (Bucket of Recvg Hopper)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Monitored[7]	Description of Monitoring[8]
26	Limestone Hand (Limestone Hopper to L2)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
26	Limestone Hand (Limestone Conveyor L2 to L3)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
26	Limestone Hand (Limestone Conveyor L3 to Stockpile)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
27	Limestone Hand (Limestone West Stockpile)	Fugitive	401 KAR 63:010	Operating rates & hours; QVs	Operating rates monthly; QVs daily
28	Limestone Hand (Limestone Hopper L3 to L4)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
28	Limestone Hand (Limestone Conveyor L4)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
28	Limestone Hand (Limestone Conveyor L5)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
28	Limestone Hand (Limestone Conveyor L6)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
28	Limestone Hand (Limestone Conveyor L7)	Opacity	40 CFR 60.672(b)	Limestone tons; QVs	Limestone tons, monthly; QVs
29	Limestone Hand (Wet Limestone Screens and Mills)	Opacity	401 KAR 59.010, Section 3(10(b)	QVs	QVs
22	Cooling Tower (Cooling Tower 1)	Fugitive	401 KAR 63:010, Section 3	General	Permit, Section F
22	Cooling Tower (Cooling Tower 2)	Fugitive	401 KAR 63:010, Section 3	General	Permit, Section F
22	Cooling Tower (Cooling Tower 3)	Fugitive	401 KAR 63:010, Section 3	General	Permit, Section F
22	Cooling Tower (Cooling Tower 4)	Fugitive	401 KAR 63:010, Section 3	General	Permit, Section F
34	Emergency Air (540 HP Air Compressor Engine)	NA	NA	Hours of operation; Fuel usage	Hours of operation; Fuel usage
35	CCR Landfill O (Haul Trucks)	Fugitive	401 KAR 63:010, Section 2	See description	Rates - Tons of material hauled; mileage traveled QVs
36	Unit 3 Emergen (755 HP Emergency Engine)	NA	NA	Hours of operation	Hours of operation
37	Unit 4 Emergen (755 HP Emergency Engine)	NA	NA	Hours of operation	Hours of operation
38	Unit 1 Emergen (505 HP Emergency Engine)	NA	NA	Hours of operation	Hours of operation

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Monitored[7]	Description of Monitoring[8]
39	Unit 2 Emergen (505 HP Emergency Engine)	NA	NA	Hours of operation	Hours of operation
40	Ghent Station (340 HP Fire Pump Engine)	NA	40 CFR 63.6605(a) &(b); 40 CFR 63.6625(e)(2) &(h); 40 CFR 63.6640(f)	Install non-resettable hour meter	Install non-resettable hour meter
41	Non-Emergency (53 HP Non-Emergency Engine)	NA	40 CFR 60.4204(b); 40 CFR 60.4206; 40 CFR 60.4207(b)	Hours of operation	Hours of operation
42	Unit 1 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)	Fuel usage & hours of operation	Fuel usage & hours of operation
43	Unit 2 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)	Fuel usage & hours of operation	Fuel usage & hours of operation

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APPLICANT NAME: Kentucky Utilities Company - Ghent Generating Station

SECTION III. RECORDKEEPING REQUIREMENTS

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Recorded[9]	Description of Recordkeeping[10]
01	Unit 1 Indirect Heat Exchanger	PM, SO2, Opacity, SAM PM, SO2, Hg	401 KAR 61:015, Section 4(1) (PM); 401 KAR 61:015, Section 2 (opacity); 401 KAR 51:015, Section 5(1) (SO2); Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	CEM Data/Quarterly Reports Fuel Data Test Data Method 9's Startup Data MATs Data/Reports CD Data	CEM Data/Quarterly Reports Fuel Data Test Data - Performance Tests Method 9's Startup Data - (cold, warm, hot, time, duration, normal or abnormal) MATs Data/Reports CD Data
02	Unit 2 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	CEM Data/Quarterly Reports Fuel Data Test Data Method 9's Startup Data MATs Data/Reports CD Data	CEM Data/Quarterly Reports Fuel Data Test Data - Performance Tests Method 9's Startup Data - (cold, warm, hot, time, duration, normal or abnormal) MATs Data/Reports CD Data
03	Unit 3 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	CEM Data/Quarterly Reports Fuel Data Test Data Method 9's Startup Data MATs Data/Reports CD Data	CEM Data/Quarterly Reports Fuel Data Test Data - Performance Tests Method 9's Startup Data - (cold, warm, hot, time, duration, normal or abnormal) MATs Data/Reports CD Data
04	Unit 4 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	CEM Data/Quarterly Reports Fuel Data Test Data Method 9's Startup Data MATs Data/Reports CD Data	CEM Data/Quarterly Reports Fuel Data Test Data - Performance Tests Method 9's Startup Data - (cold, warm, hot, time, duration, normal or abnormal) MATs Data/Reports CD Data
05	Barge Unloader (Coal Barge Unloading)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
07	Coal Handling (Coal Stockpile)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
07	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records

SECTION III. RECORDKEEPING REQUIREMENTS					
KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Recorded[9]	Description of Recordkeeping[10]
07	Coal Handling (Coal Conveyor 1J)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
07	Coal Handling (Coal Conveyor 1G)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
07	Coal Handling (Coal Conveyor 1H)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
08	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
09	Coal Handling (Coal Conveyor 2H)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
10	Coal Handling (Coal Conveyor 6H)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
06	Coal Crushing (Crusher House #1)	PM, Opacity	401 KAR 52:020		QVs, Method 9's if triggered
11a	Coal Crushing (Crusher House #2)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
11b	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
11b	Coal Handling (Coal Conveyor 2G)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
11b	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
11b	Coal Handling (Coal Conveyor 3G & 4G)	Opacity	401 KAR 52:020	See Description	Coal received; QVs
25	Barge Unloadin (Limestone Barge Unloading)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
25	Barge Unloadin (Bucket of Recvg Hopper)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
26	Limestone Hand (Limestone Hopper to L2)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
26	Limestone Hand (Limestone Conveyor L2 to L3)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
26	Limestone Hand (Limestone Conveyor L3 to Stockpile)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
27	Limestone Hand (Limestone West Stockpile)	Fugitive	401 KAR 52:020	See Description	Coal and limestone received; QVs, maintenance records
28	Limestone Hand (Limestone Hopper L3 to L4)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
28	Limestone Hand (Limestone Conveyor L4)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs

SECTION III. RECORDKEEPING REQUIREMENTS					
KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Recorded[9]	Description of Recordkeeping[10]
28	Limestone Hand (Limestone Conveyor L5)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
28	Limestone Hand (Limestone Conveyor L6)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
28	Limestone Hand (Limestone Conveyor L7)	Opacity	401 KAR 52:020	See Description	Limestone received; QVs
29	Limestone Hand (Wet Limestone Screens and Mills)	Opacity	401 KAR 52:020	See Description	QVs
22	Cooling Tower (Cooling Tower 1)	Fugitive	401 KAR 52:020	See Description	Water circulation rate (monthly)
22	Cooling Tower (Cooling Tower 2)	Fugitive	401 KAR 52:020	See Description	Water circulation rate (monthly)
22	Cooling Tower (Cooling Tower 3)	Fugitive	401 KAR 52:020	See Description	Water circulation rate (monthly)
22	Cooling Tower (Cooling Tower 4)	Fugitive	401 KAR 52:020	See Description	Water circulation rate (monthly)
34	Emergency Air (540 HP Air Compressor Engine)	NA	401 KAR 52:020	See Description	Hours and fuel usage
35	CCR Landfill O (Haul Trucks)	Fugitive	401 KAR 52:020	See Description	QVs, Hauled tons, Haul miles, water usage (gallons);maintenance records (water spay nozzles)
36	Unit 3 Emergen (755 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation
37	Unit 4 Emergen (755 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation
38	Unit 1 Emergen (505 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation
39	Unit 2 Emergen (505 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation
40	Ghent Station (340 HP Fire Pump Engine)	NA	401 KAR 52:020	See Description	Applicable notifications; maintenance records
41	Non-Emergency (53 HP Non-Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation
42	Unit 1 Emergen (469 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation; fuel usage, certification, operating time purpose
43	Unit 2 Emergen (469 HP Emergency Engine)	NA	401 KAR 52:020	See Description	Hours of operation; fuel usage, certification, operating time purpose

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APPLICANT NAME:		Kentucky Utilities Company - Ghent Generating Station				continued
SECTION IV. REPORTING REQUIREMENTS						
KYEIS No.[1]	**Emission Unit Description[2]**	**Contaminant[3]**	**Origin of Requirement or Standard[4]**	**Parameter Reported[11]**	**Description of Reporting[12]**	
01	Unit 1 Indirect Heat Exchanger	PM, SO2, Opacity, SAM PM, SO2, Hg	401 KAR 61:015, Section 4(1) (PM); 401 KAR 61:015, Section 2 (opacity); 401 KAR 51:015, Section 5(1) (SO2); Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	SAM CAM Plans if Revised Performance Tests CEM Data (PM, SO2) Quarterly Excess Emission Reports Excursions (excluding exempted time periods) Startup Data MATs Data CD Data & Deviation Reports Annual Title V Reports Semi-Annual Monitoring Reports	For pollutants, as applicable: Exceedences; startup, shutdown & malfunction reports; testing data/Method 9 reports. Semi-annual monitoring reports, annual certification, and annual KYEIS emission surveys. Quarterly CEM reports. CD Reports. MATS Reports	
02	Unit 2 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	SAM CAM Plans if Revised Performance Tests CEM Data (PM, SO2) Quarterly Excess Emission Reports Excursions (excluding exempted time periods) Startup Data MATs Data CD Data & Deviation Reports Annual Title V Reports Semi-Annual Monitoring Reports	For pollutants, as applicable: Exceedences; startup, shutdown & malfunction reports; testing data/Method 9 reports. Semi-annual monitoring reports, annual certification, and annual KYEIS emission surveys. Quarterly CEM reports. CD Reports. MATS Reports	
03	Unit 3 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	SAM CAM Plans if Revised Performance Tests CEM Data (PM, SO2) Quarterly Excess Emission Reports Excursions (excluding exempted time periods) Startup Data MATs Data CD Data & Deviation Reports Annual Title V Reports Semi-Annual Monitoring Reports	For pollutants, as applicable: Exceedences; startup, shutdown & malfunction reports; testing data/Method 9 reports. Semi-annual monitoring reports, annual certification, and annual KYEIS emission surveys. Quarterly CEM reports. CD Reports. MATS Reports	

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APPLICANT NAME:		Kentucky Utilities Company - Ghent Generating Station				continued
SECTION IV. REPORTING REQUIREMENTS						
KYEIS	**Emission Unit**		**Origin of Requirement**	**Parameter**		
04	Unit 4 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	SAM CAM Plans if Revised Performance Tests CEM Data (PM, SO2) Quarterly Excess Emission Reports Excursions (excluding exempted time periods) Startup Data MATs Data CD Data & Deviation Reports Annual Title V Reports Semi-Annual Monitoring Reports	For pollutants, as applicable: Exceedences; startup, shutdown & malfunction reports; testing data/Method 9 reports. Semi-annual monitoring reports, annual certification, and annual KYEIS emission surveys. Quarterly CEM reports. CD Reports. MATS Reports
05	Barge Unloader (Coal Barge Unloading)	Fugitive			Permit, Section F
07	Coal Handling (Coal Stockpile)	Fugitive			Permit, Section F
07	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive			Permit, Section F
07	Coal Handling (Coal Conveyor 1J)	Fugitive			Permit, Section F
07	Coal Handling (Coal Conveyor 1G)	Fugitive			Permit, Section F
07	Coal Handling (Coal Conveyor 1H)	Fugitive			Permit, Section F
08	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive			Permit, Section F
09	Coal Handling (Coal Conveyor 2H)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
10	Coal Handling (Coal Conveyor 6H)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
06	Coal Crushing (Crusher House #1)	PM, Opacity	40 KAR 52:020, Section 10	See description	Visible emissions, Method 9's if applicable Permit, Section F
11a	Coal Crushing (Crusher House #2)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
11b	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
11b	Coal Handling (Coal Conveyor 2G)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
11b	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F

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APPLICANT NAME: Kentucky Utilities Company - Ghent Generating Station

SECTION IV. REPORTING REQUIREMENTS

KYEIS	Emission Unit		Origin of Requirement	Parameter	
11b	Coal Handling (Coal Conveyor 3G & 4G)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
25	Barge Unloadin (Limestone Barge Unloading)	Fugitive			Permit, Section F
25	Barge Unloadin (Bucket of Recvg Hopper)	Fugitive			Permit, Section F
26	Limestone Hand (Limestone Hopper to L2)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
26	Limestone Hand (Limestone Conveyor L2 to L3)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
26	Limestone Hand (Limestone Conveyor L3 to Stockpile)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
27	Limestone Hand (Limestone West Stockpile)	Fugitive			Permit, Section F
28	Limestone Hand (Limestone Hopper L3 to L4)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
28	Limestone Hand (Limestone Conveyor L4)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
28	Limestone Hand (Limestone Conveyor L5)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
28	Limestone Hand (Limestone Conveyor L6)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
28	Limestone Hand (Limestone Conveyor L7)	Opacity	40 KAR 52:020, Section 10	See description	Excursions above opacity std Permit, Section F
29	Limestone Hand (Wet Limestone Screens and Mills)	Opacity			Permit, Section F
22	Cooling Tower (Cooling Tower 1)	Fugitive	40 KAR 52:020, Section 10	See description	Water circulation rates
22	Cooling Tower (Cooling Tower 2)	Fugitive	40 KAR 52:020, Section 10	See description	Water circulation rates
22	Cooling Tower (Cooling Tower 3)	Fugitive	40 KAR 52:020, Section 10	See description	Water circulation rates
22	Cooling Tower (Cooling Tower 4)	Fugitive	40 KAR 52:020, Section 10	See description	Water circulation rates
34	Emergency Air (540 HP Air Compressor Engine)	NA	40 KAR 52:020, Section 10	See description	Hours of operation and fuel usage

						DEP7007V Number
APPLICANT NAME:		Kentucky Utilities Company - Ghent Generating Station				continued
SECTION IV. REPORTING REQUIREMENTS						
KYEIS	**Emission Unit**		**Origin of Requirement**	**Parameter**		
35	CCR Landfill O (Haul Trucks)	Fugitive			Permit, Section F	
36	Unit 3 Emergen (755 HP Emergency Engine)	NA			Permit, Section F	
37	Unit 4 Emergen (755 HP Emergency Engine)	NA			Permit, Section F	
38	Unit 1 Emergen (505 HP Emergency Engine)	NA			Permit, Section F	
39	Unit 2 Emergen (505 HP Emergency Engine)	NA			Permit, Section F	
40	Ghent Station (340 HP Fire Pump Engine)	NA	40 CFR 63.6650 [40 CFR 63.6640(b)]; Table 8 of 40 CFR 63 Subpart ZZZZ, that apply - 40 CFR 63.6640(e). Notifications listed in 63.7(b) and (c), 40 CFR 63,8 (e), (f)(4) and (f)(6), 40 CFR 63.9(b) through (e), and (g) are not required [40 cfr 63.6645(a)(5)]		Deviations	
41	Non-Emergency (53 HP Non-Emergency Engine)	NA	40 KAR 52:020, Section 10	See description	Hours of operation	
42	Unit 1 Emergen (469 HP Emergency Engine)	NA	40 KAR 52:020, Section 10	See description	Hours of operation and fuel usage; if used for purposes specified in 40 CFR 60.4211(f)(3) submit an annual report per 40 CFR 60.4214(d)	
43	Unit 2 Emergen (469 HP Emergency Engine)	NA	40 CFR 60.4211(f)(3)	See description	Hours of operation and fuel usage; if used for purposes specified in 40 CFR 60.4211(f)(3) submit an annual report per 40 CFR 60.4214(d) Permit, Section F	

DEP7007V Number continued

APPLICANT NAME: Kentucky Utilities Company - Ghent Generating Station

SECTION V. TESTING REQUIREMENTS

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Tested[13]	Description of Testing[14]
01	Unit 1 Indirect Heat Exchanger	PM, SO2, Opacity, SAM PM, SO2, Hg	401 KAR 61:015, Section 4(1) (PM); 401 KAR 61:015, Section 2 (opacity); 401 KAR 51:015, Section 5(1) (SO2); Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM filterable MATs testing (Hg, SO2, PM) SAM	PM filterable - PM CEM Compliance - Annual Testing MATs testing (Hg, SO2, PM) SAM - Biannual but can be changed to annual if certain requirements are met.
02	Unit 2 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM filterable MATs testing (Hg, HCL, PM) SAM	PM filterable - PM CEM Compliance - Annual Testing MATs testing (Hg, quarterly HCL testing, PM) SAM - Biannual but can be changed to annual if certain requirements are met.
03	Unit 3 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM filterable MATs testing (Hg, HCL, PM) SAM	PM filterable - PM CEM Compliance - Annual Testing MATs testing (Hg, quarterly HCL testing, PM) SAM - Biannual but can be changed to annual if certain requirements are met.
04	Unit 4 Indirect Heat Exchanger	PM, Nox, SO2, Opacity, SAM PM, SO2, Hg	40 CFR 60.42(a)(1)(PM);40 CFR 60.42(a)(2) (opacity); 40 CFR 60.43(a)(2) (SO2); 40 CFR 60.44(a)(3) NOx; Consent Decree (SAM); 40 CFR 63.9991 (PM, SO2, Hg)	PM filterable MATs testing (Hg, SO2, PM) SAM	PM filterable - PM CEM Compliance - Annual Testing MATs testing (Hg, SO2, PM) SAM - Biannual but can be changed to annual if certain requirements are met.
05	Barge Unloader (Coal Barge Unloading)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
07	Coal Handling (Coal Stockpile)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
07	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
07	Coal Handling (Coal Conveyor 1J)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
07	Coal Handling (Coal Conveyor 1G)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
07	Coal Handling (Coal Conveyor 1H)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
08	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
09	Coal Handling (Coal Conveyor 2H)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
10	Coal Handling (Coal Conveyor 6H)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254

SECTION V. TESTING REQUIREMENTS

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Tested[13]	Description of Testing[14]
06	Coal Crushing (Crusher House #1)	PM, Opacity	401 KAR 61:020, Section 3(1)(a) 401 KAR 61:020, Section 3(2)		Testing if requested by the Cabinet 401 KAR 50:045
11a	Coal Crushing (Crusher House #2)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
11b	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
11b	Coal Handling (Coal Conveyor 2G)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
11b	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
11b	Coal Handling (Coal Conveyor 3G & 4G)	Opacity	40 CFR 60.254(a)		Method 9 if triggered 40 CFR 60.254
25	Barge Unloadin (Limestone Barge Unloading)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
25	Barge Unloadin (Bucket of Recvg Hopper)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
26	Limestone Hand (Limestone Hopper to L2)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
26	Limestone Hand (Limestone Conveyor L2 to L3)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
26	Limestone Hand (Limestone Conveyor L3 to Stockpile)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
27	Limestone Hand (Limestone West Stockpile)	Fugitive	401 KAR 63:010		Testing if requested by the Cabinet 401 KAR 59:005 and 401 KAR 50:045
28	Limestone Hand (Limestone Hopper L3 to L4)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
28	Limestone Hand (Limestone Conveyor L4)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
28	Limestone Hand (Limestone Conveyor L5)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
28	Limestone Hand (Limestone Conveyor L6)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045
28	Limestone Hand (Limestone Conveyor L7)	Opacity	40 CFR 60.672(b)		Testing if requested by the Cabinet 401 KAR 50:045

SECTION V. TESTING REQUIREMENTS

KYEIS No.[1]	Emission Unit Description[2]	Contaminant[3]	Origin of Requirement or Standard[4]	Parameter Tested[13]	Description of Testing[14]
29	Limestone Hand (Wet Limestone Screens and Mills)	Opacity	401 KAR 59.010, Section 3(10(b)		Testing if requested by the Cabinet 401 KAR 50:045
22	Cooling Tower (Cooling Tower 1)	Fugitive	401 KAR 63:010, Section 3		Testing if requested by the Cabinet 401 KAR 50:045
22	Cooling Tower (Cooling Tower 2)	Fugitive	401 KAR 63:010, Section 3		Testing if requested by the Cabinet 401 KAR 50:045
22	Cooling Tower (Cooling Tower 3)	Fugitive	401 KAR 63:010, Section 3		Testing if requested by the Cabinet 401 KAR 50:045
22	Cooling Tower (Cooling Tower 4)	Fugitive	401 KAR 63:010, Section 3		Testing if requested by the Cabinet 401 KAR 50:045
34	Emergency Air (540 HP Air Compressor Engine)	NA	NA		NA
35	CCR Landfill O (Haul Trucks)	Fugitive	401 KAR 63:010, Section 2		NA
36	Unit 3 Emergen (755 HP Emergency Engine)	NA	NA		NA
37	Unit 4 Emergen (755 HP Emergency Engine)	NA	NA		NA
38	Unit 1 Emergen (505 HP Emergency Engine)	NA	NA		NA
39	Unit 2 Emergen (505 HP Emergency Engine)	NA	NA		NA
40	Ghent Station (340 HP Fire Pump Engine)	NA	40 CFR 63.6605(a) &(b); 40 CFR 63.6625(e)(2) &(h); 40 CFR 63.6640(f)		NA
41	Non-Emergency (53 HP Non-Emergency Engine)	NA	40 CFR 60.4204(b); 40 CFR 60.4206; 40 CFR 60.4207(b)		NA
42	Unit 1 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)		NA
43	Unit 2 Emergen (469 HP Emergency Engine)	NA	41 CFR 60.4211(f); 40 CFR 60.4211 (a); 40 CFR 60.4207(b)		NA

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007Y
Good Engineering Practice (GEP) Stack Height Determination

Complete only for stacks 65m or taller

EMISSIONS UNIT # 01
EMISSIONS POINT # EO25

EXHAUST POINT INFORMATION		
1) Flow diagram designation of exhaust point E025		
2) Description of exhaust point (stack, vent, roof monitor, indoors, etc.). If the exhaust point discharges indoors, complete items 3 through 11 for the building exhaust nearest to the process operations emission unit. Stack for Unit 01		
3) Distance to nearest plant boundary from exhaust point discharge (ft): 439.64		
4) Discharge height above grade (ft): 662 ft		
5) Good engineering practice (GEP) height, if known (ft): 592.51 ft		
6) Diameter (or equivalent diameter) of exhaust point : 26 ft		
7) Exit gas flow rate	a) Maximum (ACFM): 1,349,853	b) Minimum (ACFM):
8) Exit gas temperature: 129 °F	a) @ maximum flow rate (°F): 129 °F	b) @ minimum flow rate (°F):
9) Direction of exhaust (vertical, lateral, downward): Vertical		
10a) Latitude:	b)	
11a) UTM zone: 16	b) UTM vertical (KM): 4,290.8258	c) UTM Horizontal (KM): 670.7613

NOTE: For a square or rectangular vent, the equivalent diameter is 1.128 times the square root of the stack's area

BUILDING DIMENSION INFORMATION			
12) Dimensions of building on which exhaust point is located	a) Length (ft) NA	b) Width (ft) NA	c) Height (ft) NA
13) Distance to nearest building (ft): 83.75			
14) Dimension of this nearest building	a) Length (ft): 414.5	b) Width (ft): 288.9	c) Height (ft): 100.9
15) List all emission units and control devices serviced by this exhaust point.			
Name		Flow Diagram Designation	
Unit 1 with PJFF, Low NOx Burners, SCR, dry sorbent injection/SO_3 mitigation, & FGD System		Unit 01	

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DEP7007Y
Good Engineering Practice (GEP) Stack Height Determination

Complete only for stacks 65m or taller

EMISSIONS UNIT # 02, 03
EMISSIONS POINT # EO03

EXHAUST POINT INFORMATION		
8) Flow diagram designation of exhaust point E003		
9) Description of exhaust point (stack, vent, roof monitor, indoors, etc.). If the exhaust point discharges indoors, complete items 3 through 11 for the building exhaust nearest to the process operations emission unit. Stack for Unit 02 and Unit 03		
10) Distance to nearest plant boundary from exhaust point discharge (ft): 439.64		
11) Discharge height above grade (ft): 581 ft		
12) Good engineering practice (GEP) height, if known (ft): 592.51 ft		
13) Diameter (or equivalent diameter) of exhaust point : 38 ft		
14) Exit gas flow rate	a) Maximum (ACFM): 2,750,172	c) Minimum (ACFM):
8) Exit gas temperature: 129 °F	a) @ maximum flow rate (°F): 129 °F	c) @ minimum flow rate (°F):
10) Direction of exhaust (vertical, lateral, downward): Vertical		
10a) Latitude:	d)	
11a) UTM zone: 16	b) UTM vertical (KM): 4,290.708	e) UTM Horizontal (KM): 670.548

NOTE: For a square or rectangular vent, the equivalent diameter is 1.128 times the square root of the stack's area

BUILDING DIMENSION INFORMATION			
12) Dimensions of building on which exhaust point is located	a) Length (ft) NA	b) Width (ft) NA	c) Height (ft) NA
14) Distance to nearest building (ft): 68.86			
14) Dimension of this nearest building	a) Length (ft): 414.5	b) Width (ft): 288.9	c) Height (ft): 100.9
16) List all emission units and control devices serviced by this exhaust point.			
Name		Flow Diagram Designation	
Unit 02 with PJFF, Low NOx Burners, dry sorbent injection/SO_3 mitigation, & FGD System		Unit 02	
Unit 03 with ESP, Low NOx Burners, SCR, dry sorbent injection/SO_3 mitigation, FGD System, & PJFF		Unit 03	

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DEP7007Y
Good Engineering Practice (GEP) Stack Height Determination

Complete only for stacks 65m or taller

EMISSIONS UNIT # 04
EMISSIONS POINT # EO26

EXHAUST POINT INFORMATION		
15) Flow diagram designation of exhaust point E026		
16) Description of exhaust point (stack, vent, roof monitor, indoors, etc.). If the exhaust point discharges indoors, complete items 3 through 11 for the building exhaust nearest to the process operations emission unit. Stack for Unit 04		
17) Distance to nearest plant boundary from exhaust point discharge (ft): 427.72		
18) Discharge height above grade (ft): 662 ft		
19) Good engineering practice (GEP) height, if known (ft): 592.51 ft		
20) Diameter (or equivalent diameter) of exhaust point : 26.5 ft		
21) Exit gas flow rate	a) Maximum (ACFM): 1,349,853	d) Minimum (ACFM):
8) Exit gas temperature: 129 °F	a) @ maximum flow rate (°F): 129 °F	d) @ minimum flow rate (°F):
11) Direction of exhaust (vertical, lateral, downward): Vertical		
10a) Latitude:	f)	
11a) UTM zone: 16	b) UTM vertical (KM): 4,290.825	g) UTM Horizontal (KM): 670.761

NOTE: For a square or rectangular vent, the equivalent diameter is 1.128 times the square root of the stack's area

BUILDING DIMENSION INFORMATION			
12) Dimensions of building on which exhaust point is located	a) Length (ft) NA	b) Width (ft) NA	c) Height (ft) NA
15) Distance to nearest building (ft): 220.64			
14) Dimension of this nearest building	a) Length (ft): 414.5	b) Width (ft): 288.9	c) Height (ft): 100.9
17) List all emission units and control devices serviced by this exhaust point.			
Name		Flow Diagram Designation	
Unit 04 with ESP, Low NOx Burners, SCR, dry sorbent injection/SO_3 mitigation, FGD System , & PJFF		Unit 04	

Commonwealth of Kentucky
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DIVISION FOR AIR QUALITY

DEP7007DD

INSIGNIFICANT ACTIVITIES

INSIGNIFICANT ACTIVITY CRITERIA

1. Emissions from insignificant activities shall be counted toward the source's potential to emit;
2. Emissions from the activity shall not be subject to a federally enforceable requirement other than generally applicable requirements that apply to all activities and affected facilities such as 401 KAR 59:010, 61:020, 63:010, and others deemed generally applicable by the Cabinet;
3. The potential to emit a regulated air pollutant from the activity or affected facility shall not exceed 5 tons/yr.
4. The potential to emit of a hazardous air pollutant from the activity or affected facility shall not exceed 1,000 pounds/yr., or the deminimis level established under Section 112(g) of the Act, whichever is less;
5. The activity shall be included in the permit application, identifying generally applicable and state origin requirements.

Description of Activity Including Rated Capacity	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignifican Activity Criteria Listed Above?
See Supplement to Form DEP7007DD		

SIGNATURE BLOCK

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAV PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENT BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THA THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICAN PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

BY Ralph Bowling
Authorized Signature

9/18/17
Date

Typed or Printed Name of Signatory

Title of Signatory

2. Supplement to Form DEP7007DD -- Insignificant Activities

Description of Activity Including Rated Capacity *	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignificant Activity Criteria?
1. Fuel Oil Storage Tanks:		
442,250 gal	None	Yes
4 X 100,000 gal	None	Yes
20,000 gal	None	Yes
12,000 gal	None	Yes
1,000 gal	None	Yes
5 x 500 gal	None	Yes
2 x 150 gal	None	Yes
1 x 300 gal	None	Yes
4 x 250 gal	None	Yes
1 x 550 gal	None	Yes
1 x 190 gal	None	Yes
1 x 106 gal	None	Yes
1 x 3000 gal	None	Yes
1 x 200 gal	None	Yes
1 x 160 gal	None	Yes
2 X 1000 gal	None	Yes
2 x 500 gal (kerosene)	None	Yes
1 X 1000 gal (kersone)	None	Yes
2. Unleaded gasoline storage tanks	401 KAR 59:050	Yes
1 X 1,000 gal		
1 X 500 gal		
1 X 250 gal		
2 X 1000 gal		
1 X 500 gal		
3. Lubricating Oil Storage Tanks:		
4 x 15,000 gal	None	Yes
3 x 400 gal (motor oil)	None	Yes
1 X 300 (gear compound)	None	Yes
6 x 120 gal	None	Yes
1 x 300 gal	None	Yes
3 x 160 gal	None	Yes
1 x 60 gal	None	Yes
4. SO3 mitigation system	401 KAR 59:010	Yes
5. Infrequent evaporation of boiler cleaning solutions	401 KAR 59:010	Yes
6. Paved and unpaved roadways (at plant)	401 KAR 63:010	Yes
7. Infrequent burning of de minimis quantities of used oil for	None	Yes
8. Limestone slurry transfer from slurry tanks to scrubbers	401 KAR 59:010	Yes
9. Bottom Ash Handling Process	401 KAR 63:010	Yes
10. Fly Ash Handling Process	401 KAR 63:010	Yes
11. Gypsum Processing (No crushing or grinding)	401 KAR 63:010	Yes
12. Fly Ash Separator Units (4)	401 KAR 59:010	Yes

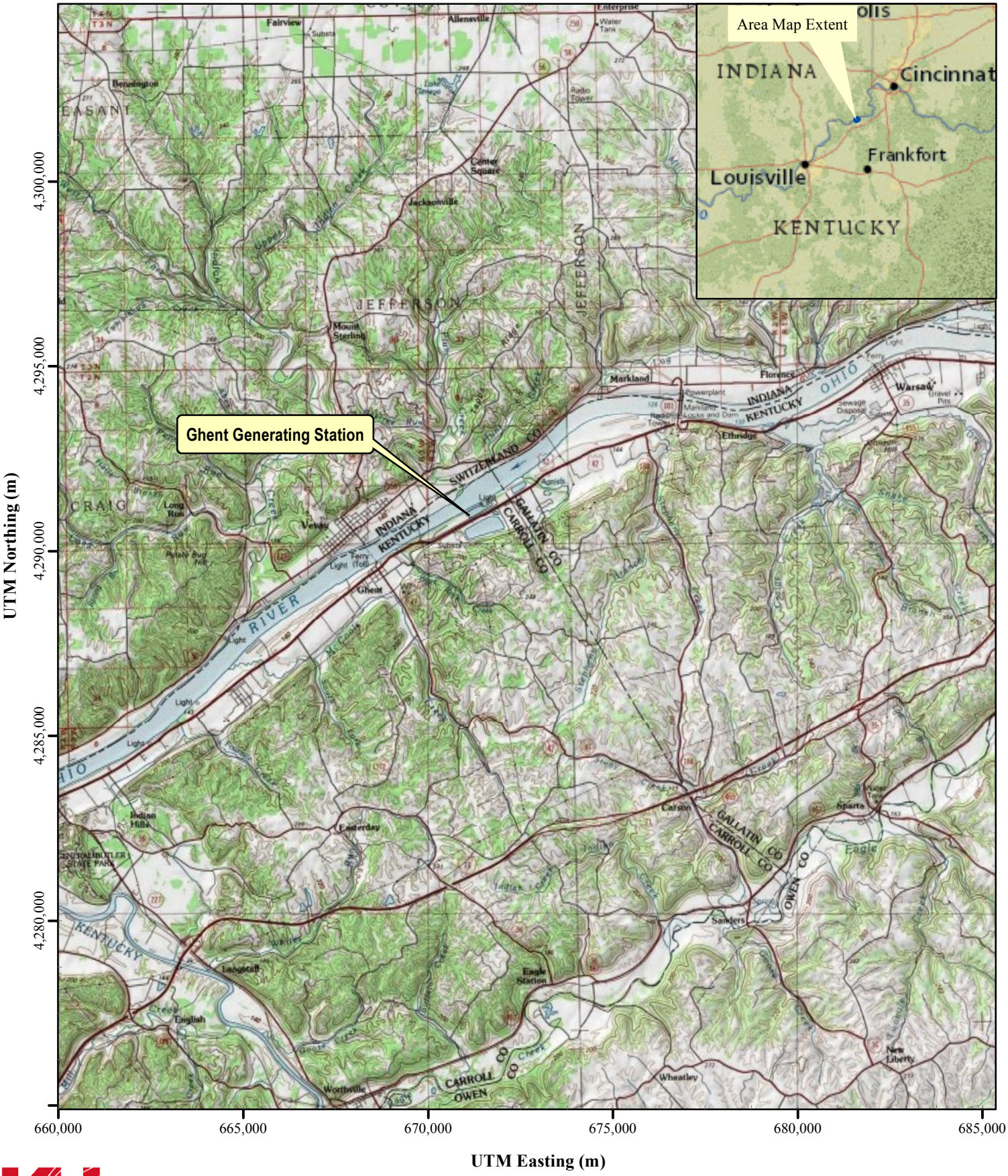
13.	Fly Ash Storage Silos (3)	401 KAR 59:010	Yes
14.	**CCR** Landfill Truck Loading Station	401 KAR 63:010	Yes
15.	Bottom Ash Transport	401 KAR 63:010	Yes
16.	Fly Ash Transport	401 KAR 63:010	Yes
17.	Gypsum Transport	401 KAR 63:010	Yes
18.	Storage Pile at **CCR** Landfill Truck Station	401 KAR 63:010	Yes
19.	Active Area of the **CCR** Landfill (Wind Erosion)	401 KAR 63:010	Yes
20.	Powered Activated Carbon handling for each boiler	401 KAR 63:010	Yes
21.	Turbine oil reservoirs *for Units 1-4 (4) each 11, 500 gallons*	none	Yes
22.	FGD Forced Oxidation Blower Lube oil cooler turbine oil	none	Yes
23.	Coal Mill gear box gear oil reservoirs for Units 1-4 (24 at 375	none	Yes
24.	FGD hydraulic control valve hydraulic fluid reservoirs for Units 1-	none	Yes
25.	Electro-hydraulic control system EH fluid reservoirs for Units 2,	none	Yes
26.	Electro-hydraulic control system EH fluid reservoirs for Unit 1 (1	none	Yes
27.	ID fan lube oil turbine oil reservoirs for Units 1, and 2 (2 at 180 gallons & 4 at 330 gallons)	none	Yes
28.	Hydrogen seal oil turbine oil reservoirs for Units 2, 3, and 4 (3 at	none	Yes
29.	Hydrogen seal oil turbine oil reservoir for Unit 1 (1 at 350	none	Yes
30.	Boiler feed pump turbine oil reservoir for Unit 1 (2 at 900	none	Yes
31.	Boiler feed pump turbine oil reservoir for Unit 2 (2 at 1000	none	Yes
32.	Limestone Ball Mill lubricating oil reservoirs (3 at 250 gallons)	none	Yes
33.	Coal Unloading Bucket Drive lubricating oil reservoir (1 at 150	none	Yes
34.	ID Fan Lubricating oil reservoirs for Unit 3 and 4 (8 at 330)	none	Yes
~~35.~~	~~ID Fan hydraulic oil reservoirs for Unit 3 and 4 (4 at 80~~	~~none~~	~~Yes~~
36.	Turbine oil reservoirs *for Units 3 and 4 (2 at 500 gallons)*	none	Yes
37.	Limestone surge bin with dust collector	401 KAR 59:010	Yes
38.	Fuel Additive Facility (Conveyors, (2) silos, mix tank and feed hopper)	401 KAR 63:010	Yes
39.	Liquid Hg Control Additivies	none	Yes
40.	150 HP (<1 mmbtu/hr) Indirect Heat Exchanger	401 KAR 59:015	Yes
41.	Paved and Unpaved Roads - Transport of CCR material during periods of maintenance and/or repair of CCRT facility	401 KAR 63:010	Yes

IA's added since 2015 permit revision or missing from previous submittals
IA 35 was added in August of 2015 and Modified in August of 2017
IA 14, 18, & 19 have been modified; CCR added in description (2017 Renewal Permit Application Change)
IA tank sizes changes

APPENDIX B

AREA MAP AND SITE PLAN

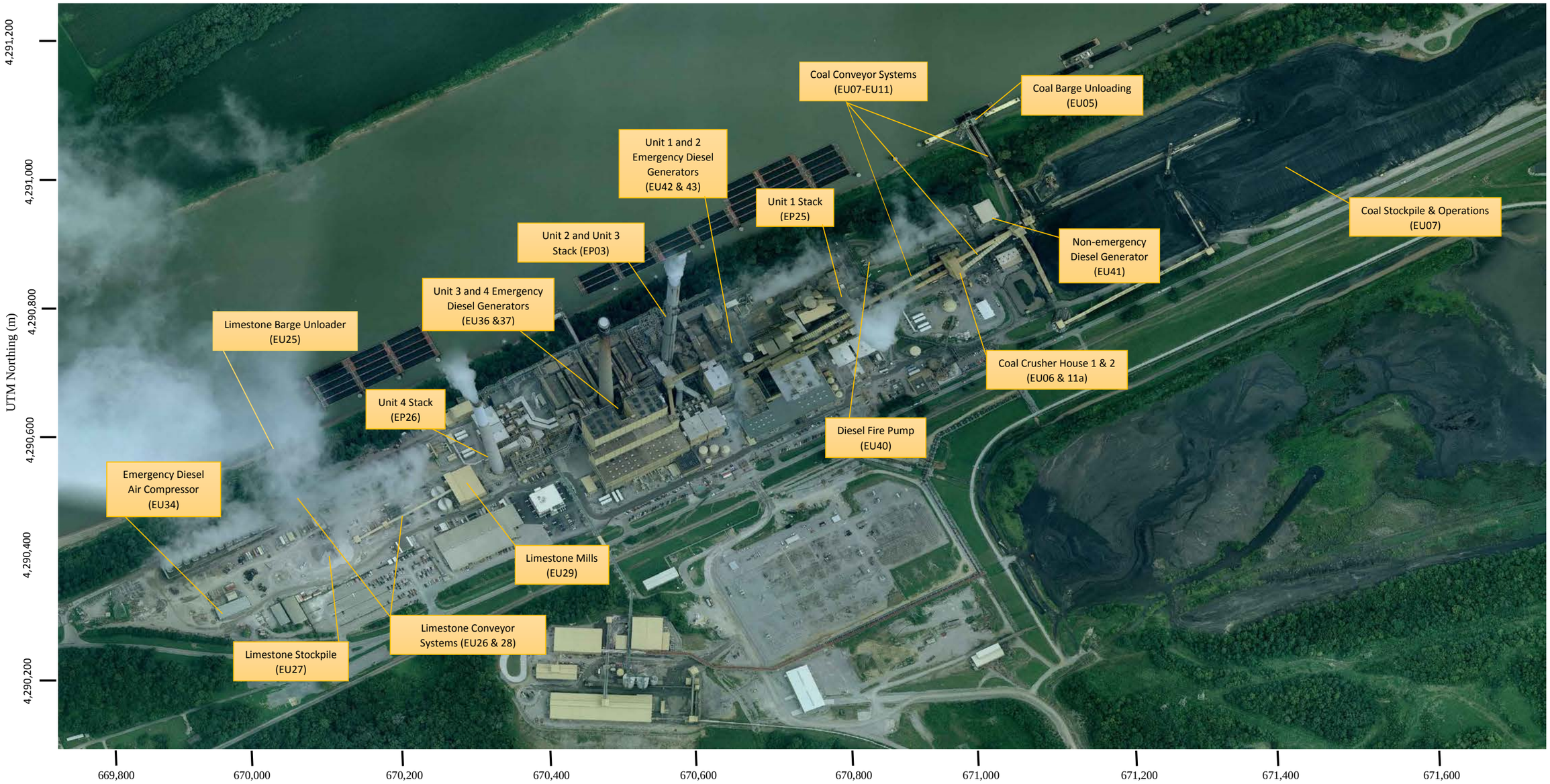
Figure B-1: Area Map
Ghent Generating Station
Ghent, Kentucky



Coordinates reflect UTM Zone 16, NAD83.

a PPL company

Figure B-2 Site Plan
Ghent Generating Station
Ghent, KY



APPENDIX C

PROCESS FLOW DIAGRAMS

Figure C-1 Air Permitting Process Flow Diagram

Kentucky Utilities Ghent Station

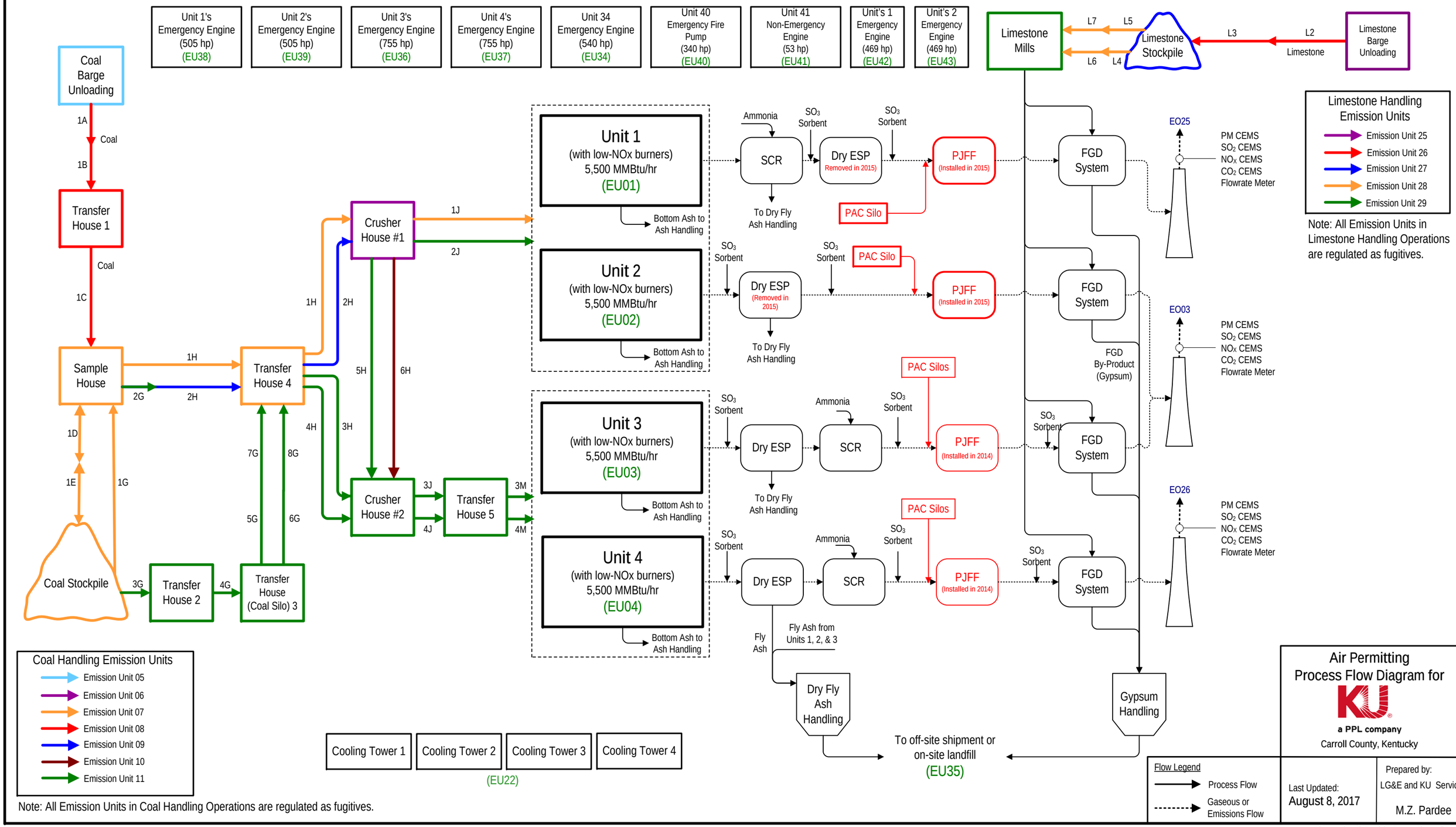
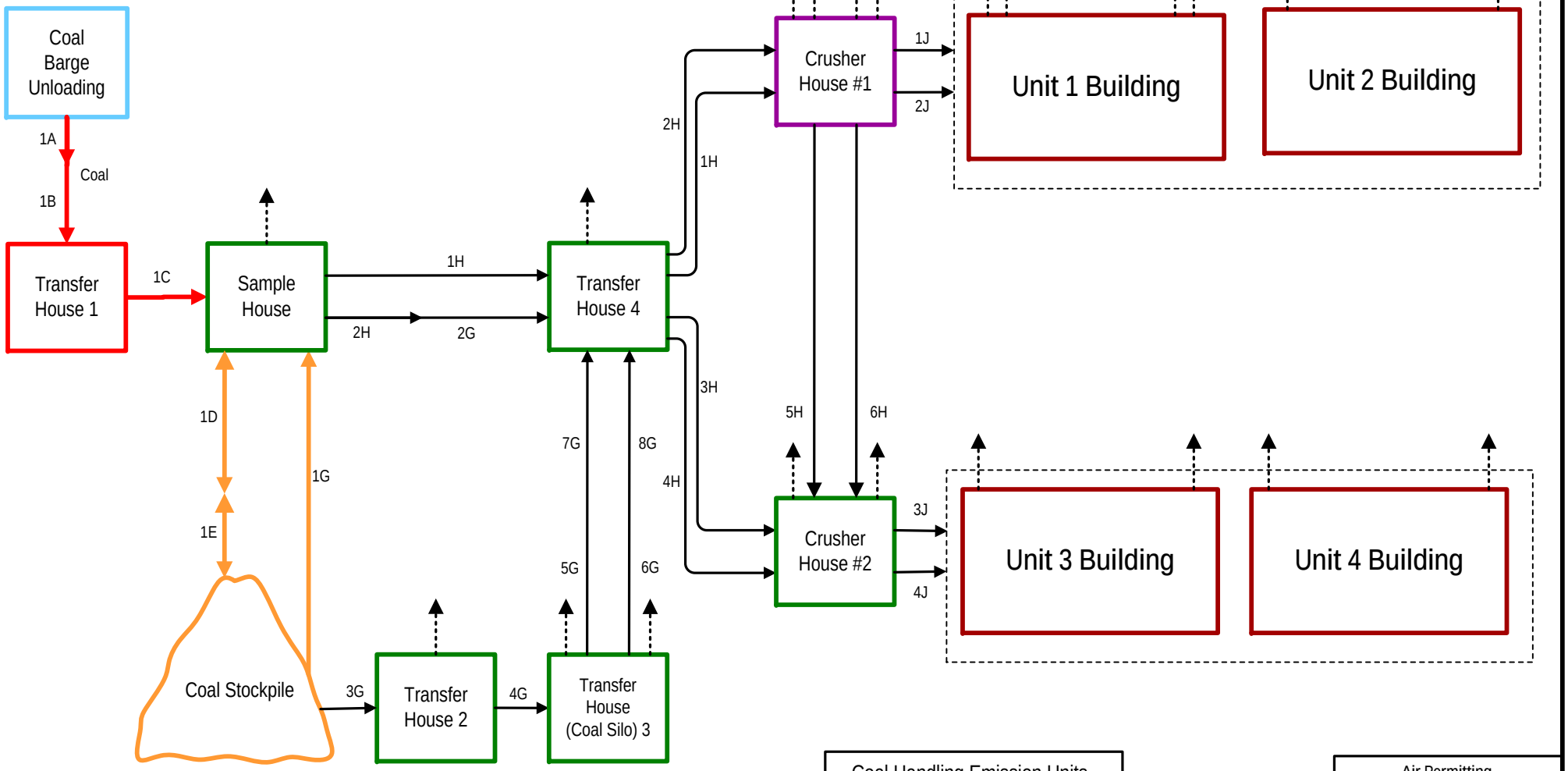


Figure X – Coal Handling Process Flow Diagram
Kentucky Utilities Ghent Station



Ghent Station- Air Permitting Process Flow April 2017.vsd

APPENDIX D

DOCUMENTATION OF EMISSION CALCULATIONS

1. Emission Unit Index

Title V Permit ID#	KyEIS Equipment ID#	KyEIS Source ID#	KyEIS Process ID#	Emission Unit Description	KyEIS Process Description	Control Description
01	COMB001	01	1	Unit 1 Indirect Heat Exchanger	UNIT 1 - Coal Use	PJFF
						Wet FGD
						Low NOx Burners
						SCR
						Dry Sorbent Injection
02	COMB002	02	1	Unit 2 Indirect Heat Exchanger	UNIT 2 - Coal Use	PJFF
						Wet FGD
						Low NOx Burners
						Dry Sorbent Injection
03	COMB003	03	1	Unit 3 Indirect Heat Exchanger	UNIT 3 - Coal Use	Dry ESP
						PJFF
						Wet FGD
						Low NOx Burners
						SCR
						Dry Sorbent Injection
04	COMB004	04	1	Unit 4 Indirect Heat Exchanger	UNIT 4 - Coal Use	Dry ESP
						PJFF
						Wet FGD
						Low NOx Burners
						SCR
						Dry Sorbent Injection
05	EQPT02	05	1	Barge Unloader - Coal Use	Coal Barge Unloading	Moist Material
07	EQPT03	07	1	Coal Handling Operations	Coal Stockpile	Wet Suppression
			2		Coal Conveyors 1D, 1E, 1F	Enclosure & Fabric Filter
			3		Coal Conveyor 1J	
			4		Coal Conveyor 1G	
			5		Coal Conveyor 1H	
08	EQPT04	08	1	Coal Handling Operations	Coal Conveyors 1A, 1B, 1C	Enclosures
09	EQPT05	09	1	Coal Handling Operations	Coal Conveyor 2H	Enclosure & Fabric Filter
10	EQPT06	10	1	Coal Handling Operations	Coal Conveyor 6H	Enclosure & Fabric Filter
06	EQPT20	06	1	Coal Crushing Operations	Crusher House #1	Enclosure & Wet Scrubber
11	EQPT21	11a	1	Coal Crushing Operations	Crusher House #2	Enclosure & Wet Scrubber
11	EQPT22	11b	1	Coal Handling Operations	Coal Conveyors 2J, 3J, 4J, 3M, 4M	Enclosure & Fabric Filter
			2		Coal Conveyor 2G	
			3		Coal Conveyor 5G-8G, 3H-5H	
			4		Coal Conveyor 3G & 4G	
25	EQPT19	25	1	Barge Unloading - Limestone Use	Limestone Barge Unloading	Moist Material
			2		Bucket of Recvg Hopper	
26	EQPT13	26	1	Limestone Handling and Processing	Limestone Hopper to L2	Enclosure
			2		Limestone Conveyor L2 to L3	
			3		Limestone Conveyor L3 to Stockpile	Telescopic Chute with Skirt
27	AREA03	27	1	Limestone Handling and Processing	Limestone West Stockpile	Moist Material
28	EQPT14	28	1	Limestone Handling and Processing	Limestone Hopper L3 to L4	Enclosure
			2		Limestone Conveyor L4	
			3		Limestone Conveyor L5	
			4		Limestone Conveyor L6	
			5		Limestone Conveyor L7	

Title V Permit ID#	KyEIS Equipment ID#	KyEIS Source ID#	KyEIS Process ID#	Emission Unit Description	KyEIS Process Description	Control Description
29	EQPT15	29	1	Limestone Handling and Processing	Wet Limestone Screens and Mills	Enclosure & Wet Suppression
22	EQPT26	22	1	Cooling Tower 1	Cooling Tower 1	
			2	Cooling Tower 2	Cooling Tower 2	
			3	Cooling Tower 3	Cooling Tower 3	
			4	Cooling Tower 4	Cooling Tower 4	
34	EQPT27	34	1	Emergency Air Compressor	540 HP Air Compressor Engine	
35	EQPT33	35	1	CCR Landfill Operations (Haul Trucks)	Haul Trucks	Wet Suppression
36	EQPT28	36	1	Unit 3 Emergency Engine	755 HP Emergency Engine	
37	EQPT32	37	1	Unit 4 Emergency Engine	755 HP Emergency Engine	
38	EQPT31	38	1	Unit 1 Emergency Engine	505 HP Emergency Engine	
39	EQPT30	39	1	Unit 2 Emergency Engine	505 HP Emergency Engine	
40	EQPT29	40	1	Ghent Station Fire Pump	340 HP Fire Pump Engine	
41	EQPT34	41	1	Non-Emergency Diesel Gen Engine	53 HP Non-Emergency Engine	
42	TBD	42	1	Unit 1 Emergency Engine	469 HP Emergency Engine	
43	TBD	43	1	Unit 2 Emergency Engine	469 HP Emergency Engine	

a. Landfill operations associated with the new dry material disposal system were covered in a minor revision application submitted to KDAQ on April 5, 2012.

b. The emergency generators and fire pump engines (36-40) were previously regulated as insignificant activities. The designation is being changed based on general applicability of RICE NESHAP.

2. Supplement to Form DEP7007DD -- Insignificant Activities

Description of Activity Including Rated Capacity *	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignificant Activity Criteria?
1. Fuel Oil Storage Tanks:		
442,250 gal	None	Yes
4 X 100,000 gal	None	Yes
20,000 gal	None	Yes
12,000 gal	None	Yes
1,000 gal	None	Yes
5 x 500 gal	None	Yes
2 x 150 gal	None	Yes
1 x 300 gal	None	Yes
4 x 250 gal	None	Yes
1 x 550 gal	None	Yes
1 x 190 gal	None	Yes
1 x 106 gal	None	Yes
1 x 3000 gal	None	Yes
1 x 200 gal	None	Yes
1 x 160 gal	None	Yes
2 X 1000 gal	None	Yes
2 x 500 gal (kerosene)	None	Yes
1 X 1000 gal (kersone)	None	Yes
2. Unleaded gasoline storage tanks	401 KAR 59:050	Yes
1 X 1,000 gal		
1 X 500 gal		
1 X 250 gal		
2 X 1000 gal		
1 X 500 gal		
3. Lubricating Oil Storage Tanks:		
4 x 15,000 gal	None	Yes
3 x 400 gal (motor oil)	None	Yes
1 X 300 (gear compound)	None	Yes
6 x 120 gal	None	Yes
1 x 300 gal	None	Yes
3 x 160 gal	None	Yes
1 x 60 gal	None	Yes
4. SO3 mitigation system	401 KAR 59:010	Yes
5. Infrequent evaporation of boiler cleaning solutions	401 KAR 59:010	Yes
6. Paved and unpaved roadways (at plant)	401 KAR 63:010	Yes
7. Infrequent burning of de minimis quantities of used oil for	None	Yes
8. Limestone slurry transfer from slurry tanks to scrubbers	401 KAR 59:010	Yes
9. Bottom Ash Handling Process	401 KAR 63:010	Yes
10. Fly Ash Handling Process	401 KAR 63:010	Yes
11. Gypsum Processing (No crushing or grinding)	401 KAR 63:010	Yes
12. Fly Ash Separator Units (4)	401 KAR 59:010	Yes

13.	Fly Ash Storage Silos (3)	401 KAR 59:010	Yes
14.	**CCR** Landfill Truck Loading Station	401 KAR 63:010	Yes
15.	Bottom Ash Transport	401 KAR 63:010	Yes
16.	Fly Ash Transport	401 KAR 63:010	Yes
17.	Gypsum Transport	401 KAR 63:010	Yes
18.	Storage Pile at **CCR** Landfill Truck Station	401 KAR 63:010	Yes
19.	Active Area of the **CCR** Landfill (Wind Erosion)	401 KAR 63:010	Yes
20.	Powered Activated Carbon handling for each boiler	401 KAR 63:010	Yes
21.	Turbine oil reservoirs *for Units 1-4 (4) each 11, 500 gallons*	none	Yes
22.	FGD Forced Oxidation Blower Lube oil cooler turbine oil	none	Yes
23.	Coal Mill gear box gear oil reservoirs for Units 1-4 (24 at 375	none	Yes
24.	FGD hydraulic control valve hydraulic fluid reservoirs for Units 1-	none	Yes
25.	Electro-hydraulic control system EH fluid reservoirs for Units 2,	none	Yes
26.	Electro-hydraulic control system EH fluid reservoirs for Unit 1 (1	none	Yes
27.	ID fan lube oil turbine oil reservoirs for Units 1, and 2 (2 at 180 gallons & 4 at 330 gallons)	none	Yes
28.	Hydrogen seal oil turbine oil reservoirs for Units 2, 3, and 4 (3 at	none	Yes
29.	Hydrogen seal oil turbine oil reservoir for Unit 1 (1 at 350	none	Yes
30.	Boiler feed pump turbine oil reservoir for Unit 1 (2 at 900	none	Yes
31.	Boiler feed pump turbine oil reservoir for Unit 2 (2 at 1000	none	Yes
32.	Limestone Ball Mill lubricating oil reservoirs (3 at 250 gallons)	none	Yes
33.	Coal Unloading Bucket Drive lubricating oil reservoir (1 at 150	none	Yes
34.	ID Fan Lubricating oil reservoirs for Unit 3 and 4 (8 at 330)	none	Yes
~~35.~~	~~ID Fan hydraulic oil reservoirs for Unit 3 and 4 (4 at 80~~	~~none~~	~~Yes~~
36.	Turbine oil reservoirs *for Units 3 and 4 (2 at 500 gallons)*	none	Yes
37.	Limestone surge bin with dust collector	401 KAR 59:010	Yes
38.	Fuel Additive Facility (Conveyors, (2) silos, mix tank and feed hopper)	401 KAR 63:010	Yes
39.	Liquid Hg Control Additivies	none	Yes
40.	150 HP (<1 mmbtu/hr) Indirect Heat Exchanger	401 KAR 59:015	Yes
41.	Paved and Unpaved Roads - Transport of CCR material during periods of maintenance and/or repair of CCRT facility	401 KAR 63:010	Yes

IA's added since 2015 permit revision or missing from previous submittals
IA 35 was added in August of 2015 and Modified in August of 2017
IA 14, 18, & 19 have been modified; CCR added in description (2017 Renewal Permit Application Change)
IA tank sizes changes

3. Emissions Summary Table

KyEIS Source ID#	KyEIS Process ID#	Emission Unit Description	CO (tpy)	NO_X (tpy)	SO_2 (tpy)	VOC (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
01	1	Unit 1 Indirect Heat Exchanger	527.4	2,056.9	2,178.1	63.3	120.4	27.7	12.3
02	1	Unit 2 Indirect Heat Exchanger	528.0	11,880.3	5,528.2	63.4	240.9	55.4	24.6
03	1	Unit 3 Indirect Heat Exchanger	528.0	2,323.3	4,476.0	63.4	240.9	55.4	24.6
04	1	Unit 4 Indirect Heat Exchanger	527.6	2,321.4	2,301.6	63.3	216.8	49.9	22.2
05	1	Barge Unloader (Coal Barge Unloading)					31.54	15.77	3.15
07	1	Coal Handling (Coal Stockpile)					12.99	6.30	1.26
	2	Coal Handling (Coal Conveyors 1D, 1E, 1F)					1.42	1.42	0.02
	3	Coal Handling (Coal Conveyor 1J)					0.12	0.12	0.02
	4	Coal Handling (Coal Conveyor 1G)					0.20	0.20	0.04
	5	Coal Handling (Coal Conveyor 1H)					0.24	0.24	0.05
08	1	Coal Handling (Coal Conveyors 1A, 1B, 1C)					1.42	1.42	0.28
09	1	Coal Handling (Coal Conveyor 2H)					0.24	0.24	0.05
10	1	Coal Handling (Coal Conveyor 6H)					0.24	0.24	0.05
06	1	Coal Crushing (Crusher House #1)					0.47	0.24	0.05
11a	1	Coal Crushing (Crusher House #2)					0.47	0.24	0.05
11b	1	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)					0.59	0.59	0.12
	2	Coal Handling (Coal Conveyor 2G)					0.20	0.20	0.04
	3	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)					1.66	1.66	0.33
	4	Coal Handling (Coal Conveyor 3G & 4G)					0.63	0.63	0.13
25	1	Barge Unloading - (Limestone Barge Unloading)					1.84	1.84	0.28
	2	Barge Unloading - (Bucket of Recvg Hopper)					5.57	5.57	0.84
26	1	Limestone Handling (Limestone Hopper to L2)					0.61	0.61	0.09
	2	Limestone Handling (Limestone Conveyor L2 to L3)					0.61	0.61	0.09
	3	Limestone Handling (Limestone Conveyor L3 to Stockpile)					0.61	0.61	0.09
27	1	Limestone Handling (Limestone West Stockpile)					0.05	0.05	0.01
28	1	Limestone Handling (Limestone Hopper L3 to L4)					0.34	0.34	0.05
	2	Limestone Handling (Limestone Conveyor L4)					0.14	0.14	0.02
	3	Limestone Handling (Limestone Conveyor L5)					0.14	0.14	0.02
	4	Limestone Handling (Limestone Conveyor L6)					0.14	0.14	0.02
	5	Limestone Handling (Limestone Conveyor L7)					0.14	0.14	0.02
29	1	Limestone Handling (Wet Limestone Screens and Mills)					na	na	na
22	1	Cooling Tower 1					176.89	176.89	176.89
	2	Cooling Tower 2					1.10	1.10	1.10
	3	Cooling Tower 3					18.19	18.19	18.19
	4	Cooling Tower 4					16.73	16.73	16.73
34	1	Emergency Air Comp (540 HP Air Compressor Engine)	0.15	0.43	0.0003	0.03	0.02	0.02	0.02
35	1	CCR Landfill Opera (Haul Trucks)					21.72	4.92	0.75
36	1	Unit 3 Emergency Engine (755 HP Emergency Engine)	0.21	0.91	0.0004	0.03	0.03	0.03	0.03
37	1	Unit 4 Emergency Engine (755 HP Emergency Engine)	0.21	0.91	0.0004	0.03	0.03	0.03	0.03
38	1	Unit 1 Emergency Engine (505 HP Emergency Engine)	0.17	0.78	0.0003	0.06	0.06	0.06	0.06
39	1	Unit 2 Emergency Engine (505 HP Emergency Engine)	0.17	0.78	0.0003	0.06	0.06	0.06	0.06
40	1	Ghent Station Fire Pump (340 HP Fire Pump Engine)	0.11	0.53	0.0002	0.04	0.04	0.04	0.04
41	1	Non-Emergency Diesel Ge (53 HP Non-Emergency Engine)	1.89	1.79	0.00	0.58	0.51	0.51	0.51
42	1	Unit 1 Emergency Engine (469 HP Emergency Engine)	0.07	0.23	0.00	0.02	0.01	0.01	0.01
43	1	Unit 2 Emergency Engine (469 HP Emergency Engine)	0.07	0.23	0.00	0.02	0.01	0.01	0.01
TOTAL			**2,114.1**	**18,588.4**	**14,483.8**	**254.2**	**1,117.0**	**446.6**	**305.3**

4. Stack Parameter Summary Table

KyEIS Source ID#	KyEIS Process ID#	Emission Unit Description	Emission Point ID#	Stack Height (ft)	Stack Diameter (ft)	Height of Release (ft)	Stack Flowrate (acfm)	Stack Velocity (ft/sec)	Exit Temperature (F)
01	1	Unit 1 Indirect Heat Exchanger	EO25	592.5	26.5	na	1,583,488	47.8	129
02	1	Unit 2 Indirect Heat Exchanger	EO03	581	37.0	na	2,750,172	42.6	129
03	1	Unit 3 Indirect Heat Exchanger	EO03	581	37.0	na	2,750,172	42.6	129
04	1	Unit 4 Indirect Heat Exchanger	EO26	592.5	26.5	na	1,349,853	40.79	129
05	1	Barge Unloader (Coal Barge Unloading)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	70
07	1	Coal Handling (Coal Stockpile)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	2	Coal Handling (Coal Conveyors 1D, 1E, 1F)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	3	Coal Handling (Coal Conveyor 1J)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	4	Coal Handling (Coal Conveyor 1G)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	5	Coal Handling (Coal Conveyor 1H)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
08	1	Coal Handling (Coal Conveyors 1A, 1B, 1C)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
09	1	Coal Handling (Coal Conveyor 2H)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
10	1	Coal Handling (Coal Conveyor 6H)	Fugitive	Fugitive	Fugitive	81	Fugitive	Fugitive	77
06	1	Coal Crushing (Crusher House #1)	Fugitive	Fugitive	Fugitive	20	Fugitive	Fugitive	75
11a	1	Coal Crushing (Crusher House #2)	Fugitive	Fugitive	Fugitive	20	Fugitive	Fugitive	75
11b	1	Coal Handling (Coal Conveyors 2J, 3J, 4J, 3M, 4M)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	2	Coal Handling (Coal Conveyor 2G)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	3	Coal Handling (Coal Conveyor 5G-8G, 3H-5H)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
	4	Coal Handling (Coal Conveyor 3G & 4G)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	77
25	1	Barge Unloading - (Limestone Barge Unloading)	Fugitive	Fugitive	Fugitive	20	Fugitive	Fugitive	75
25	2	Barge Unloading - (Bucket of Recvg Hopper)	Fugitive	Fugitive	Fugitive	20	Fugitive	Fugitive	75
26	1	Limestone Handling (Limestone Hopper to L2)	Fugitive	Fugitive	Fugitive	10	Fugitive	Fugitive	75
26	2	Limestone Handling (Limestone Conveyor L2 to L3)	Fugitive	Fugitive	Fugitive	20	Fugitive	Fugitive	75
26	3	Limestone Handling (Limestone Conveyor L3 to Stockpile)	Fugitive	Fugitive	Fugitive	55	Fugitive	Fugitive	75
27	1	Limestone Handling (Limestone West Stockpile)	Fugitive	Fugitive	Fugitive	16	Fugitive	Fugitive	75
28	1	Limestone Handling (Limestone Hopper L3 to L4)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
	2	Limestone Handling (Limestone Conveyor L4)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
	3	Limestone Handling (Limestone Conveyor L5)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
	4	Limestone Handling (Limestone Conveyor L6)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
	5	Limestone Handling (Limestone Conveyor L7)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
29	1	Limestone Handling (Wet Limestone Screens and Mills)	Fugitive	Fugitive	Fugitive	15	Fugitive	Fugitive	75
22	1	Cooling Tower 1 (Cooling Tower 1)	Fugitive	na	na	na	na	na	na
	2	Cooling Tower 2 (Cooling Tower 2)	Fugitive	na	na	na	na	na	na
	3	Cooling Tower 3 (Cooling Tower 3)	Fugitive	na	na	na	na	na	na
	4	Cooling Tower 4 (Cooling Tower 4)	Fugitive	na	na	na	na	na	na
34	1	Emergency Air Comp (540 HP Air Compressor Engine)	34	7.25	0.50	na	na	na	na
35	1	CCR Landfill Opera (Haul Trucks)	Fugitive	Fugitive	Fugitive	10	Fugitive	Fugitive	na
36	1	Unit 3 Emergency (755 HP Emergency Engine)	36	14	1	na	na	na	na
37	1	Unit 4 Emergency (755 HP Emergency Engine)	37	14	1	na	na	na	na
38	1	Unit 1 Emergency (505 HP Emergency Engine)	38	19	1	na	na	na	na
39	1	Unit 2 Emergency (505 HP Emergency Engine)	39	19	1	na	na	na	na
40	1	Ghent Station Fi (340 HP Fire Pump Engine)	40	13	0.5	na	na	na	na
41	1	Non-Emergency Di (53 HP Non-Emergency Engine)	41	6	0.25	na	na	na	na
42	1	Unit 1 Emergency (469 HP Emergency Engine)	42	10	0.50	na	na	na	na
43	1	Unit 2 Emergency (469 HP Emergency Engine)	43	10	0.50	na	na	na	na

Coal and Limestone Handling emission sources include various fugitive sources such as conveyors, transfer points, and drop points, some of which are inside transfer houses that have fabric filters.

5. Unit 1 Indirect Heat Exchanger (KyEIS ID# 01)

> Documentation of boiler fuel firing rates, emission factors, and emission calculations are provided in this section.

5.1 Description and Nomenclature

Generating Unit 1; Pulverized coal-fired, tangential fired unit with Low NOX Burners, SCR, PJFF, WFGD, DSI for SAM Control, DSI for Hg Control

Type of Unit (Make, Model):	Combustion Engineering Pulverized Coal Boiler
Construction Date:	8/17/1971
Title V Permit ID:	01
KyEIS Equipment ID:	COMB001
KyEIS Source ID:	01
KyEIS Process ID:	1
Emission Point ID:	25

5.2 Boiler Capacity and Fuel Firing Rates

Boiler Heat Input Capacity: **5,500 MMBtu/hr**

5.21 Coal Properties

Coal Heating Value	**22.8 MMBtu/ton**	= (11419 Btu/lb * 2000 lb/ton / 1E6 Btu/MMBtu / 2000 lb/ton)
	11,419 Btu/lb	Average for 2016 Coal Samples
Coal % Sulfur Content (Weight Basis)	2.9%	Average for 2016 Coal Samples
Coal % Ash Content (Weight Basis)	9.7%	Average for 2016 Coal Samples

5.22 Maximum Coal Firing Rate

240.8 ton/hr = (5500 MMBtu/hr / 22.838 MMBtu/ton)

5.3 SourceClassificationCode

SCC:	10100212
SCC Description:	Pulverized Coal: Dry Bottom (Tangential) (Bituminous Coal) (1-01-002-12)
SCC Units:	Tons Bituminous Coal Burned

5.4 Documentation of Emission Factors Used

> Emission factors for the primary pollutants are either those published in AP42 Section 1.1 (9/98 Edition) or from vendor data, as listed below. Control efficiencies listed are based on a combination of vendor information and engineering judgment.

5.41 Primary Pollutants			Emission Factor Basis
CO	0.5	lb/ton	AP42 1.1-3, 9/98; PC, dry bottom, tangentially-fired, pre-NSPS
	0.022	lb/MMBtu	= (0.5 lb/ton / 22.838 MMBtu/ton)
NOX			
Uncontrolled Factor	15	lb/ton	AP42 1.1-3, 9/98; PC, dry bottom, tangentially-fired, pre-NSPS
	0.657	lb/MMBtu	= (15 lb/ton / 22.838 MMBtu/ton)
Control Efficiency, LNB	35%		Vendor guarantee
Control Efficiency, SCR	80%		Vendor guarantee for NOX control in SCR.
Combined Control	87%		= 1 - (1 - 0.8) *(1- 0.35)
Controlled Factor	1.95	lb/ton	
Actual Estimated NOX Emissions	0.085	lb/MMBtu	= (1.95 lb/ton / 22.838 MMBtu/ton)
SO2			
Uncontrolled Factor	38	S lb/ton	AP42 1.1-3, 9/98
	108.68	lb/ton	= (38 * 0.0286 * 100)
	4.759	lb/MMBtu	= (108.68 lb/ton / 22.838 MMBtu/ton)
Control Efficiency, FGD	98.1%		Average from 2009 - 2011
Controlled Factor	2.06492	lb/ton	= (1-0.98) * 108.68 lb/ton
Actual Estimated SO2 Emissions	0.090	lb/MMBtu	= (2.06492 lb/ton / 22.838 MMBtu/ton)
Permitted allowable SO2 (61:015)	5.67	lb/MMBtu	
VOC (TNMOC)	0.06	lb/ton	AP42 1.1-19, 9/98
	0.0026	lb/MMBtu	= (0.06 lb/ton / 22.838 MMBtu/ton)
PM			
Uncontrolled Factor	10	A lb/ton	AP42 1.1-4, 9/98
	96.6	lb/ton	= (10 * 0.0966 * 100)
	4.230	lb/MMBtu	= (96.6 lb/ton / 22.838 MMBtu/ton)
Control Efficiency, PJFF	99.9%		1 - (0.005 / 4.23)
Controlled Factor	0.114	lb/ton	= 0.005 lb/MMBtu * 22.838 MMBtu/ton
Actual Estimated PM Emissions	0.005	lb/MMBtu	Stack Test conducted on June 2-4, 2015.
Permitted allowable PM (Reg 7)	0.200	lb/MMBtu	
PM_{10}			
Uncontrolled Factor	2.3	A lb/ton	AP42 1.1-4, 9/98
	22.218	lb/ton	= (2.3 * 0.0966 * 100)
	0.973	lb/MMBtu	= (22.218 lb/ton / 22.838 MMBtu/ton)
Control Efficiency, PJFF	99.9%		Assume control efficiency is the same as for PM
Controlled Factor	0.026	lb/ton	= (1-0.9988) * 22.218 lb/ton
Actual Estimated PM10 Emissions	0.001	lb/MMBtu	= (0.026 lb/ton / 22.838 MMBtu/ton)
$PM_{2.5}$			
Uncontrolled Factor	0.6	A lb/ton	AP42 1.1-6, 9/98
	5.796	lb/ton	= (0.6 * 0.0966 * 100)
	0.254	lb/MMBtu	= (5.796 lb/ton / 22.838 MMBtu/ton)
Percentage of PM10 that is PM2.5	44.44%		Ratio of PM2.5 to PM10 in AP42 1.1-6 is 0.024A / 0.054A = 44.44%.
Controlled Factor	0.012	lb/ton	= (0.4444 * 0.026 lb/ton)
Actual Estimated PM2.5 Emissions	0.001	lb/MMBtu	= (0.4444 * 0.001 lb/MMBtu)
Back-Calculated Control Efficiency	99.80%		= 1 - 0.001/0.254

5.42 GHG Pollutants

			Emission Factor Basis
CO_2			
Emission Factor	93.4	kg/MMBtu	40 CFR 98 Table C-1
	4,960,363	tpy	= (93.4 *0.001 * 1.1023*5500 *8760)
	4,703	lbs/ton	= 4960363*2000/(8760*240.83)
CH_4			
Emission Factor	1.10E-02	kg/MMBtu	40 CFR 98 Table C-2
	584	tpy	= (0.011 *0.001 *1.1023 *5500 *8760)
	0.55	lbs/ton	= 584*2000/(8760*240.83)
N_2O			
Emission Factor	1.60E-03	kg/MMBtu	40 CFR 98 Table C-2
	85	tpy	= (0.0016 *0.001 *1.1023* 5500 *8760)
	0.08	lbs/ton	= 85*2000/(8760*240.83)
CO_2e			
CO2 Contribution	4,960,363	tpy	=1.0* 4960363 40 CFR 98 Table A-1
CH4 Contribution	12,268	tpy	=21* 584 40 CFR 98 Table A-1
N2O Contribution	26,342	tpy	=310* 85 40 CFR 98 Table A-1
	4,998,973	tpy	

5.43 Sulfuric Acid Mist

> Uncontrolled H2SO4 emissions are conservatively estimated assuming 1% conversion of S to SO3 in the boiler and 10% reduction in air preheater.

> H2SO4 emissions at the stack take into account the expected control efficiency from the FGD and SO3 mitigation system necessary to reach a stack concentration of 7 ppmv.

H2SO4

Sulfur loading	57.2	lb/ton	= 0.0286 lb S/lb coal * 2000 lb/ton
Conversion to SO3 in boiler	1%		
Reduction of SO3 in air heater	10%		
Uncontrolled H2SO4 emission factor	1.575	lb/ton	= [57.2 * 0.01 * (1-0.1) * 98.07848 / 32.065]
H2SO4 control efficiency downstream of air heater	60.05%		
Controlled H2SO4 emission factor	0.6291	lb/ton	= 1.5746* (1 - 0.6005)
	0.0275	lb/MMBtu	= (0.629 lb/ton / 22.838 MMBtu/ton)

5.44 Metal Compounds With Factors Based on Coal Concentration

> Emission factors for all metal compounds except mercury and selenium are based on AP42 Table 1.1-16 (9/98 Edition). Emissions in AP42 1.1-16 are expressed as a function of coal concentration, ash content, and either the PM uncontrolled or controlled emission factor.

> Coal metal concentrations are based on either information in the PISCES database for coal samples from Kentucky and West Virginia or on target specifications for coal to be burned in Units 1, 2, 3, and 4.

Uncontrolled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Uncontrolled Factor (lb/MMBtu)	Uncontrolled Metal Factor (lb/TBtu)	Equivalent Uncontrolled Metal Factor (lb/ton)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	4.230	13.537	3.09E-04
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	4.230	739.258	1.69E-02
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	4.230	109.276	2.50E-03
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	4.230	23.417	5.35E-04
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	4.230	187.831	4.29E-03
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	4.230	90.750	2.07E-03
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	4.230	523.950	1.20E-02
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	4.230	281.040	6.42E-03
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	4.230	118.301	2.70E-03

Controlled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Controlled Factor (lb/MMBtu)	Controlled Metal Factor (lb/TBtu)	Equivalent Controlled Metal Factor (lb/ton)	Metal Control Efficiency (%)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	0.005	0.194	4.43E-06	98.6%
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	0.005	2.402	5.49E-05	99.7%
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	0.005	0.066	1.50E-06	99.9%
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	0.005	0.805	1.84E-05	96.6%
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	0.005	3.766	8.60E-05	98.0%
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	0.005	0.867	1.98E-05	99.0%
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	0.005	2.385	5.45E-05	99.5%
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	0.005	4.924	1.12E-04	98.2%
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	0.005	4.654	1.06E-04	96.1%

5.45 Metal Compounds with Emissions Based on AP-42 Controlled Factors

> AP42 provides no concentration-based factor for mercury or selenium. However, AP42 Table 1.1-18 (9/98 Edition) provides controlled emission factors for these metals which are thus used.

> Estimated uncontrolled emission factors are back-calculated based on the metal concentration in the coal.

Mercury

Uncontrolled emission factor	4.0E-04	lb/ton	AP42 1.1-17, 9/98 / KYEIS
	17.515	lb/TBtu	= (0.0004 lb/ton / 22.838 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of mercury in coal	0.2	mg/kg	
Uncontrolled mercury emissions	0.0004	lb/ton	= 0.2 lb Hg /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	97%		Based on 2016 Data

Selenium

Controlled emission factor	0.0013	lb/ton	AP42 1.1-18, 9/98
	56.923	lb/TBtu	= (0.0013 lb/ton / 22.838 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of selenium in coal	2	mg/kg	
Uncontrolled selenium emissions	0.004	lb/ton	= 2 lb Se /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	67.5%		= (1- 0.0013 / 0.004)

5.46 Polynuclear Aromatic Hydrocarbons

> Emission factors for select polynuclear aromatic hydrocarbons are taken from AP42 Table 1.1-13 (9/98 Edition). The AP42 factors are controlled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

PAH Compound	Emission Factor (lb/ton)	Equivalent Factor (lb/TBtu)	Sample Calculation
Biphenyl	1.70E-06	0.074	= (0.0000017 lb/ton / 22.838 MMBtu/ton * 1E6 MMBtu/Tbtu)
Naphthalene	1.30E-05	0.569	= (0.000013 lb/ton / 22.838 MMBtu/ton * 1E6 MMBtu/Tbtu)

5.47 Other Organic Compounds

> Emission factors for other organic compounds expected to be emitted are based on emission factors in EPRI's PISCES database where available, or AP42 Table 1.1-14 (9/98 Edition).

> PISCES (Power Plant Integrated System: Chemical Emissions Study) is data published by the Electric Power Research Institute.

	Emission Factor (lb/ton)	Emission Factor (lb/TBtu)	Emission Factor Basis
Acetaldehyde	7.3E-05	3.2	PISCES
Acetophenone	2.7E-05	1.2	PISCES
Acrolein	4.3E-05	1.9	PISCES
Benzene	8.9E-05	3.9	PISCES
Benzyl chloride	6.4E-06	0.28	PISCES
Bis(2-ethylhexyl)phthalate	8.2E-05	3.6	PISCES
Bromoform	3.9E-05	1.7	AP42 1.1-14, 9/98
Carbon disulfide	2.5E-05	1.1	PISCES
2-Chloroacetophenone	7.0E-06	0.3	AP42 1.1-14, 9/98
Chlorobenzene	3.7E-06	0.16	PISCES
Chloroform	1.8E-05	0.8	PISCES
Cumene	5.3E-06	0.2	AP42 1.1-14, 9/98
Cyanide	2.5E-03	109.5	AP42 1.1-14, 9/98
Dimethyl sulfate	4.8E-05	2.1	AP42 1.1-14, 9/98
2,4-Dinitrotoluene	4.6E-06	0.2	PISCES
Ethylbenzene	1.8E-05	0.8	PISCES
Ethyl chloride	1.2E-05	0.53	PISCES
Ethylene dibromide	5.9E-05	2.6	PISCES
Ethylene dichloride	4.0E-05	1.8	AP42 1.1-14, 9/98
Formaldehyde	5.9E-05	2.6	PISCES
Hexane	1.1E-05	0.49	PISCES
Isophorone	2.7E-05	1.2	PISCES
Methyl bromide	2.0E-05	0.89	PISCES
Methyl chloride	2.5E-05	1.1	PISCES
Methyl ethyl ketone	3.9E-04	17.1	AP42 1.1-14, 9/98
Methyl hydrazine	1.7E-04	7.4	AP42 1.1-14, 9/98
Methyl methacrylate	2.0E-05	0.9	AP42 1.1-14, 9/98
Methyl tert butyl ether	3.5E-05	1.5	AP42 1.1-14, 9/98
Methylene chloride	6.2E-05	2.7	PISCES
Phenol	7.5E-05	3.3	PISCES
Propionaldehyde	4.3E-05	1.9	PISCES
Styrene	1.6E-05	0.7	PISCES
Tetrachloroethylene	9.6E-06	0.42	PISCES
Toluene	3.9E-05	1.7	PISCES
1,1,1-Trichloroethane	2.0E-05	0.9	AP42 1.1-14, 9/98
Vinyl acetate	7.1E-06	0.31	PISCES
m/p-Xylene	1.9E-05	0.82	PISCES
o-Xylene	1.0E-05	0.44	PISCES

5.48 Polycyclic Organic Matter (POM)

> Emission factors for POM are taken from AP42 Table 1.1-17 (9/98 Edition). The AP42 factors are uncontrolled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

Controlled emission factor	2.4	lb/TBtu	AP42 1.1-17, 9/98 (PC, Tangentially Fired, Dry Bottom)
	5.48E-05	lb/ton	= (2.4 lb/TBtu / 1E6 MMBtu/TBtu * 22.838 MMBtu/ton)

5.49 Inorganic HAPs- HCl and HF

> Emissions for HCl and HF are based on emission factors published in EPRI's PISCES database.
> The uncontrolled emission factors for HCl and HF are back-calculated based on the chloride and fluoride present in the coal.

Hydrogen Chloride

Controlled emission factor	12,535	lb/TBtu	PISCES
	0.286	lb/ton	= (12535 lb/TBtu / 1E6 MMBtu/TBtu * 22.838 MMBtu/ton)
Concentration of chloride in coal	700	mg/kg	
Molecular weight of chlorine	35.453	lb/lbmole	
Molecular weight of HCl	36.461	lb/lbmole	
Uncontrolled HCl emissions	1.440	lb/ton	= 700 lb Cl /1E6 lb coal * 36.46/35.45 * 2000 lb/ton
Back calculated control efficiency	80.1%		= 1 - 0.286/1.44

Hydrogen Fluoride

Controlled emission factor	1,003	lb/TBtu	PISCES
	0.023	lb/ton	= (1003 lb/TBtu / 1E6 MMBtu/TBtu * MMBtu/ton)
Concentration of fluoride in coal	80	mg/kg	
Molecular weight of fluorine	18.998	lb/lbmole	
Molecular weight of HF	20.006	lb/lbmole	
Uncontrolled HF emissions	0.168	lb/ton	= 80 lb Cl /1E6 lb coal * 20/19 * 2000 lb/ton
Back calculated control efficiency	86.4%		= 1 - 0.023/0.168

5.5 Emission Calculations Based on Factors Documented

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Primary Pollutants							
CO	0.5	AP42 1.1-3, 9/98; PC, dr	120.4	527	na	na	na
NOX	15	AP42 1.1-3, 9/98	3,612	15,822	87.0%	470	2,057
SO2	108.68	AP42 1.1-3, 9/98	26,173	114,638	98.1%	497	2,178
VOC (TNMOC)	0.06	AP42 1.1-19, 9/98	14.4	63.3	na	na	na
PM	96.6	AP42 1.1-4, 9/98	23,264	101,896	99.9%	27	120
PM10	22.218	AP42 1.1-4, 9/98	5,351	23,436	99.9%	6	28
PM2.5	5.80	AP42 1.1-6, 9/98	1,396	6,114	99.8%	3	12
H2SO4	1.57	1% conversion to SO3	379	1,661	60.0%	151.5	663.6
Metals							
Antimony	3.09E-04	AP42 1.1-16, 9/98	0.0745	0.3261	98.6%	1.07E-03	4.67E-03
Arsenic	1.69E-02	AP42 1.1-16, 9/98	4.0659	17.8087	99.7%	1.32E-02	5.79E-02
Beryllium	2.50E-03	AP42 1.1-16, 9/98	0.6010	2.6325	99.9%	3.62E-04	1.59E-03
Cadmium	5.35E-04	AP42 1.1-16, 9/98	0.1288	0.5641	96.6%	4.43E-03	1.94E-02
Chromium	4.29E-03	AP42 1.1-16, 9/98	1.0331	4.5249	98.0%	2.07E-02	9.07E-02
Cobalt	2.07E-03	AP42 1.1-16, 9/98	0.4991	2.1862	99.0%	4.77E-03	2.09E-02
Lead	1.20E-02	AP42 1.1-16, 9/98	2.8817	12.6220	99.5%	1.31E-02	5.74E-02
Manganese	6.42E-03	AP42 1.1-16, 9/98	1.5457	6.7703	98.2%	2.71E-02	1.19E-01
Nickel	2.70E-03	AP42 1.1-16, 9/98	0.6507	2.8499	96.1%	2.56E-02	1.12E-01
Mercury	0.0004	AP42 1.1-17, 9/98 / KYE	0.0963	0.4219	97.0%	2.89E-03	1.27E-02
Selenium	0.004	AP42 1.1-18, 9/98	0.9633	4.2193	67.5%	3.13E-01	1.37E+00
PAH Compounds							
Biphenyl	1.70E-06	AP42 1.1-13, 9/98	0.0004	0.0018	na	na	na
Naphthalene	1.30E-05	AP42 1.1-13, 9/98	0.0031	0.0137	na	na	na
GHG Pollutants							
CO2	4.70E+03	40 CFR 98 Table C-1	1,132,503	4,960,363	na	na	na
CH4	5.54E-01	40 CFR 98 Table C-2	133	584	na	na	na
N2O	8.06E-02	40 CFR 98 Table C-2	19	85	na	na	na
CO2e	4.70E+03	40 CFR 98 Table A-1	1,132,656	4,961,032	na	na	na

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Other Organic Compounds							
Acetaldehyde	7.3E-05	PISCES	0.0176	0.0771	na	na	na
Acetophenone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Acrolein	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Benzene	8.9E-05	PISCES	0.0215	0.0940	na	na	na
Benzyl chloride	6.4E-06	PISCES	0.0015	0.0067	na	na	na
Bis(2-ethylhexyl)phthalate	8.2E-05	PISCES	0.0198	0.0867	na	na	na
Bromoform	3.9E-05	AP42 1.1-14, 9/98	0.0094	0.0411	na	na	na
Carbon disulfide	2.5E-05	PISCES	0.0061	0.0265	na	na	na
2-Chloroacetophenone	7.0E-06	AP42 1.1-14, 9/98	0.0017	0.0074	na	na	na
Chlorobenzene	3.7E-06	PISCES	0.0009	0.0039	na	na	na
Chloroform	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Cumene	5.3E-06	AP42 1.1-14, 9/98	0.0013	0.0056	na	na	na
Cyanide	2.5E-03	AP42 1.1-14, 9/98	0.6021	2.6371	na	na	na
Dimethyl sulfate	4.8E-05	AP42 1.1-14, 9/98	0.0116	0.0506	na	na	na
2,4-Dinitrotoluene	4.6E-06	PISCES	0.0011	0.0048	na	na	na
Ethylbenzene	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Ethyl chloride	1.2E-05	PISCES	0.0029	0.0128	na	na	na
Ethylene dibromide	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Ethylene dichloride	4.0E-05	AP42 1.1-14, 9/98	0.0096	0.0422	na	na	na
Formaldehyde	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Hexane	1.1E-05	PISCES	0.0027	0.0118	na	na	na
Isophorone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Methyl bromide	2.0E-05	PISCES	0.0049	0.0214	na	na	na
Methyl chloride	2.5E-05	PISCES	0.0061	0.0265	na	na	na
Methyl ethyl ketone	3.9E-04	AP42 1.1-14, 9/98	0.0939	0.4114	na	na	na
Methyl hydrazine	1.7E-04	AP42 1.1-14, 9/98	0.0409	0.1793	na	na	na
Methyl methacrylate	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Methyl tert butyl ether	3.5E-05	AP42 1.1-14, 9/98	0.0084	0.0369	na	na	na
Methylene chloride	6.2E-05	PISCES	0.0149	0.0650	na	na	na
Phenol	7.5E-05	PISCES	0.0182	0.0795	na	na	na
Propionaldehyde	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Styrene	1.6E-05	PISCES	0.0039	0.0169	na	na	na
Tetrachloroethylene	9.6E-06	PISCES	0.0023	0.0101	na	na	na
Toluene	3.9E-05	PISCES	0.0094	0.0410	na	na	na
1,1,1-Trichloroethane	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Vinyl acetate	7.1E-06	PISCES	0.0017	0.0075	na	na	na
m/p-Xylene	1.9E-05	PISCES	0.0045	0.0198	na	na	na
o-Xylene	1.0E-05	PISCES	0.0024	0.0106	na	na	na
POM	5.5E-05	AP42 1.1-17, 9/98	0.0132	0.0578	na	na	na
Inorganic HAPs- HCl and HF							
Hydrogen Chloride	1.440	PISCES	346.7	1,519	80.1%	68.9	302.0
Hydrogen Fluoride	0.168	PISCES	40.6	178	86.4%	5.5	24.2

6. Unit 2 Indirect Heat Exchanger (KyEIS ID# 02)

> Documentation of boiler fuel firing rates, emission factors, and emission calculations are provided in this section.

6.1 Description and Nomenclature

Generating Unit 2; Pulverized coal-fired, tangential fired unit with Low NOX Burners, PJFF, FGD, DSI for SAM, DSI for Hg.

Type of Unit (Make, Model):	Combustion Engineering Pulverized Coal Boiler
Construction Date:	4/20/1977
Title V Permit ID:	02
KyEIS Equipment ID:	COMB002
KyEIS Source ID:	02
KyEIS Process ID:	1
Emission Point ID:	03

6.2 Boiler Capacity and Fuel Firing Rates

Boiler Heat Input Capacity: **5,500 MMBtu/hr**

6.21 Coal Properties

Coal Heating Value	**22.8 MMBtu/ton**	= (11406 Btu/lb * 2000 lb/ton / 1E6 Btu/MMBtu / 2000 lb/ton)
	11,406 Btu/lb	Average for 2016 Coal Samples
Coal % Sulfur Content (Weight Basis)	2.9%	Average for 2016 Coal Samples
Coal % Ash Content (Weight Basis)	9.7%	Average for 2016 Coal Samples

6.22 Maximum Coal Firing Rate

241.1 ton/hr = (5500 MMBtu/hr / 22.812 MMBtu/ton)

6.3 SourceClassificationCode

SCC:	10100212
SCC Description:	Pulverized Coal: Dry Bottom (Tangential) (Bituminous Coal) (1-01-002-12)
SCC Units:	Tons Bituminous Coal Burned

6.4 Documentation of Emission Factors Used

> Emission factors for the primary pollutants are either those published in AP42 Section 1.1 (9/98 Edition) or from vendor data, as listed below. Control efficiencies listed are based on a combination of vendor information and engineering judgment.

6.41 Primary Pollutants			Emission Factor Basis
CO	0.5	lb/ton	AP42 1.1-3, 9/98
	0.022	lb/MMBtu	= (0.5 lb/ton / 22.812 MMBtu/ton)
NOX			
Uncontrolled Factor	15	lb/ton	AP42 1.1-3, 9/98; PC, dry bottom, tangentially-fired, pre-NSPS
	0.658	lb/MMBtu	= (15 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, LNB	25%	Vendor guarantee	
Controlled Factor	11	lb/ton	
Actual Estimated NOX Emissions	0.493	lb/MMBtu	= (11.25 lb/ton / 22.812 MMBtu/ton)
Permitted allowable NOx	0.70	lb/MMBtu	NSPS Subpart D
SO2			
Uncontrolled Factor	38	S lb/ton	AP42 1.1-3, 9/98
	109.06	lb/ton	= (38 * 0.0287 * 100)
	4.781	lb/MMBtu	= (109.06 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, FGD	95.2%		Average from 2010 - 2011
Controlled Factor	5.23488	lb/ton	= (1-0.95) * 109.06 lb/ton
Actual Estimated SO2 Emissions	0.229	lb/MMBtu	= (5.23488 lb/ton / 22.812 MMBtu/ton)
Permitted allowable SO2	1.20	lb/MMBtu	NSPS Subpart D
VOC (TNMOC)	0.06	lb/ton	AP42 1.1-19, 9/98
	0.0026	lb/MMBtu	= (0.06 lb/ton / 22.812 MMBtu/ton)
PM			
Uncontrolled Factor	10	A lb/ton	AP42 1.1-4, 9/98
	96.8	lb/ton	= (10 * 0.0968 * 100)
	4.243	lb/MMBtu	= (96.8 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, PJFF	99.8%		1 - (0.01 / 4.243)
Controlled Factor	0.228	lb/ton	= 0.01 lb/MMBtu * 22.812 MMBtu/ton
Actual Estimated PM Emissions	0.010	lb/MMBtu	Stack Test conducted on April 28 - May1, 2015
Permitted allowable PM	0.200	lb/MMBtu	
PM_{10}			
Uncontrolled Factor	2.3	A lb/ton	AP42 1.1-4, 9/98
	22.264	lb/ton	= (2.3 * 0.0968 * 100)
	0.976	lb/MMBtu	= (22.264 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, PJFF	99.8%		Assume control efficiency is the same as for PM
Controlled Factor	0.0525	lb/ton	= (1-0.9976) * 22.264 lb/ton
Actual Estimated PM10 Emissions	0.002	lb/MMBtu	= (0.052 lb/ton / 22.812 MMBtu/ton)
$PM_{2.5}$			
Uncontrolled Factor	0.6	A lb/ton	AP42 1.1-6, 9/98
	5.808	lb/ton	= (0.6 * 0.0968 * 100)
	0.255	lb/MMBtu	= (5.808 lb/ton / 22.812 MMBtu/ton)
Percentage of PM10 that is PM2.5	44.44%		Ratio of PM2.5 to PM10 in AP42 1.1-6 is 0.024A / 0.054A = 44.44%.
Controlled Factor	0.023	lb/ton	= (0.4444 * 0.052 lb/ton)
Actual Estimated PM2.5 Emissions	0.001	lb/MMBtu	= (0.4444 * 0.002 lb/MMBtu)
Back-Calculated Control Efficiency	99.60%		= 1 - 0.001/0.255

6.42 GHG Pollutants			Emission Factor Basis
CO_2			
Emission Factor	93.4	kg/MMBtu	40 CFR 98 Table C-1
	4,960,363	tpy	= (93.4 *0.001 * 1.1023*5500 *8760)
	4,697.21	lbs/ton	= 4960363*2000/(8760*241.1)
CH_4			
Emission Factor	1.10E-02	kg/MMBtu	40 CFR 98 Table C-2
	584.20	tpy	= (0.011 *0.001 *1.1023 *5500 *8760)
	0.55	lbs/ton	= 584*2000/(8760*241.1)
N_2O			
Emission Factor	1.60E-03	kg/MMBtu	40 CFR 98 Table C-2
	84.97	tpy	= (0.0016 *0.001 *1.1023* 5500 *8760)
	0.08	lbs/ton	= 85*2000/(8760*241.1)
CO_2e			
CO2 Contribution	4,960,363	tpy	=1.0* 4960363 40 CFR 98 Table A-1
CH4 Contribution	12,268	tpy	=21* 584 40 CFR 98 Table A-1
N2O Contribution	26,342	tpy	=310* 85 40 CFR 98 Table A-1
	4,998,973	tpy	

6.43 Sulfuric Acid Mist

> Uncontrolled H2SO4 emissions are conservatively estimated assuming 1% conversion of S to SO3 in the boiler and 10% reduction in air preheater.

> H2SO4 emissions at the stack take into account the expected control efficiency from the FGD and SO3 mitigation system necessary to reach a stack concentration of 7 ppmv.

H2SO4

Sulfur loading	57.4	lb/ton	= 22.812 lb S/lb coal * 2000 lb/ton
Conversion to SO3 in boiler	1%		
Reduction of SO3 in air heater	10%		
Uncontrolled H2SO4 emission factor	1.580	lb/ton	= [57.4 * 0.01 * (1-0.1) * 98.07848 / 32.065]
H2SO4 control efficiency downstream of air heater	50.67%		
Controlled H2SO4 emission factor	0.7796	lb/ton	= 1.5801* (1 - 0.5067)
	0.0342	lb/MMBtu	= (0.78 lb/ton / 22.812 MMBtu/ton)

6.44 Metal Compounds With Factors Based on Coal Concentration

> Emission factors for all metal compounds except mercury and selenium are based on AP42 Table 1.1-16 (9/98 Edition). Emissions in AP42 1.1-16 are expressed as a function of coal concentration, ash content, and either the PM uncontrolled or controlled emission factor.

> Coal metal concentrations are based on either information in the PISCES database for coal samples from Kentucky and West Virginia or on target specifications for coal to be burned in Units 1, 2, 3, and 4.

Uncontrolled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Uncontrolled Factor (lb/MMBtu)	Uncontrolled Metal Factor (lb/TBtu)	Equivalent Uncontrolled Metal Factor (lb/ton)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	4.243	13.546	3.09E-04
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	4.243	739.974	1.69E-02
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	4.243	109.413	2.50E-03
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	4.243	23.430	5.34E-04
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	4.243	187.955	4.29E-03
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	4.243	90.821	2.07E-03
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	4.243	524.428	1.20E-02
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	4.243	281.232	6.42E-03
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	4.243	118.366	2.70E-03

Controlled Metal Emission Factors:

Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	0.010	0.299	6.83E-06	97.8%
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	0.010	4.322	9.86E-05	99.4%
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	0.010	0.141	3.21E-06	99.9%
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	0.010	1.137	2.59E-05	95.1%
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	0.010	5.623	1.28E-04	97.0%
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	0.010	1.397	3.19E-05	98.5%
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	0.010	4.145	9.46E-05	99.2%
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	0.010	7.455	1.70E-04	97.3%
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	0.010	6.485	1.48E-04	94.5%

6.45 Metal Compounds with Emissions Based on AP-42 Controlled Factors

> AP42 provides no concentration-based factor for mercury or selenium. However, AP42 Table 1.1-18 (9/98 Edition) provides controlled emission factors for these metals which are thus used.

> Estimated uncontrolled emission factors are back-calculated based on the metal concentration in the coal.

Mercury

Controlled emission factor	4.0E-04	lb/ton	AP42 1.1-18, 9/98
	17.535	lb/TBtu	= (0.0004 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of mercury in coal	0.2	mg/kg	
Uncontrolled mercury emissions	0.0004	lb/ton	= 0.2 lb Hg /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	95%		Based on 2016 Data

Selenium

Controlled emission factor	0.0013	lb/ton	AP42 1.1-18, 9/98
	56.988	lb/TBtu	= (0.0013 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of selenium in coal	2	mg/kg	
Uncontrolled selenium emissions	0.004	lb/ton	= 2 lb Se /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	67.5%		= (1- 0.0013 / 0.004)

6.46 Polynuclear Aromatic Hydrocarbons

> Emission factors for select polynuclear aromatic hydrocarbons are taken from AP42 Table 1.1-13 (9/98 Edition). The AP42 factors are controlled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

PAH Compound	Emission Factor (lb/ton)	Equivalent Factor (lb/TBtu)	Sample Calculation
Biphenyl	1.70E-06	0.075	= (0.0000017 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/Tbtu)
Naphthalene	1.30E-05	0.570	= (0.000013 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/Tbtu)

6.47 Other Organic Compounds

> Emission factors for other organic compounds expected to be emitted are based on emission factors in EPRI's PISCES database where available, or AP42 Table 1.1-14 (9/98 Edition).

> PISCES (Power Plant Integrated System: Chemical Emissions Study) is data published by the Electric Power Research Institute.

	Emission Factor (lb/ton)	Emission Factor (lb/TBtu)	Emission Factor Basis
Acetaldehyde	7.3E-05	3.2	PISCES
Acetophenone	2.7E-05	1.2	PISCES
Acrolein	4.3E-05	1.9	PISCES
Benzene	8.9E-05	3.9	PISCES
Benzyl chloride	6.4E-06	0.28	PISCES
Bis(2-ethylhexyl)phthalate	8.2E-05	3.6	PISCES
Bromoform	3.9E-05	1.7	AP42 1.1-14, 9/98
Carbon disulfide	2.5E-05	1.1	PISCES
2-Chloroacetophenone	7.0E-06	0.3	AP42 1.1-14, 9/98
Chlorobenzene	3.6E-06	0.16	PISCES
Chloroform	1.8E-05	0.8	PISCES
Cumene	5.3E-06	0.2	AP42 1.1-14, 9/98
Cyanide	2.5E-03	109.6	AP42 1.1-14, 9/98
Dimethyl sulfate	4.8E-05	2.1	AP42 1.1-14, 9/98
2,4-Dinitrotoluene	4.6E-06	0.2	PISCES
Ethylbenzene	1.8E-05	0.8	PISCES
Ethyl chloride	1.2E-05	0.53	PISCES
Ethylene dibromide	5.9E-05	2.6	PISCES
Ethylene dichloride	4.0E-05	1.8	AP42 1.1-14, 9/98
Formaldehyde	5.9E-05	2.6	PISCES
Hexane	1.1E-05	0.49	PISCES
Isophorone	2.7E-05	1.2	PISCES
Methyl bromide	2.0E-05	0.89	PISCES
Methyl chloride	2.5E-05	1.1	PISCES
Methyl ethyl ketone	3.9E-04	17.1	AP42 1.1-14, 9/98
Methyl hydrazine	1.7E-04	7.5	AP42 1.1-14, 9/98
Methyl methacrylate	2.0E-05	0.9	AP42 1.1-14, 9/98
Methyl tert butyl ether	3.5E-05	1.5	AP42 1.1-14, 9/98
Methylene chloride	6.2E-05	2.7	PISCES
Phenol	7.5E-05	3.3	PISCES
Propionaldehyde	4.3E-05	1.9	PISCES
Styrene	1.6E-05	0.7	PISCES
Tetrachloroethylene	9.6E-06	0.42	PISCES
Toluene	3.9E-05	1.7	PISCES
1,1,1-Trichloroethane	2.0E-05	0.9	AP42 1.1-14, 9/98
Vinyl acetate	7.1E-06	0.31	PISCES
m/p-Xylene	1.9E-05	0.82	PISCES
o-Xylene	1.0E-05	0.44	PISCES

6.48 Polycyclic Organic Matter (POM)

> Emission factors for POM are taken from AP42 Table 1.1-17 (9/98 Edition). The AP42 factors are uncontrolled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

Controlled emission factor	2.4	lb/TBtu	AP42 1.1-17, 9/98 (PC, Tangentially Fired, Dry Bottom)
	5.47E-05	lb/ton	= (2.4 lb/TBtu / 1E6 MMBtu/TBtu * 22.812 MMBtu/ton)

6.49 Inorganic HAPs- HCl and HF

> Emissions for HCl and HF are based on emission factors published in EPRI's PISCES database.

> The uncontrolled emission factors for HCl and HF are back-calculated based on the chloride and fluoride present in the coal.

Hydrogen Chloride

Controlled emission factor	12,535	lb/TBtu	PISCES
	0.286	lb/ton	= (12535 lb/TBtu / 1E6 MMBtu/TBtu * 22.812 MMBtu/ton)
Concentration of chloride in coal	700	mg/kg	
Molecular weight of chlorine	35.453	lb/lbmole	
Molecular weight of HCl	36.461	lb/lbmole	
Uncontrolled HCl emissions	1.440	lb/ton	= 700 lb Cl /1E6 lb coal * 36.46/35.45 * 2000 lb/ton
Back calculated control efficiency	80.1%		= 1 - 0.286/1.44

Hydrogen Fluoride

Controlled emission factor	1,003	lb/TBtu	PISCES
	0.023	lb/ton	= (1003 lb/TBtu / 1E6 MMBtu/TBtu * MMBtu/ton)
Concentration of fluoride in coal	80	mg/kg	
Molecular weight of fluorine	18.998	lb/lbmole	
Molecular weight of HF	20.006	lb/lbmole	
Uncontrolled HF emissions	0.168	lb/ton	= 80 lb Cl /1E6 lb coal * 20/19 * 2000 lb/ton
Back calculated control efficiency	86.4%		= 1 - 0.023/0.168

6.5 Emission Calculations Based on Factors Documented

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Primary Pollutants							
CO	0.5	AP42 1.1-3, 9/98	120.6	528	na	na	na
NOX	15	AP42 1.1-3, 9/98	3,617	15,840	25.0%	2,712	11,880
SO2	109.06	AP42 1.1-3, 9/98	26,294	115,170	95.2%	1,262	5,528
VOC (TNMOC)	0.06	AP42 1.1-19, 9/98	14.5	63.4	na	na	na
PM	96.8	AP42 1.1-4, 9/98	23,339	102,223	99.8%	55	241
PM10	22.264	AP42 1.1-4, 9/98	5,368	23,511	99.8%	13	55
PM2.5	5.81	AP42 1.1-6, 9/98	1,400	6,133	99.6%	6	25
H2SO4	1.58	1% conversion to SO3	381	1,669	50.7%	188.0	823.2
Metals							
Antimony	3.09E-04	AP42 1.1-16, 9/98	0.0745	0.3263	97.8%	1.65E-03	7.21E-03
Arsenic	1.69E-02	AP42 1.1-16, 9/98	4.0699	17.8260	99.4%	2.38E-02	1.04E-01
Beryllium	2.50E-03	AP42 1.1-16, 9/98	0.6018	2.6358	99.9%	7.74E-04	3.39E-03
Cadmium	5.34E-04	AP42 1.1-16, 9/98	0.1289	0.5644	95.1%	6.26E-03	2.74E-02
Chromium	4.29E-03	AP42 1.1-16, 9/98	1.0338	4.5278	97.0%	3.09E-02	1.35E-01
Cobalt	2.07E-03	AP42 1.1-16, 9/98	0.4995	2.1879	98.5%	7.68E-03	3.36E-02
Lead	1.20E-02	AP42 1.1-16, 9/98	2.8844	12.6335	99.2%	2.28E-02	9.99E-02
Manganese	6.42E-03	AP42 1.1-16, 9/98	1.5468	6.7749	97.3%	4.10E-02	1.80E-01
Nickel	2.70E-03	AP42 1.1-16, 9/98	0.6510	2.8514	94.5%	3.57E-02	1.56E-01
Mercury	0.0004	AP42 1.1-18, 9/98	0.0964	0.4224	95.0%	4.82E-03	2.11E-02
Selenium	0.004	AP42 1.1-18, 9/98	0.9644	4.2241	67.5%	3.13E-01	1.37E+00
PAH Compounds							
Biphenyl	1.70E-06	AP42 1.1-13, 9/98	0.0004	0.0018	na	na	na
Naphthalene	1.30E-05	AP42 1.1-13, 9/98	0.0031	0.0137	na	na	na
GHG Pollutants							
CO2	4.70E+03	40 CFR 98 Table C-1	1,132,503	4,960,363	na	na	na
CH4	5.53E-01	40 CFR 98 Table C-2	133	584	na	na	na
N2O	8.05E-02	40 CFR 98 Table C-2	19	85	na	na	na
CO2e	4.70E+03	40 CFR 98 Table A-1	1,132,656	4,961,032	na	na	na

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Other Organic Compounds							
Acetaldehyde	7.3E-05	PISCES	0.0176	0.0771	na	na	na
Acetophenone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Acrolein	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Benzene	8.9E-05	PISCES	0.0215	0.0940	na	na	na
Benzyl chloride	6.4E-06	PISCES	0.0015	0.0067	na	na	na
Bis(2-ethylhexyl)phthalate	8.2E-05	PISCES	0.0198	0.0867	na	na	na
Bromoform	3.9E-05	AP42 1.1-14, 9/98	0.0094	0.0412	na	na	na
Carbon disulfide	2.5E-05	PISCES	0.0061	0.0265	na	na	na
2-Chloroacetophenone	7.0E-06	AP42 1.1-14, 9/98	0.0017	0.0074	na	na	na
Chlorobenzene	3.6E-06	PISCES	0.0009	0.0039	na	na	na
Chloroform	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Cumene	5.3E-06	AP42 1.1-14, 9/98	0.0013	0.0056	na	na	na
Cyanide	2.5E-03	AP42 1.1-14, 9/98	0.6028	2.6401	na	na	na
Dimethyl sulfate	4.8E-05	AP42 1.1-14, 9/98	0.0116	0.0507	na	na	na
2,4-Dinitrotoluene	4.6E-06	PISCES	0.0011	0.0048	na	na	na
Ethylbenzene	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Ethyl chloride	1.2E-05	PISCES	0.0029	0.0128	na	na	na
Ethylene dibromide	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Ethylene dichloride	4.0E-05	AP42 1.1-14, 9/98	0.0096	0.0422	na	na	na
Formaldehyde	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Hexane	1.1E-05	PISCES	0.0027	0.0118	na	na	na
Isophorone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Methyl bromide	2.0E-05	PISCES	0.0049	0.0214	na	na	na
Methyl chloride	2.5E-05	PISCES	0.0061	0.0265	na	na	na
Methyl ethyl ketone	3.9E-04	AP42 1.1-14, 9/98	0.0940	0.4118	na	na	na
Methyl hydrazine	1.7E-04	AP42 1.1-14, 9/98	0.0410	0.1795	na	na	na
Methyl methacrylate	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Methyl tert butyl ether	3.5E-05	AP42 1.1-14, 9/98	0.0084	0.0370	na	na	na
Methylene chloride	6.2E-05	PISCES	0.0149	0.0650	na	na	na
Phenol	7.5E-05	PISCES	0.0182	0.0795	na	na	na
Propionaldehyde	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Styrene	1.6E-05	PISCES	0.0039	0.0169	na	na	na
Tetrachloroethylene	9.6E-06	PISCES	0.0023	0.0101	na	na	na
Toluene	3.9E-05	PISCES	0.0094	0.0410	na	na	na
1,1,1-Trichloroethane	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Vinyl acetate	7.1E-06	PISCES	0.0017	0.0075	na	na	na
m/p-Xylene	1.9E-05	PISCES	0.0045	0.0198	na	na	na
o-Xylene	1.0E-05	PISCES	0.0024	0.0106	na	na	na
POM	5.5E-05	AP42 1.1-17, 9/98	0.0132	0.0578	na	na	na
Inorganic HAPs- HCl and HF							
Hydrogen Chloride	1.440	PISCES	347.1	1,520	80.1%	68.9	302.0
Hydrogen Fluoride	0.168	PISCES	40.6	178	86.4%	5.5	24.2

7. Unit 3 Indirect Heat Exchanger (KyEIS ID# 03)

> Documentation of boiler fuel firing rates, emission factors, and emission calculations are provided in this section.

7.1 Description and Nomenclature

Generating Unit 3; Pulverized coal-fired, dry bottom, wall-fired unit with Low NOX Burners, SCR, ESP, FGD, PJFF, DSI for SAM, DSI for Hg.

Type of Unit (Make, Model):	Foster Wheeler Pulverized Coal Boiler
Construction Date:	9/18/1978
Title V Permit ID:	03
KyEIS Equipment ID:	COMB003
KyEIS Source ID:	03
KyEIS Process ID:	1
Emission Point ID:	03

7.2 Boiler Capacity and Fuel Firing Rates

Boiler Heat Input Capacity: **5,500 MMBtu/hr**

7.21 Coal Properties

Coal Heating Value: **22.8 MMBtu/ton** = (11406 Btu/lb * 2000 lb/ton / 1E6 Btu/MMBtu / 2000 lb/ton)

11,406 Btu/lb — Average for 2016 Coal Samples

Coal % Sulfur Content (Weight Basis)	2.9%	Average for 2016 Coal Samples
Coal % Ash Content (Weight Basis)	9.7%	Average for 2016 Coal Samples

7.22 Maximum Coal Firing Rate

241.1 ton/hr = (5500 MMBtu/hr / 22.812 MMBtu/ton)

7.3 SourceClassificationCode

SCC:	10100202
SCC Description:	Pulverized Coal: Dry Bottom (Bituminous Coal) (1-01-002-02)
SCC Units:	Tons Bituminous Coal Burned

7.4 Documentation of Emission Factors Used

> Emission factors for the primary pollutants are either those published in AP42 Section 1.1 (9/98 Edition) or from vendor data, as listed below. Control efficiencies listed are based on a combination of vendor information and engineering judgment.

7.41 Primary Pollutants			Emission Factor Basis
CO	0.5	lb/ton	AP42 1.1-3, 9/98
	0.022	lb/MMBtu	= (0.5 lb/ton / 22.812 MMBtu/ton)
NOX			
Uncontrolled Factor	22	lb/ton	AP42 1.1-3, 9/98; PC, dry bottom, wall-fired, pre-NSPS
	0.964	lb/MMBtu	= (22 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, LNB	50%		Vendor guarantee
Control Efficiency, SCR	80%		Vendor guarantee for NOX control in SCR.
Combined Control	90%		= 1 - (1 - 0.8) * 0.5
Controlled Factor	2.20	lb/ton	
Actual Estimated NOX Emissions	0.096	lb/MMBtu	= (2.2 lb/ton / 22.812 MMBtu/ton)
Permitted allowable NOx	0.70	lb/MMBtu	NSPS Subpart D
SO2			
Uncontrolled Factor	38	S lb/ton	AP42 1.1-3, 9/98
	108.68	lb/ton	= (38 * 0.0286 * 100)
	4.764	lb/MMBtu	= (108.68 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, FGD	96%		Average from 2009 - 2011
Controlled Factor	4.23852	lb/ton	= (1-0.96) * 108.68 lb/ton
Actual Estimated SO2 Emissions	0.186	lb/MMBtu	= (4.23852 lb/ton / 22.812 MMBtu/ton)
Permitted allowable SO2	1.20	lb/MMBtu	NSPS Subpart D
VOC (TNMOC)	0.06	lb/ton	AP42 1.1-19, 9/98
	0.0026	lb/MMBtu	= (0.06 lb/ton / 22.812 MMBtu/ton)
PM			
Uncontrolled Factor	10	A lb/ton	AP42 1.1-4, 9/98
	96.8	lb/ton	= (10 * 0.0968 * 100)
	4.243	lb/MMBtu	= (96.8 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, ESP/WESP	99.8%		1 - (0.01 / 4.243)
Controlled Factor	0.228	lb/ton	= 0.01 lb/MMBtu * 22.812 MMBtu/ton
Actual Estimated PM Emissions	0.010	lb/MMBtu	Stack Test conducted on April 28 - May 1, 2015.
Permitted allowable PM	0.200	lb/MMBtu	
PM_{10}			
Uncontrolled Factor	2.3	A lb/ton	AP42 1.1-4, 9/98
	22.264	lb/ton	= (2.3 * 0.0968 * 100)
	0.976	lb/MMBtu	= (22.264 lb/ton / 22.812 MMBtu/ton)
Control Efficiency, ESP/WESP	99.8%		Assume control efficiency is the same as for PM
Controlled Factor	0.0525	lb/ton	= (1-0.9976) * 22.264 lb/ton
Actual Estimated PM10 Emissions	0.002	lb/MMBtu	= (0.052 lb/ton / 22.812 MMBtu/ton)
$PM_{2.5}$			
Uncontrolled Factor	0.6	A lb/ton	AP42 1.1-6, 9/98
	5.808	lb/ton	= (0.6 * 0.0968 * 100)
	0.255	lb/MMBtu	= (5.808 lb/ton / 22.812 MMBtu/ton)
Percentage of PM10 that is PM2.5	44.44%		Ratio of PM2.5 to PM10 in AP42 1.1-6 is 0.024A / 0.054A = 44.44%.
Controlled Factor	0.023	lb/ton	= (0.4444 * 0.052 lb/ton)
Actual Estimated PM2.5 Emissions	0.001	lb/MMBtu	= (0.4444 * 0.002 lb/MMBtu)
Back-Calculated Control Efficiency	99.60%		= 1 - 0.001/0.255

7.42 GHG Pollutants

			Emission Factor Basis
CO_2			
Emission Factor	93.4	kg/MMBtu	40 CFR 98 Table C-1
	4,960,363	tpy	= (93.4 *0.001 * 1.1023*5500 *8760)
	4,697.21	lbs/ton	= 4960363*2000/(8760*241.1)
CH_4			
Emission Factor	1.10E-02	kg/MMBtu	40 CFR 98 Table C-2
	584	tpy	= (0.011 *0.001 *1.1023 *5500 *8760)
	0.55	lbs/ton	= 584*2000/(8760*241.1)
N_2O			
Emission Factor	1.60E-03	kg/MMBtu	40 CFR 98 Table C-2
	85	tpy	= (0.0016 *0.001 *1.1023* 5500 *8760)
	0.08	lbs/ton	= 85*2000/(8760*241.1)
CO_2e			
CO2 Contribution	4,960,363	tpy	=1.0* 4960363 40 CFR 98 Table A-1
CH4 Contribution	12,268	tpy	=21* 584 40 CFR 98 Table A-1
N2O Contribution	26,342	tpy	=310* 85 40 CFR 98 Table A-1
	4,998,973	tpy	

7.43 Sulfuric Acid Mist

> Uncontrolled H2SO4 emissions are conservatively estimated assuming 1% conversion of S to SO3 in the boiler and 10% reduction in air preheater.

> H2SO4 emissions at the stack take into account the expected control efficiency from the FGD and SO3 mitigation system necessary to reach a stack concentration of 7 ppmv.

H2SO4

Sulfur loading	57.2	lb/ton	= 0.0286 lb S/lb coal * 2000 lb/ton
Conversion to SO3 in boiler	1%		
Reduction of SO3 in air heater	10%		
Uncontrolled H2SO4 emission factor	1.575	lb/ton	= [57.2 * 0.01 * (1-0.1) * 98.07848 / 32.065]
H2SO4 control efficiency downstream of air heater	30.69%		
Controlled H2SO4 emission factor	1.0914	lb/ton	= 1.5746* (1 - 0.3069)
	0.0478	lb/MMBtu	= (1.091 lb/ton / 22.812 MMBtu/ton)

7.44 Metal Compounds With Factors Based on Coal Concentration

> Emission factors for all metal compounds except mercury and selenium are based on AP42 Table 1.1-16 (9/98 Edition). Emissions in AP42 1.1-16 are expressed as a function of coal concentration, ash content, and either the PM uncontrolled or controlled emission factor.

> Coal metal concentrations are based on either information in the PISCES database for coal samples from Kentucky and West Virginia or on target specifications for coal to be burned in Units 1, 2, 3, and 4.

Uncontrolled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Uncontrolled Factor (lb/MMBtu)	Uncontrolled Metal Factor (lb/TBtu)	Equivalent Uncontrolled Metal Factor (lb/ton)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	4.243	13.546	3.09E-04
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	4.243	739.974	1.69E-02
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	4.243	109.413	2.50E-03
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	4.243	23.430	5.34E-04
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	4.243	187.955	4.29E-03
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	4.243	90.821	2.07E-03
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	4.243	524.428	1.20E-02
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	4.243	281.232	6.42E-03
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	4.243	118.366	2.70E-03

Controlled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Controlled Factor (lb/MMBtu)	Controlled Metal Factor (lb/TBtu)	Equivalent Controlled Metal Factor (lb/ton)	Metal Control Efficiency (%)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	0.010	0.299	6.83E-06	97.8%
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	0.010	4.322	9.86E-05	99.4%
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	0.010	0.141	3.21E-06	99.9%
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	0.010	5.623	1.28E-04	97.0%
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	0.010	1.397	3.19E-05	98.5%
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	0.010	4.145	9.46E-05	99.2%
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	0.010	7.455	1.70E-04	97.3%
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	0.010	6.485	1.48E-04	94.5%

7.45 Metal Compounds with Emissions Based on AP-42 Controlled Factors

> AP42 provides no concentration-based factor for mercury or selenium. However, AP42 Table 1.1-18 (9/98 Edition) provides controlled emission factors for these metals which are thus used.

> Estimated uncontrolled emission factors are back-calculated based on the metal concentration in the coal.

Mercury

Controlled emission factor	4.0E-04	lb/ton	AP42 1.1-18, 9/98
	17.535	lb/TBtu	= (0.0004 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of mercury in coal	0.2	mg/kg	
Uncontrolled mercury emissions	0.0004	lb/ton	= 0.2 lb Hg /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	95%		Based on 2016 Data

Selenium

Controlled emission factor	0.0013	lb/ton	AP42 1.1-18, 9/98
	56.988	lb/TBtu	= (0.0013 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of selenium in coal	2	mg/kg	
Uncontrolled selenium emissions	0.004	lb/ton	= 2 lb Se /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	67.5%		= (1- 0.0013 / 0.004)

7.46 Polynuclear Aromatic Hydrocarbons

> Emission factors for select polynuclear aromatic hydrocarbons are taken from AP42 Table 1.1-13 (9/98 Edition). The AP42 factors are controlled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

PAH Compound	Emission Factor (lb/ton)	Equivalent Factor (lb/TBtu)	Sample Calculation
Biphenyl	1.70E-06	0.075	= (0.0000017 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/Tbtu)
Naphthalene	1.30E-05	0.570	= (0.000013 lb/ton / 22.812 MMBtu/ton * 1E6 MMBtu/Tbtu)

7.47 Other Organic Compounds

> Emission factors for other organic compounds expected to be emitted are based on emission factors in EPRI's PISCES database where available, or AP42 Table 1.1-14 (9/98 Edition).

> PISCES (Power Plant Integrated System: Chemical Emissions Study) is data published by the Electric Power Research Institute.

	Emission Factor (lb/ton)	Emission Factor (lb/TBtu)	Emission Factor Basis
Acetaldehyde	7.3E-05	3.2	PISCES
Acetophenone	2.7E-05	1.2	PISCES
Acrolein	4.3E-05	1.9	PISCES
Benzene	8.9E-05	3.9	PISCES
Benzyl chloride	6.4E-06	0.28	PISCES
Bis(2-ethylhexyl)phthalate	8.2E-05	3.6	PISCES
Bromoform	3.9E-05	1.7	AP42 1.1-14, 9/98
Carbon disulfide	2.5E-05	1.1	PISCES
2-Chloroacetophenone	7.0E-06	0.3	AP42 1.1-14, 9/98
Chlorobenzene	3.6E-06	0.16	PISCES
Chloroform	1.8E-05	0.8	PISCES
Cumene	5.3E-06	0.2	AP42 1.1-14, 9/98
Cyanide	2.5E-03	109.6	AP42 1.1-14, 9/98
Dimethyl sulfate	4.8E-05	2.1	AP42 1.1-14, 9/98
2,4-Dinitrotoluene	4.6E-06	0.2	PISCES
Ethylbenzene	1.8E-05	0.8	PISCES
Ethyl chloride	1.2E-05	0.53	PISCES
Ethylene dibromide	5.9E-05	2.6	PISCES
Ethylene dichloride	4.0E-05	1.8	AP42 1.1-14, 9/98
Formaldehyde	5.9E-05	2.6	PISCES
Hexane	1.1E-05	0.49	PISCES
Isophorone	2.7E-05	1.2	PISCES
Methyl bromide	2.0E-05	0.89	PISCES
Methyl chloride	2.5E-05	1.1	PISCES
Methyl ethyl ketone	3.9E-04	17.1	AP42 1.1-14, 9/98
Methyl hydrazine	1.7E-04	7.5	AP42 1.1-14, 9/98
Methyl methacrylate	2.0E-05	0.9	AP42 1.1-14, 9/98
Methyl tert butyl ether	3.5E-05	1.5	AP42 1.1-14, 9/98
Methylene chloride	6.2E-05	2.7	PISCES
Phenol	7.5E-05	3.3	PISCES
Propionaldehyde	4.3E-05	1.9	PISCES
Styrene	1.6E-05	0.7	PISCES
Tetrachloroethylene	9.6E-06	0.42	PISCES
Toluene	3.9E-05	1.7	PISCES
1,1,1-Trichloroethane	2.0E-05	0.9	AP42 1.1-14, 9/98
Vinyl acetate	7.1E-06	0.31	PISCES
m/p-Xylene	1.9E-05	0.82	PISCES
o-Xylene	1.0E-05	0.44	PISCES

7.48 Polycyclic Organic Matter (POM)

> Emission factors for POM are taken from AP42 Table 1.1-17 (9/98 Edition). The AP42 factors are uncontrolled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

Controlled emission factor	2.08	lb/TBtu	AP42 1.1-17, 9/98 (PC, Dry Bottom)
	4.74E-05	lb/ton	= (2.08 lb/TBtu / 1E6 MMBtu/TBtu * 22.812 MMBtu/ton)

7.49 Inorganic HAPs- HCl and HF

> Emissions for HCl and HF are based on emission factors published in EPRI's PISCES database.

> The uncontrolled emission factors for HCl and HF are back-calculated based on the chloride and fluoride present in the coal.

Hydrogen Chloride

Controlled emission factor	12,535	lb/TBtu	PISCES
	0.286	lb/ton	= (12535 lb/TBtu / 1E6 MMBtu/TBtu * 22.812 MMBtu/ton)
Concentration of chloride in coal	700	mg/kg	
Molecular weight of chlorine	35.453	lb/lbmole	
Molecular weight of HCl	36.461	lb/lbmole	
Uncontrolled HCl emissions	1.440	lb/ton	= 700 lb Cl /1E6 lb coal * 36.46/35.45 * 2000 lb/ton
Back calculated control efficiency	80.1%		= 1 - 0.286/1.44

Hydrogen Fluoride

Controlled emission factor	1,003	lb/TBtu	PISCES
	0.023	lb/ton	= (1003 lb/TBtu / 1E6 MMBtu/TBtu * MMBtu/ton)
Concentration of fluoride in coal	80	mg/kg	
Molecular weight of fluorine	18.998	lb/lbmole	
Molecular weight of HF	20.006	lb/lbmole	
Uncontrolled HF emissions	0.168	lb/ton	= 80 lb Cl /1E6 lb coal * 20/19 * 2000 lb/ton
Back calculated control efficiency	86.4%		= 1 - 0.023/0.168

7.5 Emission Calculations Based on Factors Documented

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Primary Pollutants							
CO	0.5	AP42 1.1-3, 9/98	120.6	528	na	na	na
NOX	22	AP42 1.1-3, 9/98	5,304	23,233	90.0%	530	2,323
SO2	108.68	AP42 1.1-3, 9/98	26,203	114,769	96.1%	1,022	4,476
VOC (TNMOC)	0.06	AP42 1.1-19, 9/98	14.5	63.4	na	na	na
PM	96.8	AP42 1.1-4, 9/98	23,339	102,223	99.8%	55	241
PM10	22.264	AP42 1.1-4, 9/98	5,368	23,511	99.8%	13	55
PM2.5	5.81	AP42 1.1-6, 9/98	1,400	6,133	99.6%	6	25
H2SO4	1.57	1% conversion to SO3	380	1,663	30.7%	263.1	1,152.5
Metals							
Antimony	3.09E-04	AP42 1.1-16, 9/98	0.0745	0.3263	97.8%	1.65E-03	7.21E-03
Arsenic	1.69E-02	AP42 1.1-16, 9/98	4.0699	17.8260	99.4%	2.38E-02	1.04E-01
Beryllium	2.50E-03	AP42 1.1-16, 9/98	0.6018	2.6358	99.9%	7.74E-04	3.39E-03
Cadmium	5.34E-04	AP42 1.1-16, 9/98	0.1289	0.5644	95.1%	6.26E-03	2.74E-02
Chromium	4.29E-03	AP42 1.1-16, 9/98	1.0338	4.5278	97.0%	3.09E-02	1.35E-01
Cobalt	2.07E-03	AP42 1.1-16, 9/98	0.4995	2.1879	98.5%	7.68E-03	3.36E-02
Lead	1.20E-02	AP42 1.1-16, 9/98	2.8844	12.6335	99.2%	2.28E-02	9.99E-02
Manganese	6.42E-03	AP42 1.1-16, 9/98	1.5468	6.7749	97.3%	4.10E-02	1.80E-01
Nickel	2.70E-03	AP42 1.1-16, 9/98	0.6510	2.8514	94.5%	3.57E-02	1.56E-01
Mercury	0.0004	AP42 1.1-18, 9/98	0.0964	0.4224	95.0%	4.82E-03	2.11E-02
Selenium	0.004	AP42 1.1-18, 9/98	0.9644	4.2241	67.5%	3.13E-01	1.37E+00
PAH Compounds							
Biphenyl	1.70E-06	AP42 1.1-13, 9/98	0.0004	0.0018	na	na	na
Naphthalene	1.30E-05	AP42 1.1-13, 9/98	0.0031	0.0137	na	na	na
GHG Pollutants							
CO2	4697.21	40 CFR 98 Table C-1	1,132,503	4,960,363	na	na	na
CH4	5.53E-01	40 CFR 98 Table C-2	133	584	na	na	na
N2O	8.05E-02	40 CFR 98 Table C-2	19	85	na	na	na
CO2e	4697.84	40 CFR 98 Table A-1	1,132,656	4,961,032	na	na	na

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Other Organic Compounds							
Acetaldehyde	7.3E-05	PISCES	0.0176	0.0771	na	na	na
Acetophenone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Acrolein	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Benzene	8.9E-05	PISCES	0.0215	0.0940	na	na	na
Benzyl chloride	6.4E-06	PISCES	0.0015	0.0067	na	na	na
Bis(2-ethylhexyl)phthalate	8.2E-05	PISCES	0.0198	0.0867	na	na	na
Bromoform	3.9E-05	AP42 1.1-14, 9/98	0.0094	0.0412	na	na	na
Carbon disulfide	2.5E-05	PISCES	0.0061	0.0265	na	na	na
2-Chloroacetophenone	7.0E-06	AP42 1.1-14, 9/98	0.0017	0.0074	na	na	na
Chlorobenzene	3.6E-06	PISCES	0.0009	0.0039	na	na	na
Chloroform	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Cumene	5.3E-06	AP42 1.1-14, 9/98	0.0013	0.0056	na	na	na
Cyanide	2.5E-03	AP42 1.1-14, 9/98	0.6028	2.6401	na	na	na
Dimethyl sulfate	4.8E-05	AP42 1.1-14, 9/98	0.0116	0.0507	na	na	na
2,4-Dinitrotoluene	4.6E-06	PISCES	0.0011	0.0048	na	na	na
Ethylbenzene	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Ethyl chloride	1.2E-05	PISCES	0.0029	0.0128	na	na	na
Ethylene dibromide	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Ethylene dichloride	4.0E-05	AP42 1.1-14, 9/98	0.0096	0.0422	na	na	na
Formaldehyde	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Hexane	1.1E-05	PISCES	0.0027	0.0118	na	na	na
Isophorone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Methyl bromide	2.0E-05	PISCES	0.0049	0.0214	na	na	na
Methyl chloride	2.5E-05	PISCES	0.0061	0.0265	na	na	na
Methyl ethyl ketone	3.9E-04	AP42 1.1-14, 9/98	0.0940	0.4118	na	na	na
Methyl hydrazine	1.7E-04	AP42 1.1-14, 9/98	0.0410	0.1795	na	na	na
Methyl methacrylate	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Methyl tert butyl ether	3.5E-05	AP42 1.1-14, 9/98	0.0084	0.0370	na	na	na
Methylene chloride	6.2E-05	PISCES	0.0149	0.0650	na	na	na
Phenol	7.5E-05	PISCES	0.0182	0.0795	na	na	na
Propionaldehyde	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Styrene	1.6E-05	PISCES	0.0039	0.0169	na	na	na
Tetrachloroethylene	9.6E-06	PISCES	0.0023	0.0101	na	na	na
Toluene	3.9E-05	PISCES	0.0094	0.0410	na	na	na
1,1,1-Trichloroethane	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Vinyl acetate	7.1E-06	PISCES	0.0017	0.0075	na	na	na
m/p-Xylene	1.9E-05	PISCES	0.0045	0.0198	na	na	na
o-Xylene	1.0E-05	PISCES	0.0024	0.0106	na	na	na
POM	4.7E-05	AP42 1.1-17, 9/98	0.0114	0.0501	na	na	na
Inorganic HAPs- HCl and HF							
Hydrogen Chloride	1.440	PISCES	347.1	1,520	80.1%	68.9	302.0
Hydrogen Fluoride	0.168	PISCES	40.6	178	86.4%	5.5	24.2

8. Unit 4 Indirect Heat Exchanger (KyEIS ID# 04)

> Documentation of boiler fuel firing rates, emission factors, and emission calculations are provided in this section.

8.1 Description and Nomenclature

Generating Unit 4; Pulverized coal-fired, dry bottom, wall-fired unit with Low NOX Burners, SCR, ESP, FGD, PJFF, DSI for SAM , DSI for Hg

Type of Unit (Make, Model):	Foster Wheeler Pulverized Coal Boiler
Construction Date:	9/18/1978
Title V Permit ID:	04
KyEIS Equipment ID:	COMB004
KyEIS Source ID:	04
KyEIS Process ID:	1
Emission Point ID:	26

8.2 Boiler Capacity and Fuel Firing Rates

Boiler Heat Input Capacity: **5,500 MMBtu/hr**

8.21 Coal Properties

Coal Heating Value	**22.8 MMBtu/ton**	= (11415 Btu/lb * 2000 lb/ton / 1E6 Btu/MMBtu / 2000 lb/ton)
	11,415 Btu/lb	Average for 2016 Coal Samples
Coal % Sulfur Content (Weight Basis)	2.9%	Average for 2016 Coal Samples
Coal % Ash Content (Weight Basis)	9.7%	Average for 2016 Coal Samples

8.22 Maximum Coal Firing Rate

240.9 ton/hr = (5500 MMBtu/hr / 22.83 MMBtu/ton)

8.3 SourceClassificationCode

SCC:	10100202
SCC Description:	Pulverized Coal: Dry Bottom (Bituminous Coal) (1-01-002-02)
SCC Units:	Tons Bituminous Coal Burned

8.4 Documentation of Emission Factors Used

> Emission factors for the primary pollutants are either those published in AP42 Section 1.1 (9/98 Edition) or from vendor data, as listed below. Control efficiencies listed are based on a combination of vendor information and engineering judgment.

8.41 Primary Pollutants			Emission Factor Basis
CO	0.5	lb/ton	AP42 1.1-3, 9/98
	0.022	lb/MMBtu	= (0.5 lb/ton / 22.83 MMBtu/ton)
NOX			
Uncontrolled Factor	22	lb/ton	AP42 1.1-3, 9/98; PC, dry bottom, wall-fired, pre-NSPS
	0.964	lb/MMBtu	= (22 lb/ton / 22.83 MMBtu/ton)
Control Efficiency, LNB	50%		Vendor guarantee
Control Efficiency, SCR	80%		Vendor guarantee for NOX control in SCR.
Combined Control	90%		= 1 - (1 - 0.8) * 0.5
Controlled Factor	2.20	lb/ton	
Actual Estimated NOX Emissions	0.096	lb/MMBtu	= (2.2 lb/ton / 22.83 MMBtu/ton)
Permitted allowable NOx	0.70	lb/MMBtu	NSPS Subpart D
SO2			
Uncontrolled Factor	38	S lb/ton	AP42 1.1-3, 9/98
	109.06	lb/ton	= (38 * 0.0287 * 100)
	4.777	lb/MMBtu	= (109.06 lb/ton / 22.83 MMBtu/ton)
Control Efficiency, FGD	98%		Average from 2009 - 2011
Controlled Factor	2.1812	lb/ton	= (1-0.98) * 109.06 lb/ton
Actual Estimated SO2 Emissions	0.096	lb/MMBtu	= (2.1812 lb/ton / 22.83 MMBtu/ton)
Permitted allowable SO2	1.20	lb/MMBtu	NSPS Subpart D
VOC (TNMOC)	0.06	lb/ton	AP42 1.1-19, 9/98
	0.0026	lb/MMBtu	= (0.06 lb/ton / 22.83 MMBtu/ton)
PM			
Uncontrolled Factor	10	A lb/ton	AP42 1.1-4, 9/98
	96.7	lb/ton	= (10 * 0.0967 * 100)
	4.236	lb/MMBtu	= (96.7 lb/ton / 22.83 MMBtu/ton)
Control Efficiency, ESP/PJFF	99.8%		1 - (0.009 / 4.236)
Controlled Factor	0.205	lb/ton	= 0.009 lb/MMBtu * MMBtu/ton
Actual Estimated PM Emissions	0.009	lb/MMBtu	Stack Test conducted on May 14, 2013
Permitted allowable PM	0.200	lb/MMBtu	
PM_{10}			
Uncontrolled Factor	2.3	A lb/ton	AP42 1.1-4, 9/98
	22.241	lb/ton	= (2.3 * 0.0967 * 100)
	0.974	lb/MMBtu	= (22.241 lb/ton / 22.83 MMBtu/ton)
Control Efficiency, ESP/PJFF	99.8%		Assume control efficiency is the same as for PM
Controlled Factor	0.0472581	lb/ton	= (1-0.9979) * 22.241 lb/ton
Actual Estimated PM10 Emissions	0.002	lb/MMBtu	= (0.047 lb/ton / 22.83 MMBtu/ton)
$PM_{2.5}$			
Uncontrolled Factor	0.6	A lb/ton	AP42 1.1-6, 9/98
	5.802	lb/ton	= (0.6 * 0.0967 * 100)
	0.254	lb/MMBtu	= (5.802 lb/ton / 22.83 MMBtu/ton)
Percentage of PM10 that is PM2.5	44.44%		Ratio of PM2.5 to PM10 in AP42 1.1-6 is 0.024A / 0.054A = 44.44%.
Controlled Factor	0.021	lb/ton	= (0.4444 * 0.047 lb/ton)
Actual Estimated PM2.5 Emissions	0.001	lb/MMBtu	= (0.4444 * 0.002 lb/MMBtu)
Back-Calculated Control Efficiency	99.64%		= 1 - 0.001/0.254

8.42 GHG Pollutants			Emission Factor Basis
CO_2			
Emission Factor	93.4	kg/MMBtu	40 CFR 98 Table C-1
	4,960,363	tpy	= (93.4 *0.001 * 1.1023*5500 *8760)
	4,700.92	lbs/ton	= 4960363*2000/(8760*240.91)
CH_4			
Emission Factor	1.10E-02	kg/MMBtu	40 CFR 98 Table C-2
	584	tpy	= (0.011 *0.001 *1.1023 *5500 *8760)
	0.55	lbs/ton	= 584*2000/(8760*240.91)
N_2O			
Emission Factor	1.60E-03	kg/MMBtu	40 CFR 98 Table C-2
	85	tpy	= (0.0016 *0.001 *1.1023* 5500 *8760)
	0.08	lbs/ton	= 85*2000/(8760*240.91)
CO_2e			
CO2 Contribution	4,960,363	tpy	=1.0* 4960363 40 CFR 98 Table A-1
CH4 Contribution	12,268	tpy	=21* 584 40 CFR 98 Table A-1
N2O Contribution	26,342	tpy	=310* 85 40 CFR 98 Table A-1
	4,998,973	tpy	

8.43 Sulfuric Acid Mist

> Uncontrolled H2SO4 emissions are conservatively estimated assuming 1% conversion of S to SO3 in the boiler and 10% reduction in air preheater.

> H2SO4 emissions at the stack take into account the expected control efficiency from the FGD and SO3 mitigation system necessary to reach a stack concentration of 7 ppmv.

H2SO4

Sulfur loading	57.4	lb/ton	= 0.0287 lb S/lb coal * 2000 lb/ton
Conversion to SO3 in boiler	1%		
Reduction of SO3 in air heater	10%		
Uncontrolled H2SO4 emission factor	1.580	lb/ton	= [57.4 * 0.01 * (1-0.1) * 98.07848 / 32.065]
H2SO4 control efficiency downstream of air heater	66.07%		
Controlled H2SO4 emission factor	0.5361	lb/ton	= 1.5801* (1 - 0.6607)
	0.0235	lb/MMBtu	= (0.536 lb/ton / 22.83 MMBtu/ton)

8.44 Metal Compounds With Factors Based on Coal Concentration

> Emission factors for all metal compounds except mercury and selenium are based on AP42 Table 1.1-16 (9/98 Edition). Emissions in AP42 1.1-16 are expressed as a function of coal concentration, ash content, and either the PM uncontrolled or controlled emission factor.

> Coal metal concentrations are based on either information in the PISCES database for coal samples from Kentucky and West Virginia or on target specifications for coal to be burned in Units 1, 2, 3, and 4.

Uncontrolled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Uncontrolled Factor (lb/MMBtu)	Uncontrolled Metal Factor (lb/TBtu)	Equivalent Uncontrolled Metal Factor (lb/ton)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	4.236	13.540	3.09E-04
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	4.236	739.478	1.69E-02
Beryllium	1.2*(C/A*PM)^1.1	1.38	9.7%	4.236	109.318	2.50E-03
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	4.236	23.421	5.35E-04
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	4.236	187.869	4.29E-03
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	4.236	90.772	2.07E-03
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	4.236	524.097	1.20E-02
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	4.236	281.099	6.42E-03
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	4.236	118.321	2.70E-03

Controlled Metal Emission Factors:

Metal Compound	Emission Equation (lb/TBtu)	Coal Conc. (ppmwt)	Ash Content (%)	Total PM Controlled Factor (lb/MMBtu)	Controlled Metal Factor (lb/TBtu)	Equivalent Controlled Metal Factor (lb/ton)	Metal Control Efficiency (%)
Antimony	0.92*(C/A*PM)^0.63	1.63	9.7%	0.009	0.280	6.40E-06	97.9%
Arsenic	3.1*(C/A*PM)^0.85	14.31	9.7%	0.009	3.955	9.03E-05	99.5%
Cadmium	3.3*(C/A*PM)^0.5	1.15	9.7%	0.009	1.080	2.46E-05	95.4%
Chromium	3.7*(C/A*PM)^0.58	19.92	9.7%	0.009	5.293	1.21E-04	97.2%
Cobalt	1.7*(C/A*PM)^0.69	7.28	9.7%	0.009	1.300	2.97E-05	98.6%
Lead	3.4*(C/A*PM)^0.8	12.4	9.7%	0.009	3.813	8.71E-05	99.3%
Manganese	3.8*(C/A*PM)^0.6	29.76	9.7%	0.009	7.002	1.60E-04	97.5%
Nickel	4.4*(C/A*PM)^0.48	21.72	9.7%	0.009	6.168	1.41E-04	94.8%

8.45 Metal Compounds with Emissions Based on AP-42 Controlled Factors

> AP42 provides no concentration-based factor for mercury or selenium. However, AP42 Table 1.1-18 (9/98 Edition) provides controlled emission factors for these metals which are thus used.

> Estimated uncontrolled emission factors are back-calculated based on the metal concentration in the coal.

Mercury

Controlled emission factor	4.0E-04	lb/ton	AP42 1.1-18, 9/98
	17.521	lb/TBtu	= (0.0004 lb/ton / 22.83 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of mercury in coal	0.2	mg/kg	
Uncontrolled mercury emissions	0.0004	lb/ton	= 0.2 lb Hg /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	97%		Based on 2016 Data

Selenium

Controlled emission factor	0.0013	lb/ton	AP42 1.1-18, 9/98
	56.943	lb/TBtu	= (0.0013 lb/ton / 22.83 MMBtu/ton * 1E6 MMBtu/TBtu)
Concentration of selenium in coal	2	mg/kg	
Uncontrolled selenium emissions	0.004	lb/ton	= 2 lb Se /1E6 lb coal * 2000 lb/ton
Assumed control efficiency	67.5%		= (1- 0.0013 / 0.004)

8.46 Polynuclear Aromatic Hydrocarbons

> Emission factors for select polynuclear aromatic hydrocarbons are taken from AP42 Table 1.1-13 (9/98 Edition). The AP42 factors are controlled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

PAH Compound	Emission Factor (lb/ton)	Equivalent Factor (lb/TBtu)	Sample Calculation
Biphenyl	1.70E-06	0.074	= (0.0000017 lb/ton / 22.83 MMBtu/ton * 1E6 MMBtu/Tbtu)
Naphthalene	1.30E-05	0.569	= (0.000013 lb/ton / 22.83 MMBtu/ton * 1E6 MMBtu/Tbtu)

8.47 Other Organic Compounds

> Emission factors for other organic compounds expected to be emitted are based on emission factors in EPRI's PISCES database where available, or AP42 Table 1.1-14 (9/98 Edition).

> PISCES (Power Plant Integrated System: Chemical Emissions Study) is data published by the Electric Power Research Institute.

	Emission Factor (lb/ton)	Emission Factor (lb/TBtu)	Emission Factor Basis
Acetaldehyde	7.3E-05	3.2	PISCES
Acetophenone	2.7E-05	1.2	PISCES
Acrolein	4.3E-05	1.9	PISCES
Benzene	8.9E-05	3.9	PISCES
Benzyl chloride	6.4E-06	0.28	PISCES
Bis(2-ethylhexyl)phthalate	8.2E-05	3.6	PISCES
Bromoform	3.9E-05	1.7	AP42 1.1-14, 9/98
Carbon disulfide	2.5E-05	1.1	PISCES
2-Chloroacetophenone	7.0E-06	0.3	AP42 1.1-14, 9/98
Chlorobenzene	3.7E-06	0.16	PISCES
Chloroform	1.8E-05	0.8	PISCES
Cumene	5.3E-06	0.2	AP42 1.1-14, 9/98
Cyanide	2.5E-03	109.5	AP42 1.1-14, 9/98
Dimethyl sulfate	4.8E-05	2.1	AP42 1.1-14, 9/98
2,4-Dinitrotoluene	4.6E-06	0.2	PISCES
Ethylbenzene	1.8E-05	0.8	PISCES
Ethyl chloride	1.2E-05	0.53	PISCES
Ethylene dibromide	5.9E-05	2.6	PISCES
Ethylene dichloride	4.0E-05	1.8	AP42 1.1-14, 9/98
Formaldehyde	5.9E-05	2.6	PISCES
Hexane	1.1E-05	0.49	PISCES
Isophorone	2.7E-05	1.2	PISCES
Methyl bromide	2.0E-05	0.89	PISCES
Methyl chloride	2.5E-05	1.1	PISCES
Methyl ethyl ketone	3.9E-04	17.1	AP42 1.1-14, 9/98
Methyl hydrazine	1.7E-04	7.4	AP42 1.1-14, 9/98
Methyl methacrylate	2.0E-05	0.9	AP42 1.1-14, 9/98
Methyl tert butyl ether	3.5E-05	1.5	AP42 1.1-14, 9/98
Methylene chloride	6.2E-05	2.7	PISCES
Phenol	7.5E-05	3.3	PISCES
Propionaldehyde	4.3E-05	1.9	PISCES
Styrene	1.6E-05	0.7	PISCES
Tetrachloroethylene	9.6E-06	0.42	PISCES
Toluene	3.9E-05	1.7	PISCES
1,1,1-Trichloroethane	2.0E-05	0.9	AP42 1.1-14, 9/98
Vinyl acetate	7.1E-06	0.31	PISCES
m/p-Xylene	1.9E-05	0.82	PISCES
o-Xylene	1.0E-05	0.44	PISCES

8.48 Polycyclic Organic Matter (POM)

> Emission factors for POM are taken from AP42 Table 1.1-17 (9/98 Edition). The AP42 factors are uncontrolled emission factors. For purposes of completing the 7007N form, no control efficiency is assigned.

Controlled emission factor	2.08	lb/TBtu	AP42 1.1-17, 9/98 (PC, Dry Bottom)
	4.75E-05	lb/ton	= (2.08 lb/TBtu / 1E6 MMBtu/TBtu * 22.83 MMBtu/ton)

8.49 Inorganic HAPs- HCl and HF

> Emissions for HCl and HF are based on emission factors published in EPRI's PISCES database.

> The uncontrolled emission factors for HCl and HF are back-calculated based on the chloride and fluoride present in the coal.

Hydrogen Chloride

Controlled emission factor	12,535	lb/TBtu	PISCES
	0.286	lb/ton	= (12535 lb/TBtu / 1E6 MMBtu/TBtu * 22.83 MMBtu/ton)
Concentration of chloride in coal	700	mg/kg	
Molecular weight of chlorine	35.453	lb/lbmole	
Molecular weight of HCl	36.461	lb/lbmole	
Uncontrolled HCl emissions	1.440	lb/ton	= 700 lb Cl /1E6 lb coal * 36.46/35.45 * 2000 lb/ton
Back calculated control efficiency	80.1%		= 1 - 0.286/1.44

Hydrogen Fluoride

Controlled emission factor	1,003	lb/TBtu	PISCES
	0.023	lb/ton	= (1003 lb/TBtu / 1E6 MMBtu/TBtu * MMBtu/ton)
Concentration of fluoride in coal	80	mg/kg	
Molecular weight of fluorine	18.998	lb/lbmole	
Molecular weight of HF	20.006	lb/lbmole	
Uncontrolled HF emissions	0.168	lb/ton	= 80 lb Cl /1E6 lb coal * 20/19 * 2000 lb/ton
Back calculated control efficiency	86.4%		= 1 - 0.023/0.168

8.5 Emission Calculations Based on Factors Documented

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Primary Pollutants							
CO	0.5	AP42 1.1-3, 9/98	120.5	528	na	na	na
NOX	22	AP42 1.1-3, 9/98	5,300	23,214	90.0%	530	2,321
SO2	109.06	AP42 1.1-3, 9/98	26,274	115,079	98.0%	525	2,302
VOC (TNMOC)	0.06	AP42 1.1-19, 9/98	14.5	63.3	na	na	na
PM	96.7	AP42 1.1-4, 9/98	23,296	102,037	99.8%	50	217
PM10	22.241	AP42 1.1-4, 9/98	5,358	23,468	99.8%	11	50
PM2.5	5.80	AP42 1.1-6, 9/98	1,398	6,122	99.6%	5	22
H2SO4	1.58	1% conversion to SO3	381	1,667	66.1%	129.2	565.7
Metals							
Antimony	3.09E-04	AP42 1.1-16, 9/98	0.0745	0.3262	97.9%	1.54E-03	6.76E-03
Arsenic	1.69E-02	AP42 1.1-16, 9/98	4.0671	17.8140	99.5%	2.18E-02	9.53E-02
Beryllium	2.50E-03	AP42 1.1-16, 9/98	0.6012	2.6335	99.9%	6.90E-04	3.02E-03
Cadmium	5.35E-04	AP42 1.1-16, 9/98	0.1288	0.5642	95.4%	5.94E-03	2.60E-02
Chromium	4.29E-03	AP42 1.1-16, 9/98	1.0333	4.5258	97.2%	2.91E-02	1.28E-01
Cobalt	2.07E-03	AP42 1.1-16, 9/98	0.4992	2.1867	98.6%	7.15E-03	3.13E-02
Lead	1.20E-02	AP42 1.1-16, 9/98	2.8825	12.6255	99.3%	2.10E-02	9.19E-02
Manganese	6.42E-03	AP42 1.1-16, 9/98	1.5460	6.7717	97.5%	3.85E-02	1.69E-01
Nickel	2.70E-03	AP42 1.1-16, 9/98	0.6508	2.8504	94.8%	3.39E-02	1.49E-01
Mercury	0.0004	AP42 1.1-18, 9/98	0.0964	0.4221	97.0%	2.89E-03	1.27E-02
Selenium	0.004	AP42 1.1-18, 9/98	0.9636	4.2208	67.5%	3.13E-01	1.37E+00
PAH Compounds							
Biphenyl	1.70E-06	AP42 1.1-13, 9/98	0.0004	0.0018	na	na	na
Naphthalene	1.30E-05	AP42 1.1-13, 9/98	0.0031	0.0137	na	na	na
GHG Pollutants							
CO2	4.70E+03	40 CFR 98 Table C-1	1,132,503	4,960,363	na	na	na
CH4	5.54E-01	40 CFR 98 Table C-2	133	584	na	na	na
N2O	8.05E-02	40 CFR 98 Table C-2	19	85	na	na	na
CO2e	4.70E+03	40 CFR 98 Table A-1	1,132,656	4,961,032	na	na	na

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Other Organic Compounds							
Acetaldehyde	7.3E-05	PISCES	0.0176	0.0771	na	na	na
Acetophenone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Acrolein	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Benzene	8.9E-05	PISCES	0.0215	0.0940	na	na	na
Benzyl chloride	6.4E-06	PISCES	0.0015	0.0067	na	na	na
Bis(2-ethylhexyl)phthalate	8.2E-05	PISCES	0.0198	0.0867	na	na	na
Bromoform	3.9E-05	AP42 1.1-14, 9/98	0.0094	0.0412	na	na	na
Carbon disulfide	2.5E-05	PISCES	0.0061	0.0265	na	na	na
2-Chloroacetophenone	7.0E-06	AP42 1.1-14, 9/98	0.0017	0.0074	na	na	na
Chlorobenzene	3.7E-06	PISCES	0.0009	0.0039	na	na	na
Chloroform	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Cumene	5.3E-06	AP42 1.1-14, 9/98	0.0013	0.0056	na	na	na
Cyanide	2.5E-03	AP42 1.1-14, 9/98	0.6023	2.6380	na	na	na
Dimethyl sulfate	4.8E-05	AP42 1.1-14, 9/98	0.0116	0.0506	na	na	na
2,4-Dinitrotoluene	4.6E-06	PISCES	0.0011	0.0048	na	na	na
Ethylbenzene	1.8E-05	PISCES	0.0044	0.0193	na	na	na
Ethyl chloride	1.2E-05	PISCES	0.0029	0.0128	na	na	na
Ethylene dibromide	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Ethylene dichloride	4.0E-05	AP42 1.1-14, 9/98	0.0096	0.0422	na	na	na
Formaldehyde	5.9E-05	PISCES	0.0143	0.0626	na	na	na
Hexane	1.1E-05	PISCES	0.0027	0.0118	na	na	na
Isophorone	2.7E-05	PISCES	0.0066	0.0289	na	na	na
Methyl bromide	2.0E-05	PISCES	0.0049	0.0214	na	na	na
Methyl chloride	2.5E-05	PISCES	0.0061	0.0265	na	na	na
Methyl ethyl ketone	3.9E-04	AP42 1.1-14, 9/98	0.0940	0.4115	na	na	na
Methyl hydrazine	1.7E-04	AP42 1.1-14, 9/98	0.0410	0.1794	na	na	na
Methyl methacrylate	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Methyl tert butyl ether	3.5E-05	AP42 1.1-14, 9/98	0.0084	0.0369	na	na	na
Methylene chloride	6.2E-05	PISCES	0.0149	0.0650	na	na	na
Phenol	7.5E-05	PISCES	0.0182	0.0795	na	na	na
Propionaldehyde	4.3E-05	PISCES	0.0105	0.0458	na	na	na
Styrene	1.6E-05	PISCES	0.0039	0.0169	na	na	na
Tetrachloroethylene	9.6E-06	PISCES	0.0023	0.0101	na	na	na
Toluene	3.9E-05	PISCES	0.0094	0.0410	na	na	na
1,1,1-Trichloroethane	2.0E-05	AP42 1.1-14, 9/98	0.0048	0.0211	na	na	na
Vinyl acetate	7.1E-06	PISCES	0.0017	0.0075	na	na	na
m/p-Xylene	1.9E-05	PISCES	0.0045	0.0198	na	na	na
o-Xylene	1.0E-05	PISCES	0.0024	0.0106	na	na	na
POM	4.7E-05	AP42 1.1-17, 9/98	0.0114	0.0501	na	na	na
Inorganic HAPs- HCl and HF							
Hydrogen Chloride	1.440	PISCES	346.9	1,519	80.1%	68.9	302.0
Hydrogen Fluoride	0.168	PISCES	40.6	178	86.4%	5.5	24.2

9. Coal Handling Operations

> Fugitive PM emissions due to receiving, storing, conveying, crushing, and handling of coal are documented in this section.

9.1 Emission Unit Nomenclature and Process Rates

> Process rates for each conveyor/transfer point upon which emissions estimates are based are provided below.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Process Rate (ton/hr)	Control Description
Barge Unloader - Coal Use					
Coal Barge Unloading	05	1	1973	3,600	Moist Material
Coal Handling Operations					
Coal Stockpile	07	1	1973	3,600	Wet Suppression
Coal Conveyors 1D, 1E, 1F	07	2	1973	10,800	Enclosure & Fabric Filter
Coal Conveyor 1J	07	3	1973	900	Enclosure & Fabric Filter
Coal Conveyor 1G	07	4	1973	1,500	Enclosure & Fabric Filter
Coal Conveyor 1H	07	5	1973	1,800	Enclosure & Fabric Filter
Coal Handling Operations					
Coal Conveyors 1A, 1B, 1C	08	1	1971	10,800	Enclosures
Coal Handling Operations					
Coal Conveyor 2H	09	1	1973	1,800	Enclosure & Fabric Filter
Coal Handling Operations					
Coal Conveyor 6H	10	1	1980	1,800	Enclosure & Fabric Filter
Coal Crushing Operations					
Crusher House #1	06	1	1974	1,800	Enclosure & Wet Scrubber
Coal Crushing Operations					
Crusher House #2	11a	1	1980	1,800	Enclosure & Wet Scrubber
Coal Handling Operations					
Coal Conveyors 2J, 3J, 4J, 3M, 4M	11b	1	1980	4,500	Enclosure & Fabric Filter
Coal Conveyor 2G	11b	2	1980	1,500	Enclosure & Fabric Filter
Coal Conveyor 5G-8G, 3H-5H	11b	3	1980	12,600	Enclosure & Fabric Filter
Coal Conveyor 3G & 4G	11b	4	1980	4,800	Enclosure & Fabric Filter

9.2 Source Classification Codes

> SCC assigned to each of the coal handling system emission units are documented below.

Emission Unit	SCC	SCC Description	SCC Units
Barge Unloader - Coal Use			
Coal Barge Unloading	30510403	Bulk Materials Unloading Operation (3-05-104), Coal (3-05-104-03)	Tons Material Processed
Coal Handling Operations			
Coal Stockpile	30510303	Bulk Materials Open Stockpiles (3-05-103), Coal (3-05-103-03)	Tons Material Processed
Coal Conveyors 1D, 1E, 1F	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 1J	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 1G	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 1H	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Handling Operations			
Coal Conveyors 1A, 1B, 1C	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Handling Operations			
Coal Conveyor 2H	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Handling Operations			
Coal Conveyor 6H	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Crushing Operations			
Crusher House #1	30501010	Coal Mining, Cleaning, and Material Handling, Crushing (3-05-010-10)	Tons Coal Shipped
Coal Crushing Operations			
Crusher House #2	30501010	Coal Mining, Cleaning, and Material Handling, Crushing (3-05-010-10)	Tons Coal Shipped
Coal Handling Operations			
Coal Conveyors 2J, 3J, 4J, 3M, 4M	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 2G	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 5G-8G, 3H-5H	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed
Coal Conveyor 3G & 4G	30510103	Bulk Materials Conveyors (3-05-101), Coal (3-05-101-03)	Tons Material Processed

9.3 Coal Stockpile Fugitive PM Emission Factors

> Fugitive PM emissions may be released from the stockpiling of coal through two mechanisms-- (1) placing of coal to the pile and (2) wind erosion. PM emissions are expected to be small due to natural characteristics of the coal received at the plant, as well as additional measures employed such as compaction and wet suppression.

9.31 Coal Transfer/Handling Emission Factors

> PM emission factors for conveyor transfer and drop points are calculated using Equation 1 from AP42 Section 13.2.4, Aggregate Handling and Storage Piles. The mean wind speed used in this equation is based on five years of data from Cincinnati CVG (2005-2009 data set). The material moisture content used is based on AP42 Table 13.2.4-1, which lists the mean value for coal at a coal-fired power plant at 4.5%. The uncontrolled emission factors calculated using AP42 have been reduced by 70% due to the presence of dust suppression measures.

> The following emission factor equation applies: (Equations 1 in AP42 13.2.4)

E (lb/ton) = 0.0032*k* * (*U* /5)^1.3 / (*M* /2)^1.4

where:	PM	PM10	PM2.5
k Particle Size Multiplier (lb/VMT)	0.74	0.35	0.053
U Mean Wind Speed (mph)	8.4	8.4	8
M Material Moisture Content (%)	4.5	4.5	4.5
E Emission Factor (lb/ton)	1.49E-03	7.06E-04	1.00E-04

9.32 Wind Erosion Emission Factors

> Fugitive PM emissions can result from wind erosion of the coal storage pile when gusts of wind cause loose dust on the surface of the pile to become airborne. The annual quantity of emissions is dependent on the silt content of the coal stored, the moisture of the pile (predicted by the number of days per year with measureable precipitation), and the percentage of hours per year that the wind speed exceeds the threshold speed of 12 miles per hour. Emissions are calculated on a pounds per day per acre basis using the method from the EPA Document "Control of Open Fugitive Dust Sources".

> Emission rates are converted to mass per time unit (lb/hr) based on the maximum estimated surface area of the coal pile. Then, so that a single SCC unit based emission factor can be used for the coal stockpile, the emission rate is divided by the coal processing rate of the overall coal handling system.

> *Control of Open Fugitive Dust Sources* ; EPA-450/3-88-008, September 1988, Page 4-17, Equation 2:

E (lb/day/acre) = 1.7 * (*s* /1.5) * (365-*p*)/235 * *f* /15

where:

s Silt content (%)	2.2	%	Silt content of coal from AP42 Table 13.2.4-1.
p Number of days with >0.01 in precipitation per year	129	days	CVG NWS Surface Data 2005-2009 data set.
f % of time unobstructed wind speed > 12 mph at mean pile heigh	18.92	%	CVG NWS Surface Data 2005-2009 data set.
E PM/PM10 Emission Factor (lb/day/acre)	3.16	lb/day/acre	

> Based on the dimensions of the coal storage area, the surface area of the coal pile at maximum capacity is approximately 34 acres.

Coal surface area:	34	acre	
PM Emission Factor (lb/hr) (average)	4.51	lb/hr	
Coal handling area process rate:	3,600	ton/hr	
Wind Erosion PM Emission Factor (lb/ton)	1.25E-03	lb/ton	
Wind Erosion PM10 Emission Factor (lb/ton)	6.26E-04	lb/ton	Assumed to be 50% of PM
Wind Erosion PM2.5 Emission Factor (lb/hr)	2.51E-04	lb/ton	Assumed to be 20% of PM

9.33 Combined Coal Transfer/Handling and Wind Erosion Emission Factor

	PM	PM10	PM2.5
Material Handling Emission Factors (lb/ton)	1.49E-03	7.06E-04	1.00E-04
Wind Erosion Emission Factors (lb/ton)	1.25E-03	6.26E-04	2.51E-04
TOTAL (Uncontrolled)	2.75E-03	1.33E-03	3.51E-04
Control efficiency applied for dust suppression measures	70%	70%	70%
TOTAL (Controlled)	8.24E-04	4.00E-04	1.05E-04

9.4 Emission Factors and Emission Rates

> The same PM/PM10 emission factors utilized in the previous Title V application for Ghent Station (citing the Midwest Research Institute) and reflected in the KyEIS system are retained for this renewal application with the exception of those for the coal stockpile. These factors are close to what could alternatively be calculated using the methodology for aggregate handling and storage in AP42 Section 13.2.4. Control efficiencies previously referenced in prior applications are retained.

> PM2.5 emissions are estimated to be 20% of PM10 emissions.

> Coal stockpile fugitive emission factors have been updated as part of this renewal application since the prior factors in use were overly conservative.

	Uncontrolled Emission Factor		Uncontrolled Emissions		Control Efficiency	Controlled Emissions	
Emission Unit	(lb/ton)	Basis	(lb/hr)	(tpy)	(%)	(lb/hr)	(tpy)
Barge Unloader - Coal Use							
Coal Barge Unloading							
PM	0.02	MRI; 2004 Title V App	72.00	315.36	90%	7.20	31.54
PM10	0.01	MRI; 2004 Title V App	36.00	157.68	90%	3.60	15.77
PM2.5	0.002	Estimated 20% of PM10	7.20	31.54	90%	0.72	3.15
Coal Handling Operations							
Coal Stockpile							
PM	0.0027	AP42 & EPA450/3-88-00	9.89	43.30	70%	2.97	12.99
PM10	0.0013	Estimated 50% of PM	4.80	21.02	70%	1.44	6.30
PM2.5	0.0003	Estimated 20% of PM10	0.96	4.20	70%	0.29	1.26
Coal Conveyors 1D, 1E, 1F							
PM	0.0003	MRI; 2004 Title V App	3.24	14.19	90%	0.32	1.42
PM10	0.0003	MRI; 2004 Title V App	3.24	14.19	90%	0.32	1.42
PM2.5	0.00006	Estimated 20% of PM10	0.65	2.84	90%	0.06	0.28
Coal Conveyor 1J							
PM	0.0003	MRI; 2004 Title V App	0.27	1.18	90%	0.03	0.12
PM10	0.0003	MRI; 2004 Title V App	0.27	1.18	90%	0.03	0.12
PM2.5	0.00006	Estimated 20% of PM10	0.05	0.24	90%	0.01	0.02
Coal Conveyor 1G							
PM	0.0003	MRI; 2004 Title V App	0.45	1.97	90%	0.05	0.20
PM10	0.0003	MRI; 2004 Title V App	0.45	1.97	90%	0.05	0.20
PM2.5	0.00006	Estimated 20% of PM10	0.09	0.39	90%	0.01	0.04
Coal Conveyor 1H							
PM	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM10	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM2.5	0.00006	Estimated 20% of PM10	0.11	0.47	90%	0.01	0.05
Coal Handling Operations							
Coal Conveyors 1A, 1B, 1C							
PM	0.0003	MRI; 2004 Title V App	3.24	14.19	90%	0.32	1.42
PM10	0.0003	MRI; 2004 Title V App	3.24	14.19	90%	0.32	1.42
PM2.5	0.00006	Estimated 20% of PM10	0.65	2.84	90%	0.06	0.28

Coal Handling Operations							
Coal Conveyor 2H							
PM	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM10	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM2.5	0.00006	Estimated 20% of PM10	0.11	0.47	90%	0.01	0.05
Coal Handling Operations							
Coal Conveyor 6H							
PM	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM10	0.0003	MRI; 2004 Title V App	0.54	2.37	90%	0.05	0.24
PM2.5	0.00006	Estimated 20% of PM10	0.11	0.47	90%	0.01	0.05
Coal Crushing Operations							
Crusher House #1							
PM	0.02	MRI; 2004 Title V App	36.00	157.68	99.7%	0.11	0.47
PM10	0.01	MRI; 2004 Title V App	18.00	78.84	99.7%	0.05	0.24
PM2.5	0.002	Estimated 20% of PM10	3.60	15.77	99.7%	0.01	0.05
Coal Crushing Operations							
Crusher House #2							
PM	0.02	MRI; 2004 Title V App	36.00	157.68	99.7%	0.11	0.47
PM10	0.01	MRI; 2004 Title V App	18.00	78.84	99.7%	0.05	0.24
PM2.5	0.002	Estimated 20% of PM10	3.60	15.77	99.7%	0.01	0.05
Coal Handling Operations							
Coal Conveyors 2J, 3J, 4J, 3M, 4M							
PM	0.0003	MRI; 2004 Title V App	1.35	5.91	90%	0.14	0.59
PM10	0.0003	MRI; 2004 Title V App	1.35	5.91	90%	0.14	0.59
PM2.5	0.00006	Estimated 20% of PM	0.27	1.18	90%	0.03	0.12
Coal Conveyor 2G							
PM	0.0003	MRI; 2004 Title V App	0.45	1.97	90%	0.05	0.20
PM10	0.0003	MRI; 2004 Title V App	0.45	1.97	90%	0.05	0.20
PM2.5	0.00006	Estimated 20% of PM10	0.09	0.39	90%	0.01	0.04
Coal Conveyor 5G-8G, 3H-5H							
PM	0.0003	MRI; 2004 Title V App	3.78	16.56	90%	0.38	1.66
PM10	0.0003	MRI; 2004 Title V App	3.78	16.56	90%	0.38	1.66
PM2.5	0.00006	Estimated 20% of PM10	0.76	3.31	90%	0.08	0.33
Coal Conveyor 3G & 4G							
PM	0.0003	MRI; 2004 Title V App	1.44	6.31	90%	0.14	0.63
PM10	0.0003	MRI; 2004 Title V App	1.44	6.31	90%	0.14	0.63
PM2.5	0.00006	Estimated 20% of PM10	0.29	1.26	90%	0.03	0.13

10. Limestone Handling System

> Documentation of limestone handling system process rates, emission factors, and emission calculations.

10.1 Emission Unit Nomenclature and Process Rates

> The limestone handling system serving the FGD system at Ghent Station consists of a barge unloading station, limestone conveying and storage, and limestone processing system. Once limestone is conveyed into the processing building, the milling of limestone occurs using a wet process.

> Process rates for each operation and conveyor/transfer point used in deriving SCC based emission factors are listed below.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Process Rate (ton/hr)	Control Description
Barge Unloading - Limestone Use					
Limestone Barge Unloading	25	1	4/1/2006	1,000	Moist Material
Bucket of Recvg Hopper	25	2	4/1/2006	1,000	Enclosure
Limestone Handling and Processing					
Limestone Hopper to L2	26	1	4/1/2006	1,000	Enclosure
Limestone Conveyor L2 to L3	26	2	4/1/2006	1,000	Enclosure & Fabric Filter
Limestone Conveyor L3 to Stockpile	26	3	4/1/2006	1,000	Telescopic Chute with Skirt
Limestone Handling and Processing					
Limestone West Stockpile	27	1	4/1/2006	1,000	Moist Material
Limestone Handling and Processing					
Limestone Hopper L3 to L4	28	1	4/1/2006	550	Enclosure
Limestone Conveyor L4	28	2	4/1/2006	225	Enclosure & Fabric Filter
Limestone Conveyor L5	28	3	4/1/2006	225	Enclosure & Fabric Filter
Limestone Conveyor L6	28	4	4/1/2006	225	Enclosure & Fabric Filter
Limestone Conveyor L7	28	5	4/1/2006	225	Enclosure & Fabric Filter
Limestone Handling and Processing					
Wet Limestone Screens and Mills	29	1	4/1/2006	200	Enclosure & Wet Suppression

10.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Barge Unloading - Limestone Use				
Limestone Barge Unloading	25	30510405	Bulk Materials Unloading Operation (3-05-104), Limestone (3-05-104-05)	Tons Material Processed
Bucket of Recvg Hopper	25	30510405	Bulk Materials Unloading Operation (3-05-104), Limestone (3-05-104-05)	Tons Material Processed
Limestone Handling and Processing				
Limestone Hopper to L2	26	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L2 to L3	26	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L3 to Stockpile	26	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Handling and Processing				
Limestone West Stockpile	27	30510305	Bulk Materials Open Stockpiles (3-05-103), Limestone (3-05-103-05)	Tons Material Processed
Limestone Handling and Processing				
Limestone Hopper L3 to L4	28	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L4	28	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L5	28	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L6	28	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Conveyor L7	28	30510105	Bulk Materials Conveyors (3-05-101), Limestone (3-05-101-05)	Tons Material Processed
Limestone Handling and Processing				
Wet Limestone Screens and Mills	29	30599999	Other Not Defined (3-05-999), Specify in Comments Field (3-05-999-99)	Tons Product Produced

10.3 Emission Factors and Emission Rates

> The same PM/PM10 emission factors utilized in the previous Title V application for Ghent Station (citing the Midwest Research Institute) and reflected in the KyEIS system are retained for this renewal application with the exception of those for the limeston stockpile. These factors are close to what could alternatively be calculated using the methodology for aggregate handling and storage in AP42 Section 13.2.4. Control efficiencies previously referenced in prior applications are retained.

> For Emission unit 29 and 30, because the crushing and milling of limestone occures within the process building in an enclosed wet process, there are no quantifiable emissions. The emission units are listed only because it is an affected source under NSPS Subpart OOO

PM/PM10		**Uncontrolled Emission Factor**		**Uncontrolled PM/PM10 Emissions**		**Control Efficiency**	**Controlled PM/PM10 Emissions**	
Emission Unit	KyEIS Source ID#	(lb/ton)	Basis	(lb/hr)	(tpy)	(%)	(lb/hr)	(tpy)
Barge Unloading - Limestone Use								
Limestone Barge Unloading	25	0.0014	Eng. Estimate	1.4	6.1	70%	0.42	1.84
Bucket of Recvg Hopper	25	0.0127	Eng. Estimate	12.71	55.7	90%	1.27	5.57
Limestone Handling and Processing								
Limestone Hopper to L2	26	0.0014	MRI	1.4	6.1	90%	0.14	0.61
Limestone Conveyor L2 to L3	26	0.0014	MRI	1.4	6.1	90%	0.14	0.61
Limestone Conveyor L3 to Stockpile	26	0.0014	MRI	1.4	6.1	90%	0.14	0.61
Limestone Handling and Processing								
Limestone West Stockpile	27	0.000037	Eng. Estimate	0.037	0.2	70%	0.01	0.05
Limestone Handling and Processing								
Limestone Hopper L3 to L4	28	0.0014	MRI	0.77	3.4	90%	0.08	0.34
Limestone Conveyor L4	28	0.0014	MRI	0.315	1.4	90%	0.03	0.14
Limestone Conveyor L5	28	0.0014	MRI	0.315	1.4	90%	0.03	0.14
Limestone Conveyor L6	28	0.0014	MRI	0.315	1.4	90%	0.03	0.14
Limestone Conveyor L7	28	0.0014	MRI	0.315	1.4	90%	0.03	0.14
Limestone Handling and Processing								
Wet Limestone Screens and Mills	29	0.0000	Enclosed/Wet Process	0	0.0	na	na	na

No test data or vendor information is available to estimate that portion of PM emissions that will be in the PM2.5 size range or less. As PM generated is solely from material handling, it is expected that fine particulate would only make up a minor portion of total PM10. Conservatively, PM2.5 emissions are estimated as 15% of PM10 emissions.

PM2.5		Uncontrolled Emission Factor		Uncontrolled PM2.5 Emissions		Control Efficiency	Controlled PM2.5 Emissions	
Emission Unit	KyEIS Source ID#	(lb/ton)	Basis	(lb/hr)	(tpy)		(lb/hr)	(tpy)
Barge Unloading - Limestone Use								
Limestone Barge Unloading	25	0.00021	Estimated 15% of PM10	0.21	0.9	70%	0.06	0.28
Bucket of Recvg Hopper	25	0.00191	Estimated 15% of PM10	1.9065	8.4	90%	0.19	0.84
Limestone Handling and Processing								
Limestone Hopper to L2	26	0.00021	Estimated 15% of PM10	0.21	0.9	90%	0.02	0.09
Limestone Conveyor L2 to L3	26	0.00021	Estimated 15% of PM10	0.21	0.9	90%	0.02	0.09
Limestone Conveyor L3 to Stockpile	26	0.00021	Estimated 15% of PM10	0.21	0.9	90%	0.02	0.09
Limestone Handling and Processing								
Limestone West Stockpile	27	0.0000056	Estimated 15% of PM10	0.00555	0.0	70%	0.00	0.01
Limestone Handling and Processing								
Limestone Hopper L3 to L4	28	0.00021	Estimated 15% of PM10	0.1155	0.5	90%	0.01	0.05
Limestone Conveyor L4	28	0.00021	Estimated 15% of PM10	0.04725	0.2	90%	0.00	0.02
Limestone Conveyor L5	28	0.00021	Estimated 15% of PM10	0.04725	0.2	90%	0.00	0.02
Limestone Conveyor L6	28	0.00021	Estimated 15% of PM10	0.04725	0.2	90%	0.00	0.02
Limestone Conveyor L7	28	0.00021	Estimated 15% of PM10	0.04725	0.2	90%	0.00	0.02
Limestone Handling and Processing								
Wet Limestone Screens and Mills	29	0	Enclosed/Wet Process	0	0.0	na	na	na

11. Cooling Towers

> Particulate matter emissions result from the operation of cooling towers due to the presence of dissolved solids in the cooling tower water that is released through the cooling tower vent fans. As the cooling tower water moves through the air away from the vent fans, the liquid water evaporates, leaving behind solid particles in the form of particulate matter. Particulate matter emissions from cooling towers are estimated using the procedures of AP42 Section 13.4, in which PM emissions are estimated as a function of the tower flow capacity, drift loss, and total dissolved solids (TDS) in the cooling tower water.

> In the existing Title V permit, the Cooling Towers 1 and 2 are designated as insignificant activities. As part of this renewal, the Cooling Towers 1 and 2 are being redesignated as significant emission units to be consistent with how Cooling Tower 3 and 4 are represented.

11.1 Source Classification Code

SCC:	38500110
SCC Description:	Industrial Processes,Cooling Tower (3-85),Process Cooling (3-85-001), Other Not Specified (3-85-001-10)
SCC Units:	Million Gallons Cooling Water Throughput

11.2 Cooling Tower Recirculation Rates

Cooling Tower	KyEIS Source ID#	Recirculation Flow Rate (gpm)	Recirculation Flow Rate (10^6gal/hr)
Cooling Tower 1	22	191,000	11.46
Cooling Tower 2	22	197,000	11.82
Cooling Tower 3	22	172,000	10.32
Cooling Tower 4	22	172,000	10.32

11.3 Recirculation Water Total Dissolved Solids Concentrations

> The TDS content of the cooling tower water is estimated by multiplying the make-up water TDS content by the cooling tower "cycles of concentration", as noted in AP42 Section 13.4 (1/1995). "Cycles of concentration" is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter in the make-up water.

Cooling Tower	TDS in Make-up Water (ppm)	Cycles of Concentration	TDS in Recirculation Water (ppm)
Cooling Tower 1	300	4.5	1,350.0
Cooling Tower 2	419	1.8	754.2
Cooling Tower 3	419	4.6	1,927.4
Cooling Tower 4	422	4.2	1,772.4

11.4 PM Emission Factors for Cooling Towers

> PM emission factors for the cooling towers are a function of the drift loss rate and TDS concentration in the recirculation water. The design specifications for the drift eliminators on the cooling towers are listed below.

> An EPA Technical Report (600/7-79-251a, Nov 1979) noted that of the total amount of water emitted from a cooling tower vent, only 31.3% remains airborne a short distance from the vent. Therefore, the total liquid drift loss mass was adjusted by this value.

Cooling Tower	Drift Loss (gal drift/gal flow)	Drift Mass Governed by Atmospheric Dispersion	TDS in Recirculation Water (ppm)	PM Emission Factor (lb/10^6gal)
Cooling Tower 1	0.001	31.3%	1,350.0	3.5241
Cooling Tower 2	0.0000108	31.3%	754.2	0.0213
Cooling Tower 3	0.00008	31.3%	1,927.4	0.4025
Cooling Tower 4	0.00008	31.3%	1,772.4	0.3701

Sample Calculation (for Cooling Tower #3):

0.00008 gal/gal x 0.313 x 8.34 lb/gal x 1927.4/10^6 lb PM/lb x 10^6 = 0.4025 lb/10^6 gal flow

11.5 Cooling Tower PM Emission Rates

> The percentage of PM emissions that are in the PM10 size range or smaller can be estimated using the methodology presented in "Calculating Realistic PM10 Emissions from Cooling Towers", *Environmental Progress* , Volume 21, Issue 2 (April 20, 2004). In this paper, the PM10 percentage is shown as a function of the circulating water TDS. For towers with a TDS content of less than 1000 ppm, over 80% of the PM is predicted to be PM10. Based on the Ghent Station water TDS values, which are low, all cooling tower PM emissions are assumed to be in the form of PM10.

> No data is available by which the percentage of PM10 emissions in the PM2.5 size range can be reasonably estimated. PM2.5 emissions are set equal to PM10, although this simplification likely over estimates PM2.5.

	Emission Factor		Recirculation Flow Rate	**PM/PM10/PM2.5 Emissions**	
Cooling Tower	(lb10^6gal)	Basis	(10^6gal/hr)	(lb/hr)	(tpy)
Cooling Tower 1	3.5241	AP42 13.4 (1/1995)	11.46	40.386	176.890
Cooling Tower 2	0.0213	AP42 13.4 (1/1995)	11.82	0.251	1.101
Cooling Tower 3	0.4025	AP42 13.4 (1/1995)	10.32	4.154	18.194
Cooling Tower 4	0.3701	AP42 13.4 (1/1995)	10.32	3.820	16.731

Sample Calculation (for Cooling Tower #3):

0.4025 lb/10^6 gal x 10.32 10^6gal/hr = 4.1539 lb/hr

Emergency Air Compressor

> Documentation of capacity, emission factors, and emission calculations for the steam plant emergency air compressor engine.

12.1 Emission Unit Nomenclature and Capacities

> The air compressor engine was manufactured in November 2006.

> The air compressor engine is subject to NSPS Subpart IIII. Pursuant to 60.4211(e), as emergency stationary ICE, the engine can be operated for up to 100 hr/yr for maintenance checks and readiness testing. There is no limit on use of the engines in emergency situations. Annual emissions represented in the application are based on an assumed 100 hr/yr of operation.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Manufact. Date	Startup Date	Engine Rating (hp)	Annual Operating Hours
Emergency Air Compressor	34	1	11/2/2006	2010	540	100

12.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Emergency Air Compressor	34	20300101	Distillate Oil (Diesel) (2-03-001), Reciprocating (2-03-001-01)	1000 Gallons Distillate Oil (Diesel)

12.3 Diesel Fuel Properties

Diesel fuel heating value:	137,000	Btu/gal	Information from fuel supplier. Expected range is from 132,000 to 138,000 Btu/gal.
Diesel fuel density:	7.05	lb/gal	AP42 Appendix A (1/1995), pg. A-7
Maximum sulfur content:	15	ppm	Information from fuel supplier.

> The SCC for industrial diesel engines is 20200102 with units of 1000 gallons. To convert emission factors in terms of lb/MMBtu to lb/1000 gallons, the approximate fuel heating value listed above is used.

12.4 Emission Factors Used

12.41 Criteria Pollutant Emission Factors

> AP42 Section 3.3 "Gasoline and Diesel Industrial Engines" (10/1996 edition) provides emission factors for criteria air pollutants, total organic compounds, and HAPs from industrial engines. Factors are expressed in terms of lb/hp-hr and lb/MMBtu. An average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used in AP42 to convert between emission factors based on power output and heat input. This consumption value inherently assumes an engine efficiency of 36.35%. The AP42 criteria pollutant emission factors are listed below:

Brake-Specific Fuel Consumption Value:	7,000	Btu/hp-hr	AP42 Table 3.3-1 (10/1996), Footnote a
Engine efficiency assumption encompassed in this value:	36.35%	= 2,544.48 Btu/hp-hr / 7000 Btu/hp-hr	

AP42 Table 3.3-1 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NOX	0.031	4.429	14.061	606.71
CO	0.00668	0.954	3.030	130.74
SOX	0.00205	0.293	0.930	40.12
PM10	0.00220	0.314	0.998	43.06
TOC (Exhaust + Crankcase)	0.0025141	0.359	1.140	49.20

Sample Calculations (NOX): 4.429 lb/MMBtu = 0.031 lb/hp-hr / 7000 Btu/hp-hr * 1E6 Btu/MMBtu
14.061 g/hp-hr = 0.031 lb/hp-hr * 453.59 g/lb
606.71 lb/1000gal = 4.429 lb/MMBtu / 1E6 Btu/MMBtu x 137000 Btu/gal x 1000 gal / '1000gal'

> Pursuant to 40 CFR 60.4205(c), the compressor engine must meet the emission standards in Table 4 of Subpart IIII. Therefore, potential emissions from the engines for those pollutants for which standards are established have been used in lieu of those in AP42. The Subpart IIII emission factors are listed below:

NSPS Subpart IIII Standards

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NMHC + NOX	0.01720	2.457	7.8	336.55
CO	0.00573	0.819	2.6	112.18
PM	0.00088	0.126	0.4	17.26

> A separate VOC and NOX emission factor that conforms to the Subpart IIII requirements can be derived based on the ratio of the TOC to NOX factor in AP42 Table 3.3-1 (10/1996 edition).

Sum of AP42 NOX and TOC emission factors:	15.202	g/hp-hr	= 14.061 + 1.14
Ratio of TOC factor to sum of NOX and TOC factors:	0.075		= 1.14 / 15.202
Ratio of NOX factor to sum of NOX and TOC factors:	0.925		= 14.061 / 15.202

> Approximate Subpart IIII equivalent NOX and VOC factors are shown below:

Equivalent NSPS Subpart IIII Standards

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NOX	0.0159	2.272	7.215	311.31
VOC	0.0013	0.184	0.585	25.25

Sample Calculation (NOX): 7.215 g/hp-hr = 0.925 x 7.8 g/hp-hr

> To take into account the lower sulfur content of the diesel fuel burned, for purposes of representing potential SO2 emissions from the engines, the factor in AP42 Table 3.4-1 (Large Stationary Diesel Engines, 10/1996 edition) is used as shown below. This factor expresses SO2 as a function of sulfur

AP42 Emission Factor for SO2 based on sulfur content:	1.01 S	lb/MMBtu (where S is the sulfur content in %)
Assumed maximum sulfur content in diesel oil:	15	ppm
Equivalent expressed in terms of percent:	0.0015	%

SO2 Emissions Based on Sulfur Content

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
SO2	0.0000106	0.001515	0.00481	0.2076

Sample Calculation (SO2): 0.001515 lb/MMBtu = 1.01 x 0.0015%

> A comparison of the Subpart IIII emission factors with those in AP42 Table 3.3-1 (10/1996 edition) is provided in the following table. The CO factor from Subpart IIII is only slightly less than AP42. The NOX, PM10 and VOC factors are about half of AP42. The SO2 factor, based on 15 ppm, is well below the AP42 factor. For emission calculations presented in this application, the Subpart IIII factors are used.

	AP42 (g/hp-hr)	Subpart IIII (g/hp-hr)	Ratio of Subpart IIII to AP42
NOX	14.0613	7.215	0.513
CO	3.0300	2.600	0.858
SO2	0.9299	0.0048	0.005
PM10	0.9979	0.400	0.401
VOC	1.1404	0.585	0.513

> All PM emissions are conservatively assumed to be in the form of PM2.5. Thus, PM2.5 emissions are set equal to PM10.

12.42 GHG Emission Factors

> GHG pollutant emissions Factor are based on emission factors obtained from 40 CFR 98 Subpart C, Table C-1 and C-2. Factors are expressed as kg/MMBtu.

Pollutant	kg/MMBtu	lb/MMBtu	lb/1000gal
CO2	73.96	163.05	22338.15
CH4	3.00E-03	6.61E-03	0.906
N2O	6.00E-04	1.32E-03	0.181
CO2e	74.209	1.64E+02	22413.359

12.43 HAP Emission Factors

> Emission factors provided in AP42 Table 3.3-2 (10/1996 edition) are used to estimate emissions of HAPs from the engines. Factors are expressed in terms of lb/MMBtu. As with the criteria pollutants, an average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used to convert between emission factors based on power output and heat input.

AP42 Table 3.3-2 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
Acetaldehyde	5.37E-06	7.67E-04	2.44E-03	0.105
Acrolein	6.48E-07	9.25E-05	2.94E-04	0.013
Benzene	6.53E-06	9.33E-04	2.96E-03	0.128
1,3-Butadiene	2.74E-07	3.91E-05	1.24E-04	0.005
Formaldehyde	8.26E-06	1.18E-03	3.75E-03	0.162
Naphthalene	5.94E-07	8.48E-05	2.69E-04	0.012
Toluene	2.86E-06	4.09E-04	1.30E-03	0.056
Xylenes	2.00E-06	2.85E-04	9.05E-04	0.039

12.4 Summary of Emissions from Emergency Air Compressor Engine

Engine Rating:	540	hp	
Equivalent heat input rate:	3.78	MMBtu/hr	= 540 hp x 7000 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate:	0.02759	1000gal/hr	= 3.78 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	311.31	Subpart IIII- 60.4205(c)	8.59	0.43
CO	112.18	Subpart IIII- 60.4205(c)	3.10	0.15
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00573	0.00029
PM	17.26	Subpart IIII- 60.4205(c)	0.476	0.024
PM10	17.26	Subpart IIII- 60.4205(c)	0.476	0.024
PM2.5	17.26	Equal to PM10	0.476	0.024
VOC	25.25	Subpart IIII- 60.4205(c)	0.697	0.035
CO2	22338.15	40 CFR 98, Table C-1	616.34	30.82
CH4	0.91	40 CFR 98, Table C-2	0.025	0.001
N2O	0.18	40 CFR 98, Table C-3	0.005	0.0003
CO2e	22413.36	40 CFR 98, Table A-2	618.41	30.92
Acetaldehyde	0.105	AP42 Table 3.3-2	2.90E-03	1.45E-04
Acrolein	0.013	AP42 Table 3.3-2	3.50E-04	1.75E-05
Benzene	0.128	AP42 Table 3.3-2	3.53E-03	1.76E-04
1,3-Butadiene	0.005	AP42 Table 3.3-2	1.48E-04	7.39E-06
Formaldehyde	0.162	AP42 Table 3.3-2	4.46E-03	2.23E-04
Naphthalene	0.012	AP42 Table 3.3-2	3.21E-04	1.60E-05
Toluene	0.056	AP42 Table 3.3-2	1.55E-03	7.73E-05
Xylenes	0.039	AP42 Table 3.3-2	1.08E-03	5.39E-05

13. Fugitive PM Emissions From Haul Trucks and Heavy Equipment

PM emissions due to transporting ash and gypsum via trucks and front end loaders, both from the site and at the landfill, are documented in this section.
Fugitive PM emissions due to vehicle movement on plant roads are estimated using methodologies of AP42 Section 13.2.1 for paved roads (1/2011 Edition) and AP42 Section 13.2.2 for unpaved roads (11/2006 Edition).

This was originally permitted with empty wt. tons of 71, full wt. tons 171 and load tons as 100 (100 ton trucks). The truck sizes have changed to 40 or 60 ton trucks. So for the 40 ton truck, empty wt. is 36.5, total 80 and hauled 43.4. For the 60 ton truck, empty wt. is 44, total 104 and hauled 60. For the emission estimates the 40 ton truck has been used to display the max potential emissions.

13.1 Weights for Transport Equipment Used in Emission Calculations

Transport Vehicle Type	Empty Weight (tons)	Full Weight (tons)	Material Carried per Load (tons)
CCR Landfill Haul Trucks for Mixed Materials	36.5	80	43.5
Front End Loaders	27.7	33.7	6

13.2 Maximum Volume of Material Transported in Each Route

Transport Vehicle Type	Maximum Volume (ton/yr)	Basis
Total volume of bottom ash processed	185,000	
Total volume of fly ash processed	770,000	
Total volume of gypsum processed	1,340,000	
Mixed materials processed through truck loading station at landfill	2,295,000	= 185000 ton/yr + 770000 ton/yr + 1340000 ton/yr

13.3 Vehicle Miles Traveled Per Year for Each Truck/Vehicle Route

Transport Operation	Maximum Annual Volume (ton/yr)	Annual Trips (trips/yr)	Paved Distance Per Trip (mi)	Unpaved Distance Per Trip (mi)	Paved Distance Traveled (VMT/yr)	Unpaved Distance Traveled (VMT/yr)
CCR Landfill Operations (Haul Trucks)						
Travel of Heavy Equipment In/Around Landfill		365	0.0	1.0	0	365
Full Mixed Waste Trucks from Truck Loading Station TL-12 to Active Area of Landfill	2,295,000	52,759	0.6	0.15	31,655	7,914
Empty Mixed Waste Trucks from Active Area of Landfill to Truck Loading Station TL-12		52,759	0.6	0.15	31,655	7,914

13.4 Unpaved Road Emission Factors

The methodology presented in AP-42 Section 13.2.2 (11/2006) is used to derive fugitive PM emission factors for truck traffic on unpaved road surfaces within the plant. The following emission factor equation applies: (Equations 1a and 2 in AP42 13.2.2)

$E\ (lb/VMT) = [(k)(s/12)^a(W/3)^b]((365-P)/365)$

where:	PM	PM10	PM2.5	
k = Particle Size Multiplier (lb/VMT)	4.9	1.5	0.15	AP42 Table 13.2.2-2
a = Constant	0.7	0.9	0.9	AP42 Table 13.2.2-2
b = Constant	0.45	0.45	0.45	AP42 Table 13.2.2-2

s = Surface Material Silt Content (%)	3.9	Value used by EPA in the 1999 National Emissions Inventory for unpaved roads in Kentucky.
P = Days with Precipitation	129	Average of 2005-2009 surface data at NWS Station 72421 (CVG Airport in Boone County).

A control efficiency is applied to account for road maintenance and dust suppression methods such as periodic watering.

Transport Operation	Truck Weight (tons)	Control Efficiency (%)	PM Factor (lb/VMT)	PM10 Factor (lb/VMT)	PM2.5 Factor (lb/VMT)
CCR Landfill Operations (Haul Trucks)					
Travel of Heavy Equipment In/Around Landfill	33.7	70%	1.285	0.314	0.031
Full Mixed Waste Trucks from Truck Loading Station TL-12 to Active Area of Landfill	80	70%	1.896	0.464	0.046
Empty Mixed Waste Trucks from Active Area of Landfill to Truck Loading Station TL-12	36.5	70%	1.332	0.326	0.033

13.5 Paved Road Emission Factors

The methodology presented in AP-42 Section 13.2.1 (1/2011) was used to derive fugitive PM emission factors for truck traffic on paved road surfaces within the plant. The following emission factor equation applies: (Equation 2 in AP43 13.2.1)

$E\ (lb/VMT) = (k)(sL/2)^{0.91}(W)^{1.02}(1-P/4N)$

where:	PM	PM10	PM2.5	
k = Particle Size Multiplier (lb/VMT)	0.011	0.0022	0.00054	AP42 Table 13.2.1-1

sL = Silt Loading (g/m2)	3	AP42 Table 13.2.1-3 (1/2011); Selected based on range of values for quarries in Table 13.2.1-3.
P = Days with Precipitation	129	Average of 2005-2009 surface data at NWS Station 72421 (CVG Airport in Boone County).
N = Number of days in averaging period	365	Days per year

A control efficiency is applied to account for road maintenance and dust suppression methods such as periodic watering.

Transport Operation	Truck Weight (tons)	Control Efficiency (%)	PM Factor (lb/VMT)	PM10 Factor (lb/VMT)	PM2.5 Factor (lb/VMT)
CCR Landfill Operations (Haul Trucks) (EU ID#: 35)					
Travel of Heavy Equipment In/Around Landfill	33.7	70%	0.157	0.031	0.008
Full Mixed Waste Trucks from Truck Loading Station TL-12 to Active Area of Landfill	80	70%	0.380	0.076	0.019
Empty Mixed Waste Trucks from Active Area of Landfill to Truck Loading Station TL-12	36.5	70%	0.171	0.034	0.008

13.6 Annual Fugitive PM Emissions Per Route Segment

Transport Operation	Paved Distance Traveled (VMT/yr)	Unpaved Distance Traveled (VMT/yr)	PM (tpy)	PM10 (tpy)	PM2.5 (tpy)
CCR Landfill Operations (Haul Trucks)					
Travel of Heavy Equipment In/Around Landfill	0	365	0.2346	0.0573	0.0057
Full Mixed Waste Trucks from Truck Loading Station TL-12 to Active Area of Landfill	31,655	7,914	13.5178	3.0375	0.4787
Empty Mixed Waste Trucks from Active Area of Landfill to Truck Loading Station TL-12	31,655	7,914	7.9726	1.8291	0.2615

13.7 Consolidated Annual Fugitive PM Emissions Per Category

Emission Unit	PM (tpy)	PM10 (tpy)	PM2.5 (tpy)	Total Material Processed	PM Factor (lb/ 1000ton)	PM10 Factor (lb/ 1000ton)	PM2.5 Factor (lb/ 1000ton)
CCRLandfill Operations (Haul Trucks)	21.72	4.92	0.75	2,295,000	18.93246	4.29098	0.65003

14. Emergency CI Engines

> Documentation of capacities, emission factors, and emission calculations for pre NSPS Subpart IIII CI emergency generators.

14.1 Emission Unit Nomenclature and Capacities

> Emissions represented in the application are based on an assumed 100 hr/yr of operation for maintenance and readiness testing of the engines.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Engine Rating (hp)	Annual Operating Hours
Unit 3 Emergency Engine	36	1	1/1/1980	755	100
Unit 4 Emergency Engine	37	1	1/1/1983	755	100

14.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Unit 3 Emergency Engine	36	20200401	Large Bore Engine (2-02-004), Diesel (2-02-004-01)	1000 Gallons Diesel Burned
Unit 4 Emergency Engine	37	20200401	Large Bore Engine (2-02-004), Diesel (2-02-004-01)	1000 Gallons Diesel Burned

14.3 Diesel Fuel Properties

Diesel fuel heating value:	137,000	Btu/gal	Information from fuel supplier. Expected range is from 132,000 to 138,000 Btu/gal.
Diesel fuel density:	7.05	lb/gal	AP42 Appendix A (1/1995), pg. A-7
Maximum sulfur content:	15	ppm	Information from fuel supplier.

> The SCC for industrial diesel engines is 20200102 with units of 1000 gallons. To convert emission factors in terms of lb/MMBtu to lb/1000 gallons, the approximate fuel heating value listed above is used.

14.4 Emission Factors Used

14.41 Criteria Pollutant Emission Factors

> AP42 Section 3.4 "Large Stationary Diesel and All Stationary Dual-Fuel Engines" (10/1996 edition) provides emission factors for criteria air pollutants, total organic compounds, and HAPs from industrial engines. Factors are expressed in terms of lb/hp-hr and lb/MMBtu. An average brake-specific fuel consumption value of 7,5000 Btu/hp-hr is used in AP42 to convert between emission factors based on power output and heat input. This consumption value inherently assumes an engine efficiency of 36.35%. The AP42 criteria pollutant emission factors are listed below:

Brake-Specific Fuel Consumption Value: 7,500 Btu/hp-hr AP42 Table 3.4-1 (10/1996), Footnote a
Engine efficiency assumption encompassed in this value: 36.35% = 2,544.48 Btu/hp-hr / 7500 Btu/hp-hr

AP42 Table 3.4-1 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NOX	0.024	3.200	10.886	438.40
CO	0.00550	0.733	2.495	100.47
SOX	0.00809	1.079	3.670	147.78
PM10	0.00070	0.093	0.318	12.79
TOC (Exhaust + Crankcase)	0.0007050	0.094	0.320	12.88

Sample Calculations (NOX): 3.2 lb/MMBtu = 0.024 lb/hp-hr / 7500 Btu/hp-hr * 1E6 Btu/MMBtu
10.886 g/hp-hr = 0.024 lb/hp-hr * 453.59 g/lb
438.4 lb/1000gal = 3.2 lb/MMBtu / 1E6 Btu/MMBtu x 137000 Btu/gal x 1000 gal / '1000gal'

> To take into account the lower sulfur content of the diesel fuel burned, for purposes of representing potential SO2 emissions from the engines, the factor in AP42 Table 3.4-1 (Large Stationary Diesel Engines, 10/1996 edition) is used as shown below. This factor expresses SO2 as a function

AP42 Emission Factor for SO2 based on sulfur content: 1.01 S lb/MMBtu (where S is the sulfur content in %)
Assumed maximum sulfur content in diesel oil: 15 ppm
Equivalent expressed in terms of percent: 0.0015 %

SO2 Emissions Based on Sulfur Content

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
SO2	0.0000114	0.001515	0.00515	0.2076

Sample Calculation (SO2): 0.001515 lb/MMBtu = 1.01 x 0.0015%

> All PM emissions are conservatively assumed to be in the form of PM2.5. Thus, PM2.5 emissions are set equal to PM10.

14.42 GHG Emission Factors

> Emission Factor obtained from 40 CFR 98 Subpart C, Table C-1. Factors are expressed as kg/MMBtu

Pollutant	kg/MMBtu	lb/MMBtu	lb/1000gal
CO2	73.96	163.05	22338.15
CH4	3.00E-03	6.61E-03	0.91
N2O	6.00E-04	1.32E-03	0.18
CO2e	74.209	1.64E+02	22413.36

14.43 HAP Emission Factors

> Emission factors provided in AP42 Table 3.4-3 (10/1996 edition) are used to estimate emissions of HAPs from the engines. Factors are expressed in terms of lb/MMBtu. As with the criteria pollutants, an average brake-specific fuel consumption value of 7,500 Btu/hp-hr is used to convert between emission factors based on power output and heat input.

AP42 Table 3.4-3 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
Acetaldehyde	1.89E-07	2.52E-05	8.57E-05	0.003
Acrolein	5.91E-08	7.88E-06	2.68E-05	0.001
Benzene	5.82E-06	7.76E-04	2.64E-03	0.106
1,3-Butadiene	2.93E-07	3.91E-05	1.33E-04	0.005
Formaldehyde	5.92E-07	7.89E-05	2.68E-04	0.011
Naphthalene	9.75E-07	1.30E-04	4.42E-04	0.018
Toluene	2.11E-06	2.81E-04	9.56E-04	0.038
Xylenes	1.45E-06	1.93E-04	6.57E-04	0.026

14.5 Emissions for Each Engine

14.51 Summary of Emissions from: Unit 3 Emergency Engine (EU36)

Engine Rating: 755 hp
Equivalent heat input rate: 5.6625 MMBtu/hr = 755 hp x 7500 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate: 0.04133 1000gal/hr = 5.663 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	438.40	AP42 Table 3.4-1	18.12	0.91
CO	100.47	AP42 Table 3.4-1	4.15	0.21
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00858	0.00043
PM	12.79	AP42 Table 3.4-1	0.529	0.026
PM10	12.79	AP42 Table 3.4-1	0.529	0.026
PM2.5	12.79	Equal to PM10	0.529	0.026
VOC	12.88	AP42 Table 3.3-1	0.532	0.027
CO2	22338.15	Subpart C, Table C-1	923.283	46.164
CH4	0.91	Subpart C, Table C-2	0.037	0.002
N2O	0.18	Subpart C, Table C-2	0.007	0.000
CO2e	22413.36	Subpart A, Table A-2	926.392	46.320
Acetaldehyde	0.003	AP42 Table 3.4-3	1.43E-04	7.13E-06
Acrolein	0.001	AP42 Table 3.4-3	4.46E-05	2.23E-06
Benzene	0.106	AP42 Table 3.4-3	4.39E-03	2.20E-04
1,3-Butadiene	0.005	AP42 Table 3.4-3	2.21E-04	1.11E-05
Formaldehyde	0.011	AP42 Table 3.4-3	4.47E-04	2.23E-05
Naphthalene	0.018	AP42 Table 3.4-3	7.36E-04	3.68E-05
Toluene	0.038	AP42 Table 3.4-3	1.59E-03	7.96E-05
Xylenes	0.026	AP42 Table 3.4-3	1.09E-03	5.46E-05

14.52 Summary of Emissions from: Unit 4 Emergency Engine (EU37)

Engine Rating: 755 hp
Equivalent heat input rate: 5.6625 MMBtu/hr = 755 hp x 7500 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate: 0.04133 1000gal/hr = 5.663 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	438.40	AP42 Table 3.4-1	18.12	0.91
CO	100.47	AP42 Table 3.4-1	4.15	0.21
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00858	0.00043
PM	12.79	AP42 Table 3.4-1	0.53	0.03
PM10	12.79	AP42 Table 3.4-1	0.53	0.03
PM2.5	12.79	Equal to PM10	0.53	0.03
VOC	12.88	AP42 Table 3.3-1	0.53	0.03
CO2	22338.15	Subpart C, Table C-1	923.28	46.16
CH4	0.91	Subpart C, Table C-2	0.04	0.00
N2O	0.18	Subpart C, Table C-2	0.01	0.00
CO2e	22413.36	Subpart A, Table A-2	926.39	46.32
Acetaldehyde	0.003	AP42 Table 3.4-3	1.43E-04	7.13E-06
Acrolein	0.001	AP42 Table 3.4-3	4.46E-05	2.23E-06
Benzene	0.106	AP42 Table 3.4-3	4.39E-03	2.20E-04
1,3-Butadiene	0.005	AP42 Table 3.4-3	2.21E-04	1.11E-05
Formaldehyde	0.011	AP42 Table 3.4-3	4.47E-04	2.23E-05
Naphthalene	0.018	AP42 Table 3.4-3	7.36E-04	3.68E-05
Toluene	0.038	AP42 Table 3.4-3	1.59E-03	7.96E-05
Xylenes	0.026	AP42 Table 3.4-3	1.09E-03	5.46E-05

15. Emergency CI Engines and Fire Pump

> Documentation of capacities, emission factors, and emission calculations for pre NSPS Subpart IIII CI emergency generators and fire pump

15.1 Emission Unit Nomenclature and Capacities

> Annual emissions represented in the application are based on an assumed 100 hr/yr of operation for maintenance and readiness testing of the engines.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Engine Rating (hp)	Annual Operating Hours
Unit 1 Emergency Engine	38	1	1972	505	100
Unit 2 Emergency Engine	39	1	1976	505	100
Ghent Station Fire Pump	40	1	1972	340	100

15.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Unit 1 Emergency Engine	38	20200102	Distillate Oil (Diesel) (2-02-001), Reciprocating (2-02-001-02)	1000 Gallons Distillate Oil
Unit 2 Emergency Engine	39	20200102	Distillate Oil (Diesel) (2-02-001), Reciprocating (2-02-001-02)	1000 Gallons Distillate Oil
Ghent Station Fire Pump	40	20200102	Distillate Oil (Diesel) (2-02-001), Reciprocating (2-02-001-02)	1000 Gallons Distillate Oil

15.3 Diesel Fuel Properties

Diesel fuel heating value:	137,000	Btu/gal	Information from fuel supplier. Expected range is from 132,000 to 138,000 Btu/gal.
Diesel fuel density:	7.05	lb/gal	AP42 Appendix A (1/1995), pg. A-7
Maximum sulfur content:	15	ppm	Information from fuel supplier.

> The SCC for industrial diesel engines is 20200102 with units of 1000 gallons. To convert emission factors in terms of lb/MMBtu to lb/1000 gallons, the approximate fuel heating value listed above is used.

15.4 Emission Factors Used

15.41 Criteria Pollutant Emission Factors

> AP42 Section 3.3 "Gasoline and Diesel Industrial Engines" (10/1996 edition) provides emission factors for criteria air pollutants, total organic compounds, and HAPs from industrial engines. Factors are expressed in terms of lb/hp-hr and lb/MMBtu. An average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used in AP42 to convert between emission factors based on power output and heat input. This consumption value inherently assumes an engine efficiency of 36.35%. The AP42 criteria pollutant emission factors are listed below:

Brake-Specific Fuel Consumption Value: 7,000 Btu/hp-hr AP42 Table 3.3-1 (10/1996), Footnote a
Engine efficiency assumption encompassed in this value: 36.35% = 2,544.48 Btu/hp-hr / 7000 Btu/hp-hr

AP42 Table 3.3-1 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NOX	0.031	4.429	14.061	606.71
CO	0.00668	0.954	3.030	130.74
SOX	0.00205	0.293	0.930	40.12
PM10	0.00220	0.314	0.998	43.06
TOC (Exhaust + Crankcase)	0.0025141	0.359	1.140	49.20

Sample Calculations (NOX): 4.429 lb/MMBtu = 0.031 lb/hp-hr / 7000 Btu/hp-hr * 1E6 Btu/MMBtu
14.061 g/hp-hr = 0.031 lb/hp-hr * 453.59 g/lb
606.71 lb/1000gal = 4.429 lb/MMBtu / 1E6 Btu/MMBtu x 137000 Btu/gal x 1000 gal / '1000gal'

> To take into account the lower sulfur content of the diesel fuel burned, for purposes of representing potential SO2 emissions from the engines, the factor in AP42 Table 3.4-1 (Large Stationary Diesel Engines, 10/1996 edition) is used as shown below. This factor expresses SO2 as a function of

AP42 Emission Factor for SO2 based on sulfur content: 1.01 S lb/MMBtu (where S is the sulfur content in %)
Assumed maximum sulfur content in diesel oil: 15 ppm
Equivalent expressed in terms of percent: 0.0015 %

SO2 Emissions Based on Sulfur Content

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
SO2	0.0000106	0.001515	0.00481	0.2076

Sample Calculation (SO2): 0.001515 lb/MMBtu = 1.01 x 0.0015%

> All PM emissions are conservatively assumed to be in the form of PM2.5. Thus, PM2.5 emissions are set equal to PM10.

15.42 GHG Emission Factors

> GHG pollutant emissions Factor are based on emission factors obtained from 40 CFR 98 Subpart C, Table C-1 and C-2. Factors are expressed as kg/MMBtu.

Pollutant	kg/MMBtu	lb/MMBtu	lb/1000gal
CO2	73.96	163.05	22338.15
CH4	3.00E-03	6.61E-03	0.906
N2O	6.00E-04	1.32E-03	0.181
CO2e	74.209	1.64E+02	22413.359

15.43 HAP Emission Factors

> Emission factors provided in AP42 Table 3.3-2 (10/1996 edition) are used to estimate emissions of HAPs from the engines. Factors are expressed in terms of lb/MMBtu. As with the criteria pollutants, an average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used to convert between emission factors based on power output and heat input.

AP42 Table 3.3-2 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
Acetaldehyde	5.37E-06	7.67E-04	2.44E-03	0.105
Acrolein	6.48E-07	9.25E-05	2.94E-04	0.013
Benzene	6.53E-06	9.33E-04	2.96E-03	0.128
1,3-Butadiene	2.74E-07	3.91E-05	1.24E-04	0.005
Formaldehyde	8.26E-06	1.18E-03	3.75E-03	0.162
Naphthalene	5.94E-07	8.48E-05	2.69E-04	0.012
Toluene	2.86E-06	4.09E-04	1.30E-03	0.056
Xylenes	2.00E-06	2.85E-04	9.05E-04	0.039

15.5 Emissions for Each Engine

15.51 Summary of Emissions from: Unit 1 Emergency Engine (EU38)

Engine Rating:	505	hp	
Equivalent heat input rate:	3.535	MMBtu/hr	= 505 hp x 7000 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate:	0.02580	1000gal/hr	= 3.535 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000g

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	606.71	AP42 Table 3.3-1	15.66	0.78
CO	130.74	AP42 Table 3.3-1	3.37	0.17
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00536	0.00027
PM	43.06	AP42 Table 3.3-1	1.111	0.056
PM10	43.06	AP42 Table 3.3-1	1.111	0.056
PM2.5	43.06	Equal to PM10	1.111	0.056
VOC	49.20	AP42 Table 3.3-1	1.270	0.063
CO2	22338.15	40 CFR 98, Table C-1	576.390	28.819
CH4	0.91	40 CFR 98, Table C-2	0.023	0.001
N2O	0.18	40 CFR 98, Table C-3	0.005	0.000
CO2e	22413.36	40 CFR 98, Table A-2	578.330	28.917
Acetaldehyde	0.105	AP42 Table 3.3-2	2.71E-03	1.36E-04
Acrolein	0.013	AP42 Table 3.3-2	3.27E-04	1.63E-05
Benzene	0.128	AP42 Table 3.3-2	3.30E-03	1.65E-04
1,3-Butadiene	0.005	AP42 Table 3.3-2	1.38E-04	6.91E-06
Formaldehyde	0.162	AP42 Table 3.3-2	4.17E-03	2.09E-04
Naphthalene	0.012	AP42 Table 3.3-2	3.00E-04	1.50E-05
Toluene	0.056	AP42 Table 3.3-2	1.45E-03	7.23E-05
Xylenes	0.039	AP42 Table 3.3-2	1.01E-03	5.04E-05

15.52 Summary of Emissions from: Unit 2 Emergency Engine (EU39)

Engine Rating: 505 hp
Equivalent heat input rate: 3.535 MMBtu/hr = 505 hp x 7000 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate: 0.02580 1000gal/hr = 3.535 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000g

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	606.71	AP42 Table 3.3-1	15.66	0.78
CO	130.74	AP42 Table 3.3-1	3.37	0.17
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00536	0.00027
PM	43.06	AP42 Table 3.3-1	1.11	0.06
PM10	43.06	AP42 Table 3.3-1	1.11	0.06
PM2.5	43.06	Equal to PM10	1.11	0.06
VOC	49.20	AP42 Table 3.3-1	1.27	0.06
CO2	22338.15	40 CFR 98, Table C-1	576.39	28.82
CH4	0.91	40 CFR 98, Table C-3	0.02	0.00
N2O	0.18	40 CFR 98, Table C-2	0.00	0.00
CO2e	22413.36	40 CFR 98, Table A-2	578.33	28.92
Acetaldehyde	0.105	AP42 Table 3.3-2	2.71E-03	1.36E-04
Acrolein	0.013	AP42 Table 3.3-2	3.27E-04	1.63E-05
Benzene	0.128	AP42 Table 3.3-2	3.30E-03	1.65E-04
1,3-Butadiene	0.005	AP42 Table 3.3-2	1.38E-04	6.91E-06
Formaldehyde	0.162	AP42 Table 3.3-2	4.17E-03	2.09E-04
Naphthalene	0.012	AP42 Table 3.3-2	3.00E-04	1.50E-05
Toluene	0.056	AP42 Table 3.3-2	1.45E-03	7.23E-05
Xylenes	0.039	AP42 Table 3.3-2	1.01E-03	5.04E-05

15.53 Summary of Emissions from: Ghent Station Fire Pump (EU40)

Engine Rating: 340 hp
Equivalent heat input rate: 2.38 MMBtu/hr = 340 hp x 7000 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate: 0.01737 1000gal/hr = 2.38 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000ga

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	606.71	AP42 Table 3.3-1	10.54	0.53
CO	130.74	AP42 Table 3.3-1	2.27	0.11
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00361	0.00018
PM	43.06	AP42 Table 3.3-1	0.748	0.037
PM10	43.06	AP42 Table 3.3-1	0.75	0.04
PM2.5	43.06	Equal to PM10	0.75	0.04
VOC	49.20	AP42 Table 3.3-1	0.85	0.04
CO2	22338.15	40 CFR 98, Table C-1	388.06	19.40
CH4	0.91	40 CFR 98, Table C-2	0.02	0.00
N2O	0.18	40 CFR 98, Table C-3	0.00	0.00
CO2e	22413.36	40 CFR 98, Table A-2	389.37	19.47
Acetaldehyde	0.105	AP42 Table 3.3-2	1.83E-03	9.13E-05
Acrolein	0.013	AP42 Table 3.3-2	2.20E-04	1.10E-05
Benzene	0.128	AP42 Table 3.3-2	2.22E-03	1.11E-04
1,3-Butadiene	0.005	AP42 Table 3.3-2	9.31E-05	4.65E-06
Formaldehyde	0.162	AP42 Table 3.3-2	2.81E-03	1.40E-04
Naphthalene	0.012	AP42 Table 3.3-2	2.02E-04	1.01E-05
Toluene	0.056	AP42 Table 3.3-2	9.73E-04	4.87E-05
Xylenes	0.039	AP42 Table 3.3-2	6.78E-04	3.39E-05

16. Non-Emergency CI Certified Tier 4 Engine

> Documentation of capacities, emission factors, and emission calculations for NSPS Subpart IIII CI non-emergency generator and EPA / Tier 4 Stds.

16.1 Emission Unit Nomenclature and Capacities

> Annual emissions represented in the application are based on an assumed 8760 hr/yr of operation for maintenance and readiness testing of the engines.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Engine Rating (hp)	Annual Operating Hours
Non-Emergency Diesel Gen Engine	41	1	2013	53	8760

16.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Non-Emergency Diesel Gen Engine	41	20200102	Distillate Oil (Diesel) (2-02-001), Reciprocating (2-02-001-02)	1000 Gallons Distillate Oil

16.3 Diesel Fuel Properties

Diesel fuel heating value:	137,000	Btu/gal	Information from fuel supplier. Expected range is from 132,000 to 138,000 Btu/gal.
Diesel fuel density:	7.05	lb/gal	AP42 Appendix A (1/1995), pg. A-7
Maximum sulfur content:	15	ppm	Information from fuel supplier.

> The SCC for industrial diesel engines is 20200102 with units of 1000 gallons. To convert emission factors in terms of lb/MMBtu to lb/1000 gallons, the approximate fuel heating value listed above is used.

16.4 Emission Factors Used

16.41 Criteria Pollutant Emission Factors

> AP42 Section 3.3 "Gasoline and Diesel Industrial Engines" (10/1996 edition) provides emission factors for criteria air pollutants, total organic compounds, and HAPs from industrial engines. Factors are expressed in terms of lb/hp-hr and lb/MMBtu. An average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used in AP42 to convert between emission factors based on power output and heat input. This consumption value inherently assumes an engine efficiency of 36.35%. The AP42 criteria pollutant emission factors are listed below:

Brake-Specific Fuel Consumption Value: 7,000 Btu/hp-hr AP42 Table 3.3-1 (10/1996), Footnote a
Engine efficiency assumption encompassed in this value: 36.35% = 2,544.48 Btu/hp-hr / 7000 Btu/hp-hr

AP42 Table 3.3-1 Emission Factors and/or Tier 4 EPA Stds

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal				
NOX	0.0077	1.101	3.5	150.88	0.031	4.429	14.061	#####
CO	0.00815	1.164	3.7	159.50	0.00668	0.954	3.030	#####
SOX	0.00205	0.293	0.930	40.12	0.00205	0.293	0.930	40.12
PM10	0.00220	0.314	0.998	43.06	0.00220	0.314	0.998	43.06
TOC (Exhaust + Crankcase)	0.0025141	0.359	1.140	49.20	0.0025141	0.359	1.140	49.20

Sample Calculations (NOX): 1.101 lb/MMBtu = 0.00770925110132159 lb/hp-hr / 7000 Btu/hp-hr * 1E6 Btu/MMBtu
3.5 g/hp-hr = 0.00770925110132159 lb/hp-hr * 453.59 g/lb
150.88 lb/1000gal = 1.101 lb/MMBtu / 1E6 Btu/MMBtu x 137000 Btu/gal x 1000 gal / '1000gal'

> To take into account the lower sulfur content of the diesel fuel burned, for purposes of representing potential SO2 emissions from the engines, the factor in AP42 Table 3.4-1 (Large Stationary Diesel Engines, 10/1996 edition) is used as shown below. This factor expresses SO2 as a function of

AP42 Emission Factor for SO2 based on sulfur content: 1.01 S lb/MMBtu (where S is the sulfur content in %)
Assumed maximum sulfur content in diesel oil: 15 ppm
Equivalent expressed in terms of percent: 0.0015 %

SO2 Emissions Based on Sulfur Content

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
SO2	0.0000106	0.001515	0.00481	0.2076

Sample Calculation (SO2): 0.001515 lb/MMBtu = 1.01 x 0.0015%

> All PM emissions are conservatively assumed to be in the form of PM2.5. Thus, PM2.5 emissions are set equal to PM10.

16.42 GHG Emission Factors

> GHG pollutant emissions Factor are based on emission factors obtained from 40 CFR 98 Subpart C, Table C-1 and C-2. Factors are expressed as kg/MMBtu.

Pollutant	kg/MMBtu	lb/MMBtu	lb/1000gal
CO2	73.96	163.05	22338.15
CH4	3.00E-03	6.61E-03	0.906
N2O	6.00E-04	1.32E-03	0.181
CO2e	74.209	1.64E+02	22413.359

16.43 HAP Emission Factors

> Emission factors provided in AP42 Table 3.3-2 (10/1996 edition) are used to estimate emissions of HAPs from the engines. Factors are expressed in terms of lb/MMBtu. As with the criteria pollutants, an average brake-specific fuel consumption value of 7,000 Btu/hp-hr is used to convert between emission factors based on power output and heat input.

AP42 Table 3.3-2 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
Acetaldehyde	5.37E-06	7.67E-04	2.44E-03	0.105
Acrolein	6.48E-07	9.25E-05	2.94E-04	0.013
Benzene	6.53E-06	9.33E-04	2.96E-03	0.128
1,3-Butadiene	2.74E-07	3.91E-05	1.24E-04	0.005
Formaldehyde	8.26E-06	1.18E-03	3.75E-03	0.162
Naphthalene	5.94E-07	8.48E-05	2.69E-04	0.012
Toluene	2.86E-06	4.09E-04	1.30E-03	0.056
Xylenes	2.00E-06	2.85E-04	9.05E-04	0.039

16.5 Emissions for Each Engine

16.51 Summary of Emissions from: Non-Emergency Diesel Gen Engine (EU41)

Engine Rating:	53	hp	
Equivalent heat input rate:	0.371	MMBtu/hr	= 53 hp x 7000 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate:	0.00271	1000gal/hr	= 0.371 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	150.88	EPA Tier 4 Data	0.41	1.79
CO	159.50	EPA Tier 4 Data	0.43	1.89
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00056	0.00246
PM	43.06	AP42 Table 3.3-1	0.117	0.511
PM10	43.06	AP42 Table 3.3-1	0.117	0.511
PM2.5	43.06	Equal to PM10	0.117	0.511
VOC	49.20	AP42 Table 3.3-1	0.133	0.584
CO2	22338.15	40 CFR 98, Table C-1	60.492	264.957
CH4	0.91	40 CFR 98, Table C-2	0.002	0.011
N2O	0.18	40 CFR 98, Table C-3	0.000	0.002
CO2e	22413.36	40 CFR 98, Table A-2	60.696	265.849
Acetaldehyde	0.105	AP42 Table 3.3-2	2.85E-04	1.25E-03
Acrolein	0.013	AP42 Table 3.3-2	3.43E-05	1.50E-04
Benzene	0.128	AP42 Table 3.3-2	3.46E-04	1.52E-03
1,3-Butadiene	0.005	AP42 Table 3.3-2	1.45E-05	6.35E-05
Formaldehyde	0.162	AP42 Table 3.3-2	4.38E-04	1.92E-03
Naphthalene	0.012	AP42 Table 3.3-2	3.15E-05	1.38E-04
Toluene	0.056	AP42 Table 3.3-2	1.52E-04	6.65E-04
Xylenes	0.039	AP42 Table 3.3-2	1.06E-04	4.63E-04

Units 42 and 43 Emergency Diesel Engines

> Documentation of capacities, emission factors, and emission calculations for pre NSPS Subpart IIII CI emergency generators.

17.1 Emission Unit Nomenclature and Capacities

> Emissions represented in the application are based on an assumed 100 hr/yr of operation for maintenance and readiness testing of the engines.

Emission Unit	KyEIS Source ID#	KyEIS Process ID#	Construc. Date	Engine Rating (hp)	Annual Operating Hours
Unit 1 Emergency Engine	42	1	4th Quarter 2017	469	100
Unit 2 Emergency Engine	43	1	4th Quarter 2017	469	100

17.2 Source Classification Codes

Emission Unit	KyEIS Source ID#	SCC	SCC Description	SCC Units
Unit 1 Emergency Engine	42	20200401	Large Bore Engine (2-02-004), Diesel (2-02-004-01)	1000 Gallons Diesel Burned
Unit 2 Emergency Engine	43	20200401	Large Bore Engine (2-02-004), Diesel (2-02-004-01)	1000 Gallons Diesel Burned

17.3 Diesel Fuel Properties

Diesel fuel heating value:	137,000	Btu/gal	Information from fuel supplier. Expected range is from 132,000 to 138,000 Btu/gal.
Diesel fuel density:	7.05	lb/gal	AP42 Appendix A (1/1995), pg. A-7
Maximum sulfur content:	15	ppm	Information from fuel supplier.

> The SCC for industrial diesel engines is 20200102 with units of 1000 gallons. To convert emission factors in terms of lb/MMBtu to lb/1000 gallons, the approximate fuel heating value listed above is used.

17.4 Emission Factors Used

17.41 Criteria Pollutant Emission Factors

> AP42 Section 3.4 "Large Stationary Diesel and All Stationary Dual-Fuel Engines" (10/1996 edition) provides emission factors for criteria air pollutants, total organic compounds, and HAPs from industrial engines. Factors are expressed in terms of lb/hp-hr and lb/MMBtu. An average brake-specific fuel consumption value of 7,5000 Btu/hp-hr is used in AP42 to convert between emission factors based on power output and heat input. This consumption value inherently assumes an engine efficiency of 36.35%. The AP42 criteria pollutant emission factors are listed below:

Brake-Specific Fuel Consumption Value: 7,500 Btu/hp-hr AP42 Table 3.4-1 (10/1996), Footnote a
Engine efficiency assumption encompassed in this value: 36.35% = 2,544.48 Btu/hp-hr / 7500 Btu/hp-hr

AP42 Table 3.4-1 Emission Factors; Orange Vendor/Tier Engine

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
NOX	0.010	1.323	4.500	181.22
CO	0.00309	0.412	1.400	56.38
SOX	0.00809	1.079	3.670	147.78
PM10	0.00022	0.029	0.100	4.03
TOC (Exhaust + Crankcase)	0.0007050	0.094	0.320	12.88

Sample Calculations (NOX): 1.323 lb/MMBtu = 0.009920809890827 lb/hp-hr / 7500 Btu/hp-hr * 1E6 Btu/MMBtu
4.5 g/hp-hr = 0.009920809890827 lb/hp-hr * 453.59 g/lb
181.22 lb/1000gal = 1.323 lb/MMBtu / 1E6 Btu/MMBtu x 137000 Btu/gal x 1000 gal / '1000gal'

> To take into account the lower sulfur content of the diesel fuel burned, for purposes of representing potential SO2 emissions from the engines, the factor in AP42 Table 3.4-1 (Large Stationary Diesel Engines, 10/1996 edition) is used as shown below. This factor expresses SO2 as a function

AP42 Emission Factor for SO2 based on sulfur content: 1.01 S lb/MMBtu (where S is the sulfur content in %)
Assumed maximum sulfur content in diesel oil: 15 ppm
Equivalent expressed in terms of percent: 0.0015 %

SO2 Emissions Based on Sulfur Content

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
SO2	0.0000114	0.001515	0.00515	0.2076

Sample Calculation (SO2): 0.001515 lb/MMBtu = 1.01 x 0.0015%

> All PM emissions are conservatively assumed to be in the form of PM2.5. Thus, PM2.5 emissions are set equal to PM10.

17.42 GHG Emission Factors

> Emission Factor obtained from 40 CFR 98 Subpart C, Table C-1. Factors are expressed as kg/MMBtu

Pollutant	kg/MMBtu	lb/MMBtu	lb/1000gal
CO2	73.96	163.05	22338.15
CH4	3.00E-03	6.61E-03	0.91
N2O	6.00E-04	1.32E-03	0.18
CO2e	74.209	1.64E+02	22413.36

17.43 HAP Emission Factors

> Emission factors provided in AP42 Table 3.4-3 (10/1996 edition) are used to estimate emissions of HAPs from the engines. Factors are expressed in terms of lb/MMBtu. As with the criteria pollutants, an average brake-specific fuel consumption value of 7,500 Btu/hp-hr is used to convert between emission factors based on power output and heat input.

AP42 Table 3.4-3 Emission Factors

Pollutant	lb/hp-hr	lb/MMBtu	g/hp-hr	lb/1000gal
Acetaldehyde	1.89E-07	2.52E-05	8.57E-05	0.003
Acrolein	5.91E-08	7.88E-06	2.68E-05	0.001
Benzene	5.82E-06	7.76E-04	2.64E-03	0.106
1,3-Butadiene	2.93E-07	3.91E-05	1.33E-04	0.005
Formaldehyde	5.92E-07	7.89E-05	2.68E-04	0.011
Naphthalene	9.75E-07	1.30E-04	4.42E-04	0.018
Toluene	2.11E-06	2.81E-04	9.56E-04	0.038
Xylenes	1.45E-06	1.93E-04	6.57E-04	0.026

17.5 Emissions for Each Engine

17.51 Summary of Emissions from: Unit 1 Emergency Engine (EU42)

Engine Rating:	469	hp	
Equivalent heat input rate:	3.5175	MMBtu/hr	= 469 hp x 7500 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate:	0.02568	1000gal/hr	= 3.518 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	181.22	Vendor	4.65	0.23
CO	56.38	Vendor	1.45	0.07
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00533	0.00027
PM	4.03	Vendor	0.103	0.005
PM10	4.03	Vendor	0.103	0.005
PM2.5	4.03	Equal to PM10	0.103	0.005
VOC	12.88	AP42 Table 3.3-1	0.331	0.017
CO2	22338.15	Subpart C, Table C-1	573.536	28.677
CH4	0.91	Subpart C, Table C-2	0.023	0.001
N2O	0.18	Subpart C, Table C-2	0.005	0.000
CO2e	22413.36	Subpart A, Table A-2	575.467	28.773
Acetaldehyde	0.003	AP42 Table 3.4-3	8.86E-05	4.43E-06
Acrolein	0.001	AP42 Table 3.4-3	2.77E-05	1.39E-06
Benzene	0.106	AP42 Table 3.4-3	2.73E-03	1.36E-04
1,3-Butadiene	0.005	AP42 Table 3.4-3	1.38E-04	6.88E-06
Formaldehyde	0.011	AP42 Table 3.4-3	2.78E-04	1.39E-05
Naphthalene	0.018	AP42 Table 3.4-3	4.57E-04	2.29E-05
Toluene	0.038	AP42 Table 3.4-3	9.88E-04	4.94E-05
Xylenes	0.026	AP42 Table 3.4-3	6.79E-04	3.39E-05

17.52 Summary of Emissions from: Unit 2 Emergency Engine (EU43)

Engine Rating: 469 hp
Equivalent heat input rate: 3.5175 MMBtu/hr = 469 hp x 7500 Btu/hp-hr / 1E6 Btu/MMBtu
Equivalent fuel input rate: 0.02568 1000gal/hr = 3.518 MMBtu/hr x 1E6 Btu/MMBtu / 137000 Btu/gal / 1000 gal/'1000gal'

Pollutant	Emission Factor (lb/1000gal)	Basis	Emissions (lb/hr)	Emissions (tpy)
NOX	181.22	Vendor	4.65	0.23
CO	56.38	Vendor	1.45	0.07
SO2	0.21	15 ppm; AP42 Tbl 3.4-1	0.00533	0.00027
PM	4.03	Vendor	0.10	0.01
PM10	4.03	Vendor	0.10	0.01
PM2.5	4.03	Equal to PM10	0.10	0.01
VOC	12.88	AP42 Table 3.3-1	0.33	0.02
CO2	22338.15	Subpart C, Table C-1	573.54	28.68
CH4	0.91	Subpart C, Table C-2	0.02	0.00
N2O	0.18	Subpart C, Table C-2	0.00	0.00
CO2e	22413.36	Subpart A, Table A-2	575.47	28.77
Acetaldehyde	0.003	AP42 Table 3.4-3	8.86E-05	4.43E-06
Acrolein	0.001	AP42 Table 3.4-3	2.77E-05	1.39E-06
Benzene	0.106	AP42 Table 3.4-3	2.73E-03	1.36E-04
1,3-Butadiene	0.005	AP42 Table 3.4-3	1.38E-04	6.88E-06
Formaldehyde	0.011	AP42 Table 3.4-3	2.78E-04	1.39E-05
Naphthalene	0.018	AP42 Table 3.4-3	4.57E-04	2.29E-05
Toluene	0.038	AP42 Table 3.4-3	9.88E-04	4.94E-05
Xylenes	0.026	AP42 Table 3.4-3	6.79E-04	3.39E-05

APPENDIX E

COMPLIANCE ASSURANCE MONITORING PLANS

1. UNIT 1, 2, 3 & 4 UTILITY BOILERS – PM CAM PLANS

This section contains the updated PM CAM plans for each of the four utility boilers at Ghent Station. Each boiler uses the same PM emissions control and monitoring method. Since the same CAM plan can be applied for each boiler, they are grouped together in this section.

1.1 PM CAM BACKGROUND

1.1.1 EMISSION UNITS AND PM CONTROLS

Facility:	Kentucky Utilities – Ghent Station Carroll, Kentucky Source ID# 21-041-0010 (Agency Interest# 704)
Emission Unit Identification:	Emission Unit 1, Emission Outlet EO25 Emission Unit 2, Emission Outlet EO03 Emission Unit 3, Emission Outlet EO03 Emission Unit 4, Emission Outlet EO26 **Units 1, 2, 3 and 4 Indirect Heat Exchangers**
Description:	Units 1, 2, 3 and 4 are pulverized coal-fired utility boilers, each with a heat input capacity of 5,500 MMBtu/hr.
PM Controls:	Each boiler employs a PJFF. Units 3 & 4 also have dry ESP's for PM control.

1.1.2 APPLICABLE REGULATIONS AND CURRENT MONITORING FOR PM

Pollutant:	**PM**
Regulation:	Unit 1: 401 KAR 61:015 Section 4(4) Units 2, 3 & 4: NSPS Subpart D [40 CFR 60.42(a)(1)]
Emission Limit:	Unit 1: PM is limited to **0.127 lb/MMBtu** based on a 3-hr average Units 2, 3 & 4: PM is limited to **0.10 lb/MMBtu** based on a 3-hr average
Current Monitoring Requirements:	A PM CEMS is used to monitor the emissions from Unit 1 at stack EO25, the combined emissions of Unit 2 and 3 at stack EO03, and the emissions from Unit 4 at stack EO26. Each PM CEMS complies with Performance Specification 11 of Appendix B to 40 CFR 60 and ongoing quality assurance requirements in Procedure 2 of Appendix F to 40 CFR 60.

1.1.3 CURRENT ESTIMATED PRE-CONTROLLED AND CONTROLLED PM

Pre-Controlled Emissions:	Unit 1	23,264 lb/hr	101,896 tpy	4.23 lb/MMBtu
	Unit 2	23,339 lb/hr	102,223 tpy	4.26 lb/MMBtu
	Unit 3	23,339 lb/hr	102,223 tpy	4.26 lb/MMBtu
	Unit 3	23,296 lb/hr	102,037 tpy	4.24 lb/MMBtu
	Estimated pre-controlled PM emissions for each boiler are based on a factor published in AP-42 Section 1.1-4 (9/98 edition): 10A lb/ton, where A is the ash content from 2016 coal data.			
Controlled Emissions:	Unit 1:	27.5 lb/hr;	120.4 tpy;	0.005 lb/MMBtu (stack test)
	Unit 2:	55 lb/hr;	240.9 tpy;	0.010 lb/MMBtu (stack test)
	Unit 3:	55 lb/hr;	240.9 tpy;	0.010 lb/MMBtu (stack test)
	Unit 4:	50 lb/hr;	216.8 tpy;	0.009 lb/MMBtu (stack test)
	The estimated control efficiency provided by the PJFF /ESP on each boiler ranges from 99.8 to 99.9% based on the most recent stack tests.			
CAM Designation:	Large PSEU			

1.2 CAM APPLICABILITY FOR PM

Unit 1 Boiler is subject to a 0.127 lb/MMBtu PM emission limit under 401 KAR 61:015. Unit 2, 3 & 4 Boilers are each subject to a 0.10 lb/MMBtu PM emission standard under NSPS Subpart D. Pursuant to 40 CFR 64.2(a), because the controls are used to achieve compliance with the PM emission limits and potential pre-controlled PM emissions exceed 100 tpy, CAM applies to the Unit 1, 2 3, & 4 Boilers for PM.

1.3 MONITORING APPROACH FOR PM

Unit 1, 2, 3 & 4 Boilers each currently use a PM Continuous Emission Monitoring System (CEMS) to monitor particulate matter emissions. (A single PM CEMS is used on stack EO03, to which emissions from Units 2 and 3 are ducted.) The data reporting system for the PM CEMS continuously measures particulate matter and calculates the particulate matter emission rates in terms of lb/MMBtu based on a three-hour average for comparison to the applicable emission limit.

1.4 MONITORING APPROACH JUSTIFICATION

The use of a CEMS that provides results in the units of the standard for the pollutant of interest and meets the criteria in 40 CFR 64.3(d)(2) is presumptively acceptable CAM. No additional performance indicators need to be defined or justified.

2. UNIT 1, 2, 3 & 4 UTILITY BOILERS – SO_2 CAM PLANS

This section contains the SO_2 CAM plans for each of the four utility boilers at Ghent Station. Each boiler uses the same SO_2 emissions control and monitoring method. Since the same CAM plan can be applied for each boiler, they are grouped together in this section.

2.1 SO_2 CAM BACKGROUND

2.1.1 EMISSION UNITS AND SO_2 CONTROLS

Facility:	Kentucky Utilities – Ghent Station Carroll, Kentucky Source ID# 21-041-0010 (Agency Interest# 704)
Emission Unit Identification:	Emission Unit 1, Emission Outlet EO25 Emission Unit 2, Emission Outlet EO03 Emission Unit 3, Emission Outlet EO03 Emission Unit 4, Emission Outlet EO26 **Units 1, 2, 3 and 4 Indirect Heat Exchangers**
Description:	Units 1, 2, 3 and 4 are pulverized coal-fired utility boilers, each with a heat input capacity of 5,500 MMBtu/hr.
SO_2 Controls:	Each boiler employs a wet FGD system for SO_2 control.

2.1.2 APPLICABLE REGULATIONS AND CURRENT MONITORING FOR SO_2

Pollutant:	**SO_2**
Regulation:	Unit 1: 401 KAR 61:015 Section 5(1) Units 2, 3 & 4: NSPS Subpart D [40 CFR 60.43(a)(2)]
Emission Limit:	Unit 1: SO_2 is limited to 5.67 lb/MMBtu based on a 24-hr average Units 2, 3 & 4: SO_2 is limited to 1.2 lb/MMBtu based on a 3-hr average
Current Monitoring Requirements:	An SO_2 CEMS is used to monitor the emissions from Unit 1 at stack EO25, the combined emissions of Unit 2 and 3 at stack EO03, and the emissions from Unit 4 at stack EO26. The SO_2 CEMS on each boiler complies with the requirements of 40 CFR 75.

2.1.3 CURRENT ESTIMATED PRE-CONTROLLED AND CONTROLLED SO_2

Pre-Controlled Emissions:	Unit 1	26,173 lb/hr	114,638 tpy	4.76 lb/MMBtu
	Unit 2	26,295 lb/hr	115,170 tpy	4.78 lb/MMBtu
	Unit 3	26,203 lb/hr	114,769 tpy	4.76 lb/MMBtu
	Unit 4	26,274 lb/hr	115,079 tpy	4.78 lb/MMBtu
	Pre-controlled SO_2 emissions for each boiler can be quantified using a mass balance taking into account the sulfur content of the fuel. As presented in AP-42 Section 1.1-3 (9/98 edition), this can be stated as an emission factor of 38S lb/ton, where S is the sulfur content of the coal and 95% of the sulfur is assumed to be oxidized to SO_2. Based on 2016 coal data average the sulfur content of coal burned at Ghent Station ranges from 2.86-2.87.			
Controlled Emissions:	Unit 1:	497.3 lb/hr;	2,178.1 tpy;	0.090 lb/MMBtu
	Unit 2:	1,262.1 lb/hr;	5,528.2 tpy;	0.229 lb/MMBtu
	Unit 3:	1,021.9 lb/hr;	4,476 tpy;	0.186 lb/MMBtu
	Unit 4:	525.5 lb/hr;	2,301.6 tpy;	0.096 lb/MMBtu
	The controlled emission rates listed are those calculated based on 2016 coal sulfur contents and FGD removal			
CAM Designation:	Large PSEU			

2.2 CAM APPLICABILITY FOR SO_2

Unit 1 Boiler is subject to a 5.67 lb/MMBtu SO_2 emission limit under 401 KAR 61:015. Unit 2, 3 & 4 Boilers are each subject to a 1.2 lb/MMBtu SO_2 emission standard under NSPS Subpart D. Pursuant to 40 CFR 64.2(a), because the wet FGDs are used to achieve compliance with the SO_2 emission limits and potential pre-controlled SO_2 emissions exceed 100 tpy, CAM applies to the Unit 1, 2 3, & 4 Boilers for SO_2.

2.3 MONITORING APPROACH FOR SO_2

Unit 1, 2, 3 & 4 Boilers each currently use a 40 CFR 75 compliant CEMS to continuously measure SO_2 at the outlet of the wet FGD systems. (A single SO_2 CEMS is used on stack EO03, to which emissions from Units 2 and 3 are ducted.) The data reporting systems for the SO_2 CEMS on each boiler calculate SO_2 emission rates in terms of lb/MMBtu based on a twenty-four-hour average (Unit 1) and three-hour average (Units 2, 3 & 4) for comparison to the applicable emission limit.

2.4 MONITORING APPROACH JUSTIFICATION

The use of a CEMS that provides results in the units of the standard for the pollutant of interest and meets the criteria in 40 CFR 64.3(d)(2) is presumptively acceptable CAM. No additional performance indicators need to be defined or justified.

3. UNIT 3 & 4 UTILITY BOILERS – NO_X CAM PLANS

This section contains the NO_X CAM plans for the Unit 3 and 4 utility boilers at Ghent Station. Both Unit 3 and 4 use the same NO_X emissions control and monitoring method. Since the same CAM plan can be applied for each boiler, they are grouped together in this section.

3.1 NO_X CAM BACKGROUND

3.1.1 EMISSION UNITS AND NO_X CONTROLS

Facility:	Kentucky Utilities – Ghent Station Carroll, Kentucky Source ID# 21-041-0010 (Agency Interest# 704)
Emission Unit Identification:	Emission Unit 3, Emission Outlet EO03 Emission Unit 4, Emission Outlet EO26 **Units 3 and 4 Indirect Heat Exchangers**
Description:	Units 3 and 4 are pulverized coal-fired utility boilers, each with a heat input capacity of 5,500 MMBtu/hr.
NO_X Controls:	Units 3 and 4 are each equipped with an SCR system to control NO_X emissions.+9

3.1.2 APPLICABLE REGULATIONS AND CURRENT MONITORING FOR NO_X

Pollutant:	**NO_X**
Regulation:	Units 3 & 4: NSPS Subpart D [40 CFR 60.44(a)(3)]
Emission Limit:	Units 3 & 4: NO_X is limited to 0.7 lb/MMBtu based on a 3-hr average
Current Monitoring Requirements:	A NO_X CEMS is used to monitor the combined emissions of Unit 2 and 3 at stack EO03, and the emissions from Unit 4 at stack EO26. The NO_X CEMS each comply with the requirements of 40 CFR 75.

3.1.3 CURRENT ESTIMATED PRE-CONTROLLED AND CONTROLLED NO_X

Pre-Controlled Emissions:	Unit 3	5304.2 lb/hr	23,232.5 tpy	0.964 lb/MMBtu
	Unit 4	5300.0 lb/hr	23,214.2 tpy	0.964 lb/MMBtu
	Pre-controlled NO emissions are based on an emission factor in AP-42 Section 1.1-3 (9/98 edition): 22 lb/ton. For Units 3 & 4 the equivalent factor is 0.964 lb/MMBtu.			
Controlled Emissions:	Unit 3	530.4 lb/hr	2,323 tpy	0.096 lb/MMBtu
	Unit 4	530.0 lb/hr	2,321.4tpy	0.096 lb/MMBtu
	The controlled emission rates listed are those calculated based on a combined control efficiency from the low-NO_X burners and SCR systems of 90%.			
CAM Designation:	Large PSEU			

3.2 CAM APPLICABILITY FOR NO_X

Unit 3 & 4 Boilers are each subject to a 0.7 lb/MMBtu NO_X emission standard under NSPS Subpart D. Pursuant to 40 CFR 64.2(a), because the SCR systems are used to achieve compliance with the NO_X emission limits and potential pre-controlled NO_X emissions exceed 100 tpy, CAM applies to the Unit 3 & 4 Boilers for NO_X.

3.3 MONITORING APPROACH FOR NO_X

Unit 3 & 4 Boilers each currently use a 40 CFR 75 compliant CEMS to continuously measure NO_X emissions at their stacks. (A single NO_X CEMS is used on stack EO03, to which emissions from Units 2 and 3 are ducted.) The data reporting systems for the NO_X CEMS calculate NO_X emission rates in terms of lb/MMBtu based on a three-hr average for comparison to the applicable emission limit.

3.4 MONITORING APPROACH JUSTIFICATION

The use of a CEMS that provides results in the units of the standard for the pollutant of interest and meets the criteria in 40 CFR 64.3(d)(2) is presumptively acceptable CAM. No additional performance indicators need to be defined or justified.

KENTUCKY UTILITIES REVISED SAM CAM PLAN – December 09, 2016

GHENT SULFURIC ACID MIST CAM PLAN

This document contains the Compliance Assurance Monitoring (CAM) plan being proposed for the sulfuric acid mist (SAM) control systems for the Kentucky Utilities' (KU) Ghent Generating Station Units 1, 2, 3 and 4. The control trains for Ghent Units 1, 2, 3, and 4 include individual wet flue gas desulfurization (WFGD) systems. Ghent Units 2 and 3 share a common chimney with a single flue. Nitrogen oxide (NOx) emissions from Ghent Units 1, 3, and 4 are controlled by selective catalytic reduction (SCR) systems. Ghent Units 3 and 4 employ dry hot-side electrostatic precipitators (ESP) for control of particulate matter (PM) emissions. After recent outages, Ghent Unit 1 and 2's ESPs were replaced with pulse jet fabric filters (PJFF) for control of PM emissions. Ghent Unit 3 and Ghent Unit 4's PM emissions are also further controlled by PJFFs. In addition, all four units employ sulfur trioxide (SO_3) mitigation systems as the primary control system to minimize the formation and emission of SAM.

TABLE 1.1.1: CAM BACKGROUND

Facility:	Kentucky Utilities — Ghent Generating Station Ghent, Kentucky Source ID# 21-041-00010
Emission Unit Identification:	KyEIS Source ID# 01 **Unit 1 Indirect Heat Exchanger** KyEIS Source ID# 02 **Unit 2 Indirect Heat Exchanger** KyEIS Source ID# 03 **Unit 3 Indirect Heat Exchanger** KyEIS Source ID# 04 **Unit 4 Indirect Heat Exchanger**
SAM Controls:	The SAM emissions from each unit will be controlled primarily by dry sorbent injection (DSI) systems.

TABLE 1.1.2: APPLICABLE REGULATIONS AND CURRENT MONITORING FOR SAM

Pollutant:	Sulfuric Acid Mist (SAM)
Regulation:	Ghent Units 1, 2, 3 and 4 are not presently subject to regulations which apply SAM emissions limits on the units. Table 1.1.3 below reflects the terms of the current Title V operating permit that has incorporated the Consent Decree that was entered into between the United States and KU establishing interim and final unit-specific SAM emission limits and compliance dates.
Current Monitoring Requirements:	As there are currently no regulation-based SAM emission limits, there are no current regulatory-based monitoring requirements specifically for SAM. The current Title V operating permit that has incorporated the Consent Decree stipulates some monitoring requirements.

TABLE 1.1.3: GHENT STATION TITLE V/CONSENT DECREE EMISSION LIMITS AND COMPLIANCE DATES

Ghent Unit	Interim SAM Limit (ppmvd@3% O2)	Interim Compliance Date	Final SAM Limit (ppmvd@3% O2)	Final Compliance Date
1	7	August 31, 2012	5	June 30, 2015
2	5	August 31, 2012	4	June 30, 2013
3	7	August 31, 2012	5	June 30, 2014
4	10	December 31, 2012	5	December 31, 2014

KU has successfully conducted the stack test(s) necessary to complete the initial compliance demonstration procedures for the interim SAM emission limit applicable to each unit. Additionally, KU has successfully completed testing on each unit to demonstrate compliance with their final SAM emission limit. KU has also been conducting the bi-annual stack tests at each unit per the requirements of the current Title V permit that incorporates the Consent Decree that are to last for at least two years following August 21, 2013. Thereafter, KU shall perform stack tests at each unit consistent with the timing identified in Item 3e for each unit in the current Title V permit that incorporates the Consent Decree.

1.2 CAM APPLICABILITY

The individual emissions from Ghent Units 1, 2, 3 and 4 are subject to emission limits as described in the current Title V permit that incorporates the Consent Decree and seen in Table 1.1.3 above. According to paragraph 70 of the Consent Decree, KU is required to obtain "enforceable provisions in its Title V permit for Ghent Station that incorporate all Unit-specific permanent SAM Emission Rates" contained in the Consent Decree. The Consent Decree requirements were incorporated into Ghent Station's Title V permit (#V-12-028(R1)) that was issued on October 16, 2015. Pursuant to 40CFR64 Section 2(a), because the SO_3 mitigation systems are used to achieve compliance with these emission limits and potential pre-controlled SAM emissions exceed 100 tons per year, CAM requirements apply to Ghent Units 1, 2, 3 and 4 for SAM emissions. This CAM plan addresses the proposed method of monitoring compliance indication with the applicable SAM emission limits pursuant to 40 CFR Part 64.

1.3 MONITORING APPROACH FOR SAM

SO_3 is generated in the boilers due to the oxidation of sulfur in the combustion process and, at Ghent Units 1, 3 and 4, further oxidation occurs within the SCR. The amount of SO_3 generated is a function of coal sulfur content, SCR catalyst SO_2 to SO_3 conversion rate, and flue gas temperature within the SCR and boiler. SO_3 reacts with water in the flue gas to form SAM vapor, which then condenses to form sub-micron SAM. KU has undertaken a series of steps to reduce and further control SAM emissions at Ghent Generating Station. The activities include installation of permanent SO_3 mitigation systems with trona[1] milling capabilities and dry

[1] Trona is a sodium-based dry sorbent material. Ghent's SO_3 mitigation systems can use trona and/or hydrated lime (another dry sorbent material) for SAM mitigation.

sorbent mixing processes to enhance sorbent effectiveness and removal efficiency of the SO_3 mitigation systems. Additionally, Ghent Generating Station will be performing boiler system work to reduce and manage boiler exit gas temperatures.

Ghent Generating Station's primary control mechanism for SAM formation and emissions will be the SO_3 mitigation system installed on each unit. Each SO_3 mitigation system consists of sorbent receiving, sorbent storage and sorbent injection systems. Each SO_3 mitigation system that utilizes the trona product will also be equipped with trona milling equipment.

The effectiveness of the SO_3 mitigation system is a function of the sorbent injection rate relative to the SO_3 concentration. The controlled SO_3 concentration is affected by several factors including: sorbent stoichiometric ratio (e.g., ratio of sodium to sulfur or calcium to sulfur), sorbent particle size and physical characteristics (e.g., surface area), degree of sorbent mixing in the flue gas, residence time and some boiler and atmospheric conditions. When using sodium-based sorbents (e.g., trona), milling technology can be used to add additional surface area to the sorbent to increase the sorbent's effectiveness. The hydrated lime product does not require further milling.

For CAM purposes, KU will use a SAM indicative monitoring system as the primary indicator of performance of the SO_3 mitigation systems. The SAM indicative monitoring systems will provide an indication of SAM levels for each unit. The monitors will be located at the stack emission monitoring level for Ghent Units 1 and 4 and at the FGD outlet ducts of Ghent Units 2 and 3. For instances when the SAM indicative monitoring systems is malfunctioning or removed from service for maintenance, KU will further develop and monitor performance indicators to ensure that the SAM control system performance is maintaining compliance with emission limits.

Unit specific SAM compliance demonstration testing will be used to determine SAM emissions levels in accordance with compliance demonstration procedures defined in Appendix A of the Consent Decree that was incorporated into the station's current Title V permit. Emissions testing will be conducted at three separate electrical generation conditions (i.e., low, mid, and high load) for each Ghent unit. Targeted electrical generation rates for these compliance demonstration tests are shown in Table 1.3.1.

TABLE 1.3.1: TARGETED GENERATION RATES FOR SAM COMPLIANCE TESTS

Targeted Test Generation (MWg)		
Low	**Mid**	**High**
375	450	510

During each compliance demonstration test, the output of the SAM indicative monitoring system will be monitored. The SAM indicative monitor's average outputs collected during the compliance demonstration test will be used to establish a correlation to the compliance demonstration test results. That correlation will be applied to the SAM indicative monitors output. After each subsequent compliance demonstration test, the correlation will be evaluated using the data collected from each test. The correlation will be adjusted, as needed, based on those evaluations. As the primary CAM indicator of the SO_3 mitigation system's performance,

the correlated SAM indicative measurements will be evaluated on a three-hour rolling average basis against each unit's applicable SAM limit (i.e., interim or final as seen in Table 1.1.3).

KU will also develop a dry sorbent injection (DSI) rate matrix for each unit that represents the appropriate amount (e.g. pounds per hour) of dry sorbent to be injected to assure proper performance of the SO_3 mitigation system. These sorbent injection rates will be used as the alternate performance indicator. The alternate performance indicator will be used when valid SAM indicative monitor data is unavailable (e.g., periods of monitor maintenance or malfunction). The relationship between DSI rate, unit generation in gross megawatts (MWg), and the FGD outlet SAM emission rate at the three targeted test generation levels will be developed from data collected during compliance demonstration testing. The relationship will be evaluated following each subsequent compliance demonstration test. The relationship will be adjusted, as needed, based on those evaluations. Sorbent injection rates will be monitored on each unit and compared, on a three-hour rolling average basis, against the minimum injection rates established for that unit's sorbent injection rate matrix as an alternate indication of compliance.

This CAM plan is being submitted as required under the terms of the current Title V permit that incorporated the Consent Decree. The monitoring approach outlined in Table 1.3.2 provides the ongoing assurance of compliance with the SAM emission limits shown in Table 1.1.3. The specific details regarding each monitoring method and the monitoring performance criteria are provided in Tables 1.3.3 and 1.3.4.

TABLE 1.3.2: SUMMARY OF SAM MONITORING APPROACH

Method	Indicator Parameter	Range	Frequency
1. SAM Indicative Correlation (Primary Indicator)	SAM Indicative Monitor Output	Interim or Final Emission Limit, as applicable	3-Hour Rolling Average
2. DSI Rate per Gross Generation (MWg) Relationship (Alternate Indicator)	DSI Rate	Established from data obtained during compliance demonstration testing.	3-Hour Rolling Average

TABLE 1.3.3: PRIMARY SAM COMPLIANCE INDICATOR— SAM INDICATIVE MONITOR CORRELATION

GENERAL CRITERIA	
Indicator	SAM Indicative Monitor Output
Measurement Approach	The continuous SAM Indicative Monitor output will be recorded as hourly averages and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Using the results of compliance demonstration test results performed pursuant to the Title V permit that incorporates the Consent Decree and average SAM Indicative Monitor output values collected during those tests, a correlation will be developed using regression analysis. Following the development of the correlation, the SAM Indicative Monitor's output will be adjusted according to that correlation. The correlation adjusted SAM Indicative Monitor's output data will be

	reduced to three-hour rolling averages and compared with each unit's applicable SAM emission limit. An excursion of SAM indicative monitor data is defined as occurring when the three-hour rolling average of correlated SAM Indicative Monitor output values exceeds the applicable interim or final emission limit.
Corrective Actions	In response to an excursion, KU shall (A) Complete an inspection of the SAM Indicative Monitor system to determine any potential problems with data collection or validation and correct any revealed performance issues in an expedient manner; and (B) Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. (C) If corrective actions are not successful in returning the performance indicators to compliant ranges, KU shall perform an additional stack test to confirm or update the SAM Indicative Monitor correlation and/or DSI per MWg relationships.
PERFORMANCE CRITERIA	
Data Representativeness/ Applicability	The correlated output of the SAM Indicative Monitoring System at each location will be compared to applicable interim and final emission limits.
QA/QC Practices and Criteria	(A) KU shall follow the installation, calibration, and startup procedures of the SAM Indicative Monitoring System in accordance with good engineering practices. (B) KU shall continue to calibrate and maintain the SAM Indicative Monitoring System in accordance with good engineering practices.
Monitoring Frequency	Continuous
Data Collection Procedure	Performance Indicator data collection system (PI)
Averaging Period	1-hour values reduced to 3-hour rolling averages
Recordkeeping	Hourly SAM Indicative Monitor output and 3-hour rolling averages of the SAM Indicative Monitor output. Associated upset conditions and monitoring malfunctions as applicable.
Reporting	Per Ghent Station's Title V operating permit Section B, Table 1, a summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

TABLE 1.3.4: ALTERNATE COMPLIANCE INDICATOR — DRY SORBENT INJECTION per GROSS GENERATION (MWg) RELATIONSHIP

GENERAL CRITERIA	
Indicator	Dry sorbent injection (DSI) rate
Measurement Approach	DSI rate will be used when valid SAM indicative monitor data is unavailable. DSI rate (pounds per hour, lb/hr) will be monitored continuously, an average will be recorded hourly, and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Minimum DSI rates will be determined using operational data gathered during compliance demonstration stack testing performed pursuant to the Title V permit that incorporates the Consent Decree. If, based on performance tests, the current acceptable DSI indicator ranges need to be amended, KU shall submit the new ranges to the Kentucky Division for Air Quality's Florence Regional Office for approval pursuant to consent decree

	requirements. An excursion of this section of the CAM plan will only be applicable if the primary indicator (correlated SAM Indicative Monitor output) is not capable of collecting accurate data (i.e., malfunction or undergoing maintenance). An excursion of this section of the CAM plan will be defined if the three-hour rolling average of the DSI rates are below the minimum injection levels determined from the correlation described above. Current appropriate DSI rates can be seen in Appendix A of this CAM plan.
Corrective Actions	In response to an excursion measure by the DSI method, KU shall: (A) Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. (B) If corrective actions are not successful in returning the performance indicator to compliant ranges, KU shall perform an additional stack test to confirm or update the DSI per MWg relationship.
PERFORMANCE CRITERIA	
Data Representativeness/Applicability	DSI data will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data. The DSI injection rates will be determined from data collected during compliance demonstration stack testing.
QA/QC Practices and Criteria	(A) KU shall follow installation, operation, and maintenance procedures for the DSI system in accordance with good engineering practices. (B) KU shall continue to calibrate and maintain the DSI system will in accordance with good engineering practices.
Monitoring Frequency	Continuous
Data Collection Procedure	Performance Indicator Data Collection System (PI)
Averaging Period	1-hour values reduced to a 3-hour rolling average
Recordkeeping	Hourly DSI rate and 3-hour rolling averages of the DSI rate. Associated upset conditions and monitoring malfunctions as applicable.
Reporting	Per Ghent Station's Title V operating permit Section B, Table 2, a summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report

TABLE 1.3.5: SUMMARY OF OPERATING CONDITIONS TO BE INCLUDED IN COMPLIANCE DEMONSTRATION TESTING

Test Series	Number of Runs	Load Conditions	Sulfur Content	Sorbent Injection Rate
1	At least 3	High (target 510 MWg)	Within 90% of maximum expected	To be determined through testing
2	At least 3	Mid (target 450 MWg)	Within 90% of maximum expected	To be determined through testing
3	At least 3	Low (target 375 MWg)	Within 90% of maximum expected	To be determined through testing

1.4 MONITORING APPROACH JUSTIFICATION

1.4.1 Rationale for Selecting Performance Indicators

Use of a SAM Indicative Monitor output correlated to tested FGD outlet SAM levels provides an indication of compliance assurance at various operating conditions. As the primary indication of compliance assurance, the correlated SAM Indicative Monitor output will be used to prompt appropriate operational responses in relation to applicable interim or final SAM emission limits. For occasions when maintenance activities or malfunctions of the SAM Indicative Monitoring System occur, alternate compliance assurance indication is established by documenting DSI rates that meet or exceed the appropriate DSI injection rates established from data collected during compliance demonstration testing.

1.4.2 Rationale for Selecting Indicator Ranges

KU has followed and will continue to follow the compliance test frequency as described in the Title V operating permit that incorporates the final Consent Decree. During compliance demonstration testing that has been performed to date, SAM Indicative Monitor output and DSI rates have been collected for correlation to FGD outlet SAM test results and SAM compliance levels.

The SAM Indicative Monitor outputs have been correlated with the SAM test result data. Those correlations have been used to adjust the SAM Indicative Monitor outputs to produce a correlated SAM Indicative Monitor output to be compared with the applicable SAM emission limits on a three-hour rolling average basis. The correlations will be adjusted, as needed, based on data collected during each subsequent compliance demonstration test.

The minimum DSI rates have been selected for each unit and can be found in Appendix A of this CAM plan. From data collected during compliance demonstration testing performed to date, the DSI rates found in Appendix A represent the appropriate minimum DSI rate to be used that indicate the unit's compliance with the applicable SAM emission limit. The DSI rates will be adjusted, as needed, based on data collected during each subsequent compliance demonstration test.

As described in Section B, item 4(k) of the Title V operating permit that incorporates the Consent Decree, the occurrence of certain material changes in operation at a Ghent unit will require additional Stack Tests to be performed. During these tests, a re-evaluation of the compliance indicator levels for the primary and alternate indicators will also be performed. As required in Section B, item 4(k)(i) of the Title V operating permit that incorporates the Consent Decree, the monthly average fuel sulfur content of the coal burned will be monitored. If the monthly coal sulfur content increases by more than 20% above the sulfur content of the coal used during the previous compliance demonstration test, a Stack Test will be conducted within 60 days. Data collected during the test will be used to determine if adjustment to the SAM Indicative Monitor correlation is needed and if a new relationship between DSI rate and the gross generation rate is warranted.

In addition, if any of the events listed below are expected to last for more than 60 days at any Ghent unit, KU shall conduct a stack test within 60 days of the relevant change and use the

results of that stack test to adjust the relationship to the SAM Indicative Monitoring system and the DSI rates, as necessary.

- The material replacement, or change in design, of SAM emissions control equipment at any Ghent Unit.
- A change in the type of fuel used at any Ghent Unit to a fuel not permitted for use at that Unit prior to the Date of Entry of this Consent Decree.
- A change in the type of sorbent material used for SAM emission control at any Ghent Unit.

APPENDIX A

Alternate CAM Indicator Ranges for Ghent Generating Station
Dry Sorbent Injection (DSI) Rates per Gross Electrical Output (MWg)

	Ghent Unit 1					
	Above 500 MW		500 to 450 MW		Below 450 MW	
SO2 (lb/mmBtu)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)
≥6	2700	3200	1500	2800	1000	1750
5-5.9	500	500	500	500	500	500
≤4.9	500	500	500	500	500	500

	Ghent Unit 2					
	> 500 MW		500 to 450 MW		< 450 MW	
SO2 (lb/mmBtu)	A-Duct Injection Rate (lb/hr)	B-Duct Injection Rate (lb/hr)	A-Duct Injection Rate (lb/hr)	B-Duct Injection Rate (lb/hr)	A-Duct Injection Rate (lb/hr)	B-Duct Injection Rate (lb/hr)
≥6	1300	1400	1000	1400	500	1300
5-5.9	500	500	500	500	500	500
≤4.9	500	500	500	500	500	500

	Ghent Unit 3					
	> 500 MW		500 to 450 MW		< 450 MW	
SO2 (lb/mmBtu)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)
≥6	500	500	500	500	500	500
5-5.9	500	500	500	500	500	500
≤4.9	500	500	500	500	500	500

	Ghent Unit 4					
	> 500 MW		500 to 450 MW		< 450 MW	
SO2 (lb/mmBtu)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)	Inlet Injection Rate (lb/hr)	Outlet Injection Rate (lb/hr)
≥6	2400	2500	2000	2000	1000	1250
5-5.9	900	900	500	500	500	500
≤4.9	500	500	500	500	500	350

APPENDIX F

SUGGESTED TITLE V PERMIT WITH REVISIONS HIGHLIGHTED

SECTION A - PERMIT AUTHORIZATION

Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit has been issued under the provisions of Kentucky Revised Statutes Chapter 224 and regulations promulgated pursuant thereto.

The permittee shall not construct, reconstruct, or modify any affected facilities without first having submitted a complete application and received a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:020, Title V Permits.

Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by this Cabinet or any other federal, state, or local agency.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

Emission Unit 01: **Unit 1 Indirect Heat Exchanger**

Description:
Pulverized coal-fired, dry bottom, tangentially-fired boiler
Construction commenced: before August 17, 1971
Number two fuel oil used for startup and stabilization
Maximum continuous rating: 5,500 MMBtu/hour

Control Equipment:
~~Electrostatic Precipitator (ESP) (to be removed in 2015)~~
Wet Limestone Forced-Oxidation Sulfur Dioxide Scrubber (WFGD) GH1
Low Nitrogen Oxides Burners
Selective Catalytic Reduction (SCR)
Dry Sorbent Injection SAM Control
Dry Sorbent Injection Hg Control and Pulse-Jet Fabric Filter (~~to be I~~installed in 2015)

Commented [MZP1]: Request installed

Stack: EO25 (not shared)

APPLICABLE REGULATIONS:
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers

401 KAR 52:060, Acid rain permits (See Section J)

401 KAR 61:015, Existing indirect heat exchangers

40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal and Oil-fired Electric Utility Steam Generating Units

40 CFR Part 64, Compliance Assurance Monitoring (CAM) (for SO_2, SAM and PM)

40 CFR Part 75, Continuous Emission Monitoring

40 CFR 97, Subpart AAAAA, TR NO_x Annual Trading Program (See Section L)

40 CFR 97, Subpart BBBBB, TR NO_x Ozone Season Trading Program (See Section L)

40 CFR 97, Subpart CCCCC TR SO_2 Group 1 Trading Program (See Section L)

APPLICABLE CONSENT DECREES:
Civil Action Number 3:12-cv-00076-GFVT, filed August 21, 2013

1. **Operating Limitations:**
   ~~a.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991. ~~no later than April 16, 2015. However, the Division grants a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

a.

1. **Operating Limitations (Continued):**

b. ~~Beginning no later than December 20, 2012, the permittee will continuously operate the existing SAM controls at Ghent Station Units 1, 2, 3 and 4 [Civil Action Number 3:12-cv-00076-GFVT, paragraph 19]. By no later than August 31, 2012, T~~the permittee will ~~install and~~ continuously operate enhanced sorbent injection controls to reduce SAM emissions with the goal of achieving a SAM emission rate of no greater than 5 ppmvd (at 3% O_2) for this unit [Civil Action Number 3:12-cv-00076-GFVT, paragraph 20.a.].

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to sub-Section 4.m., **Specific Monitoring Requirements**.

2. **Emission Limitations:**

~~a. Before removal of the ESP, particulate matter emissions shall not exceed 0.20 lb/MMBtu based on a three (3) hour average [401 KAR 61:015, Section 4(4)].~~

~~b.~~a. ~~Following removal of the ESP, P~~particulate matter emissions shall not exceed 0.127 lb/MMBtu, based on a three (3)-hour average [401 KAR 61:015, Section 4(1)].

Compliance Demonstration Method:
Compliance with the particulate matter emission limit shall be demonstrated by stack testing as required in sub-Section 3.a., **Testing Requirements**.

~~c. Before removal of the ESP, emissions shall not exceed 40 percent opacity based on a six (6) minute average except:~~
~~i. that a maximum of 60 percent opacity is allowed for a period or aggregate of periods of not more than six (6) minutes in any sixty (60) minutes during building a new fire, cleaning the firebox, or blowing soot; and~~

~~ii. during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.~~
~~[401 KAR 61:015, Section 4(4)].~~

~~d.~~b. ~~After removal of the ESP, e~~Emissions shall not exceed 20 percent opacity [401 KAR 61:015, Section 2], except a maximum of 40 percent opacity shall be permissible for:

i. not more than one (1) six (6) minute period in any sixty (60) consecutive minutes [401 KAR 61:015, Section 4(2)(a)]; and

ii. during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations [401 KAR 61:015, Section 4(2)(c)].

Compliance Demonstration Method:
Compliance with the opacity standard shall be demonstrated by Reference Method 9, as

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2. Emission Limitations (Continued):

required in sub-Section 4.n., **Specific Monitoring Requirements**.

~~e.~~c. Sulfur dioxide (SO_2) emissions shall not exceed 5.67 lbs/MMBtu based on a twenty-four (24)-hour average [401 KAR 61:015, Section 5(1)].

Compliance Demonstration Method:
Compliance with SO_2 emission limits shall be demonstrated by SO_2 continuous emissions monitoring systems (CEMS) as required in sub-Section 4.c., **Specific Monitoring Requirements**.

~~f.~~d. ~~Between August 31, 2012 and June 30, 2015, emissions of H_2SO_4 (SAM) shall not exceed 7 ppmvd (at 3% O_2). After June 30, 2015, e~~Emissions of SAM shall not exceed 5 ppmvd (at 3% O_2) [Civil Action Number 3:12-cv-00076-GFVT, paragraphs 20.b.i. and 20.c.i.].

Compliance Demonstration Method:
Compliance with the SAM emission rate shall be demonstrated through the use of stack testing as described in sub-Section 3., **Testing Requirements**.

~~g.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991~~, no later than April 16, 2015. However, the Division grants a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

e.

***General MATS Compliance Demonstration Method*:**

~~i.~~ The permittee shall comply with 40 CFR 63, Subpart UUUUU~~, no later than April 16, 2015 [40 CFR 63.9984(b)]. However, the Division has granted a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

i.

~~ii.~~ The permittee shall meet the notification requirements in 40 CFR 63.10030 according to the schedule in 40 CFR 63.10030 and in 40 CFR 63, Subpart A. Some of the notifications must be submitted before compliance with the emission limits and work practice standards in 40 CFR 63, Subpart UUUUU is required [40 CFR 63.9984(c)]. ~~However, the Division has granted a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

ii.

iii. The permittee shall demonstrate that compliance has been achieved, by conducting the required performance tests and other activities, no later than one-hundred-eighty (180) days after the applicable date in paragraph (b) or (c) of 40 CFR 63.9984 [40 CFR 63.9984(f)]. ~~However, t~~The Division ~~has~~ granted a compliance ~~extension~~ extension~~request~~, August 6, 2015, for this emission unit ~~until August 6, 2015~~ [Approval letter, February 5, 2015].

iv.

~~iv.~~ The permittee shall demonstrate continuous compliance according to 40 CFR 63.10000 through 40 CFR 63.10023~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

v. Filterable Particulate Matter (PM) emissions shall not exceed 0.030 lb/MMBtu OR 0.30 lb/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 2, 3, and 4 (see Table in Section D)~~.~~

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vi. Hg emissions shall not exceed 0.013 lbs/GWh, ~~or~~OR 1.2 lb/TBtu heat input, based on a thirty (30) operating day emission averaging group with Ghent Unit 2, 3, and 4.

vii. Sulfur Dioxide (SO2) shall not exceed 0.020 lb/MMBtu OR 1.5 lb/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 4 (see Table in Section D).

3. Testing Requirements:

a. The permittee shall conduct a performance test for particulate matter (filterable) emissions by the start of the fourth (4^{th}) year of the term of this permit to demonstrate compliance with the applicable standards within the life of the permit. This requirement may be satisfied with the successful completion of testing performed in conjunction with PM CEMS compliance certification/recertification when approved by the Division [401 KAR 50:045, Section 1].

b. Performance t~~T~~esting shall be conducted in accordance with 401 KAR 50:045, ~~Performance Tests,~~ and pursuant to 40 CFR 64.4(c)(1). T~~,~~ ~~t~~he testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant- specific emissions unit.

c. PM CEMS compliance certification/recertification monitor tests to audit the correlation of the reference method mass emissions and the particulate matter monitor (PMCEM) according to the Relative Response Audit (RRA) Test procedures in Performance Specification 11 of 40 CFR 60 shall be conducted annually, once per calendar year; except, every three years, when an Response Correlation Audit (RCA) must be performed.

~~b.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.10005 through 40 CFR 63.10009 and 40 CFR 63.10011~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

~~c.~~d. Compliance with the SAM Emission Rate set forth in sub-Section 2.f., **Emission Limitations** shall be determined through stack tests conducted pursuant to the most recent procedures set forth in Appendix A of Civil Action Number 3:12-cv-00076-GFVT. Such stack tests shall be conducted under representative unit operating conditions, taking into account fuel sulfur content, load, and other parameters known to impact SAM emissions [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.a.].

~~d.~~e. The permittee shall ~~subsequently~~ conduct ~~a bi-~~annual stack test for SAM emission rate using procedures set forth in sub-Section 3.g., **Testing Requirements**., ~~at this unit for the two (2) years following August 21, 2013. If, after the initial two (2) year period of bi-annual stack tests, the permittee is able to demonstrate during any subsequent stack test that the SAM emission rate for this unit is less than 80% of the permanent SAM emission rate for this unit, then the permittee may reduce the frequency of the stack tests required for this unit under the Consent Decree to an A~~annual stack tests are required until ~~basis until~~ termination of the Consent Decree [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.b.].

~~e.~~f. The permittee may petition EPA to change the annual SAM stack test and reporting requirements if it can demonstrate that appropriate continuous emissions devices for SAM are available, but the permittee shall submit SAM emissions control parameters and data on at least an annual basis [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.c.].

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4. Specific Monitoring Requirements:

a. To meet the monitoring requirement for particulate matter, the permittee shall use a particulate matter continuous emissions monitor (PM-CEMS). The PM-CEMS shall comply with Performance Specification 11 of Appendix B to 40 CFR 60 and ongoing quality assurance requirements per 40 CFR 60 Appendix F, Procedure 2 [401 KAR 61:005, Section 3(6)].

b. PM CEMS shall be used to satisfy the CAM requirements for PM.

i. Excluding exempted time periods, if any three (3)-hour average particulate matter value exceeds the standard, the permittee shall, as appropriate, initiate an investigation of the cause of the exceedances and the CEMS and make any repairs or take corrective actions as soon as practicable [40 CFR 64.3(d)(1)].

ii. If five (5) percent or greater of the PM CEMS data recorded in a calendar quarter show excursions above the emission limitation, the permittee shall perform a stack test in the following calendar quarter to demonstrate compliance with the particulate matter standard while operating at representative conditions. The permittee shall submit a compliance test protocol as required by 401 KAR 50:045 before conducting the test. The Division may waive this testing requirement upon a demonstration that the cause(s) of the excursions have been corrected, or may require stack tests at any time pursuant to 401 KAR 50:045, Performance Tests [40 CFR 64.3(d)(3)].

c. CEMS shall be installed, calibrated, maintained, and operated for measuring nitrogen oxides, sulfur dioxide, and either oxygen or carbon dioxide emissions [401 KAR 61:005, Section 3 and Performance Specification 2 of Appendix B to 40 CFR 60 or 40 CFR 75, Appendix A].

d. SO_2 CEMS shall be used to satisfy CAM requirements for sulfur dioxide. Excluding exempted time periods, if any twenty-four (24)-hour average sulfur dioxide value exceeds the standard, the permittee shall, as appropriate, initiate an investigation of the cause of the exceedances and the CEMS and make any repairs or take corrective actions as soon as practicable [40 CFR 64.3(d)(1)].

e. The sulfur content of solid fuels, as burned, in percent by weight, shall be determined on a weekly basis [401 KAR 61:015, Section 6(1)].

f. The rate of each fuel burned shall be measured daily and recorded. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. The average electrical output, and the minimum and maximum hourly generation rate shall be measured and recorded daily [401 KAR 61:015, Section 6(3)].

g. The permittee shall monitor the duration of each start-up [401 KAR 52:020, Section 10].

h. The Division may provide a temporary exemption from the monitoring and recordkeeping requirements of 401 KAR 61:005, Section 3, for the continuous monitoring systems during any period of monitoring system malfunction, provided the permittee shows, to the Division's satisfaction, that the malfunction was unavoidable and is being repaired as expeditiously as practicable [401 KAR 61:005, Section 3(5)].

~~i.~~ The permittee shall comply with all applicable monitoring requirements of 40 CFR 63.10010, 40 CFR 63.10020 and 40 CFR 63.10021~~, no later than April 16, 2015. However, the Division grants a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

Commented [MZP2]: Could we add a statement that the Division will accept monthly averages in the Semi-Annual Monitoring Reports? Daily and weekly data will be available upon request. The verbiage from the regs notes daily/weekly, etc. KU has received approval for monthly summaries instead of daily/weekly data submittals in the past from KDAQ and KU has been told by the field offices that they don't want the daily data. This continues to be a question raised by our third party auditors and KU requests that this clarification be noted in the permit.

~~j.~~i. The permittee shall implement Compliance Assurance Monitoring (CAM) at EU01for SAM emissions based on the most recent CAM plan approved by the Division and as follows:

TABLE 1 – PRIMARY – SAM COMPLIANCE INDICATOR

Indicator	SAM Indicative Monitor Output is the primary compliance indicator.
Applicability	The correlated output of the SAM indicative monitoring system at this unit will be compared to applicable SAM emission rates.
Monitoring Frequency, Data Collection, and Averaging Period	The continuous SAM indicative monitor output will be recorded as hourly averages and the data captured will be reduced to 3-hour rolling averages by a Performance Indicator data collection (PI) system.
Compliance Indication	Using the results of compliance demonstration stack tests performed pursuant to sub-Section 3., **Testing Requirements**, and average SAM indicative monitor output values collected during those tests, a correlation will be developed using regression analysis. Following development of the correlation, the SAM indicative monitor's output will be adjusted according to that correlation. The correlation adjusted SAM indicative monitor's output data will be reduced to 3-hour rolling averages and compared with the applicable SAM emission rate in sub-section 2.f., **Emission Limitations**. An excursion of SAM indicative monitor data is defined as occurring when the 3-hour rolling average of correlated SAM indicative monitor output values exceeds ~~90% of~~ the applicable SAM rate.
QA/QC Practices and Criteria	A. The permittee shall follow the installation, calibration, and startup procedures of the SAM indicative monitoring system in accordance with good engineering practices. B. The permittee shall continue to calibrate and maintain the SAM indicative monitoring system in accordance with good engineering practices.
Recordkeeping	Hourly SAM indicative monitor output and 3-hour rolling averages of the SAM indicative monitor output will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion, the permittee shall: A. Complete an inspection of the SAM indicative monitor system to determine any potential problems with data collection or validation and correct any revealed performance issues in an expedient manner: and B. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. C. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM Indicative Monitor correlation and DSI per MWg relationships.

Commented [MZP3]: KU does not believe that an additional 10% must be subtracted from an **indicator.** The emission limit is based on the SAM stack test.

TABLE 2 – ALTERNATE – SAM COMPLIANCE INDICATOR

Indicator	DSI injection rates are the secondary compliance indicator.
Applicability	DSI data will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data. The DSI injection rates will be determined from data collected during compliance demonstration stack testing.
Monitoring Frequency, Data Collection, and Averaging Period Monitoring Methods	DSI rate will be used when valid SAM indicative monitor data is unavailable. DSI rate (lb/hr) will be monitored continuously, an average will be recorded hourly, and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Minimum DSI rates will be determined using operational data gathered during compliance demonstration stack testing performed pursuant to sub-Section 3., **Testing Requirements**. If, based on performance tests, the current acceptable DSI indicator ranges need to be amended, the permittee shall submit the new ranges to the Division's Florence Regional Office for approval pursuant to consent decree requirements. An excursion of this section of the CAM plan will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data (i.e., malfunction or undergoing maintenance). An excursion of this section of the CAM plan will be defined if the three-hour rolling average of the DSI rates are below the minimum injection levels determined from the appropriate correlations. Current appropriate DSI indicator ranges are in the table below.
Practices and Criteria	A. The permittee shall follow the installation, operation, and maintenance procedures of the DSI system in accordance with good engineering practices. B. The permittee shall continue to calibrate and maintain the DSI system in accordance with good engineering practices.
Recordkeeping	Hourly DSI rate and 3-hour rolling averages of the DSI rate will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion measured by the DSI method, the permittee shall: A. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. B. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.

~~k.~~j. If any of the events listed below occur at this unit, the permittee shall conduct a stack test within sixty (60) days of the relevant change at this unit and use the results of the stack test to adjust, as necessary, the CAM-determined sorbent injection rates for applicable load ranges for this Unit as described in sub-Sections 6.a., b., and c., **Specific Reporting Requirements**:

i. The monthly average sulfur content of fuel burned at this Unit calculated at the end of any calendar month is greater than 20% above the highest sulfur content used at this Unit during the most recent stack test; or

ii. To the extent that the permittee reasonably expects any of the following changes to remain in effect for more than sixty (60) days:
   a. The material replacement, or change in design, of SAM emissions control equipment at this unit;

   b. A change in the type of fuel used at this unit to a fuel not permitted for use at this unit prior to August 21, 2013;

   c. A change in the type of sorbent material used for SAM emission control at this unit; or

   d. Any other change that the permittee would reasonably expect to result in an increase in the SAM emission rate prior to adjustment of control parameters.

iii. The permittee may rely on the results of a previously scheduled stack test in lieu of conducting an additional stack test if the previously scheduled stack test will occur during the sixty (60)-day period after implementation of the relevant change [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.c.].

~~l.~~k. Following approval by the Kentucky Division for Air Quality (KDAQ) of a CAM plan revision submitted pursuant to sub-Section k., above, or sub-Sections 6.b. or c., **Specific Reporting Requirements**, at all times that this unit is in operation, the permittee shall monitor the continuous monitored indication of SAM and the sorbent injection rate for this unit for comparison to the applicable performance indicators determined in the CAM plan for the relevant load.

i. Any excursion from the applicable CAM-determined performance indicators shall be addressed through compliance with the response protocols set forth in the CAM plan. Such an excursion shall not be considered a violation subject to stipulated penalties under the Consent Decree, notwithstanding any language in Section IX (Stipulated Penalties) of Civil Action Number 3:12-cv-00076-GFVT.

ii. Any excursion from the CAM plan shall be subject to the applicable reporting requirements of Section VII of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.d.].

~~m.~~l. The permittee shall maintain a daily log of the sorbent injection rates and other relevant operating data, including date, average daily unit load (MWg), operating hours for each day, sorbent injection flow rate (gallons per minute and tons per hour), and sorbent injection density (if injecting liquid sorbent) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.e.].

m. The permittee shall determine the opacity of emissions from the stack by Method 9 at least once every fourteen (14) boiler operating days or more frequently if requested by the Division, to demonstrate compliance with the opacity standard. If permittee is unable to perform a Method 9 the permittee must document the reason and report this in the Semiannual Monitoring Report. It will only be considered a deviation in the Annual Compliance Report if reason is other than unit being offline, weather, or night operation. [401 KAR 50:045, Section 1],

n. The permittee shall determine the opacity of emissions from the stack by Method 9 in accordance with the schedule prescribed in 40 CFR 60.45(b)(7). Method 9 testing may also be requested more frequently by the cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

Commented [MZP4]: If possible, KU requests that the every 14-boiler operating day language be changed to the same requirements as 4(o) for Unit 2. The reason is to alleviate time periods when Method 9's can't be performed and for consistency of permit requirement. Unit 1 is equipped with a baghouse. Opacity has not been an issued for this Unit. **The suggested replacement language for the Unit 1, 4(m) language is noted in 4 (n).** If 4n is not accepted then KU requests the revision in 4m.

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5. Specific Recordkeeping Requirements:

a. The permittee shall maintain a file of all information reported in the quarterly summaries, in accordance with 401 KAR 61:005, Section 3(15) and 401 KAR 61:015, Section 6, with the exception that the records shall be maintained for a period of five (5) years.

b. The permittee shall maintain records of:
   i. Each fuel analysis;

   ii. The rate of fuel burned for each fuel type, on a daily basis;

   iii. The heating value, in Btu/lb, and ash content, in percent by weight, of fuel as-burned on a weekly basis;

   iv. The average electrical output and the minimum and maximum hourly generation rate on a daily basis;

   v. When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted;

   vi. Data collected either by CEMS or as necessary to convert monitoring data to the units of the applicable standard; and

   vii. Results of all compliance tests [401 KAR 61:005, Section 3(15) and 401 KAR 61:015,

Section 6].

c. The permittee shall keep visible observation records and Method 9 observations in a designated logbook or electronic format. Records shall be maintained for five (5) years [401 KAR 52:020, Section 10].

d. The permittee shall record the duration and type (cold, warm, or hot) of each start-up [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements (Continued):**

e. The permittee shall comply with all applicable recording provisions of 40 CFR 63.10030 through 40 CFR 63.10033. ~~, no later than April 16, 2015. However, t~~The ~~Division granteds a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

f.

~~f.~~g. The permittee shall retain, and shall instruct it's contractors and agents to preserve, all non-identical copies of documents, records, or other information (including documents, records, or other information in electronic form) in it's or it's contractors' or agents' possession or control that relate directly to the permittee's performance of it's obligations under Civil Action Number 3:12-cv-00076-GFVT for the following periods: (a) until August 21, 2023 for records concerning physical or operational changes undertaken in accordance with Section VI (Sulfuric Acid Mist Reduction and Controls) of Civil Action Number 3:12-cv-00076-GFVT; and (b) until August 21, 2020 for all other records. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information retention period, upon request by the United States, the permittee shall provide copies of documents, records, or other information required to be maintained under this Paragraph [Civil Action Number 3:12-cv-00076-GFVT, paragraph 74] or under sub-Section 4.m., **Specific Monitoring Requirements** [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**

a. The permittee has submitted an initial CAM plan under 40 C.F.R. Part 64, to satisfy the SAM emission rates in paragraph 21.a. of the consent decree, with a copy sent to EPA contemporaneously with the submittal to KDAQ [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.a.].

b. Within sixty (60) days of completion of each SAM stack test required for this unit under sub- Section 3., **Testing Requirements**, the permittee shall submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan, that determines average continuous monitored indication of SAM values and minimum sorbent injection rates for applicable load ranges, as provided for in the CAM plan, based on the most recent stack test for this unit [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.i.].

c. Notwithstanding sub-Sections a. and b. above, if the permittee demonstrates that the CAM-determined minimum sorbent injection rates for SAM control have remained consistent for five (5) consecutive testing periods, then the permittee may submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan that provides for the permittee to thereafter use the previously determined minimum sorbent injection rates without recalculating based on subsequent testing periods [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.iii.].

d. The following minimum data requirements shall be maintained and furnished in the format specified by the Division:

i. The permittee shall submit for every calendar quarter, a written report of excess emissions and the nature and cause of the excess emissions if known. The averaging

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period used for data reporting should correspond to the emission standard averaging period. All quarterly reports shall be submitted electronically or postmarked by the thirtieth (30th) day following the end of each calendar quarter.

ii. For gaseous measurements, the summary shall consist of hourly averages in the units of the applicable standard. The hourly averages shall not appear in the written summary, but shall be provided in electronic format only.

iii. The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments shall be reported. Proof of continuous monitoring system performance is required as specified by the Division whenever system repairs or adjustments have been made.

iv. When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted [401 KAR 61:005, Section 3(15)].

e. For particulate matter measurements, the report summary shall consist of the magnitude in actual pounds per million Btu (lb/MMBtu) of any rolling three (3)-hour average for particulate matter greater than the applicable standard for each hour of operation of the facility. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four (4) equally spaced, instantaneous particulate matter measurements per hour. Any time period exempted shall be considered before determining the excess average of particulate matter [401 KAR 61:005, Section 3(15) and 40 CFR 64.9].

f. The permittee shall report the number of excursions (excluding exempted time periods) above the particulate matter standard, date and time of excursions, particulate matter value of the excursions, in lb/MMBtu, and percentage of the PM-CEMS data showing excursions above the applicable standard in each calendar quarter [401 KAR 61:005, Section 3(15) and 40 CFR 64.9].

g. The permittee shall report the number of excursions (excluding exempted time periods) above the SO_2 standard, date and time of excursions, SO_2 value of the excursions, in lb/MMBtu, and percentage of the SO_2 CEMS data showing excursions above the applicable standard in each calendar quarter [40 CFR 64.9].

h. For exceedances that occur as a result of start-up, the permittee shall report:
   i. The type of start-up (cold, warm, or hot);

   ii. Whether or not the duration of the start-up exceeded the manufacturer's recommended or typical historic durations, and if so, an explanation of how the start-up exceeded recommended or typical durations [401 KAR 52:020, Section 10].

~~i.~~ The permittee shall comply with all applicable reporting provisions of 40 CFR 63.10030 through 40 CFR 63.10033, ~~no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until August 6, 2015 [Approval letter, February 5, 2015].~~

i.

j. Beginning sixty (60) days after the end of the second calendar quarter following August 21, 2013, and continuing on a semi-annual basis until termination of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to EPA a periodic progress report containing the following:

   i. Information, including milestone dates, regarding the design and installation of the SAM control technologies required under Civil Action Number 3:12-cv-00076-GFVT, including any problems encountered or anticipated, together with implemented or proposed solutions;

   ii. Any information indicating that the installation or commencement of operation of a SAM control device might be delayed, including the nature and cause of the delay, and any steps taken by the permittee to mitigate such delay;

   iii. Beginning with the first report filed after June 30, 2013, information to demonstrate compliance with the relevant SAM emission rate during the preceding six (6)-month reporting period, including any compliance testing reports for SAM;

   iv. Information regarding any events or changes identified in paragraph 23.c(i)-(ii) of Civil Action Number 3:12-cv-00076-GFVT;

   v. Information regarding the status of any permit applications submitted or any permit applications required to be submitted under the Consent Decree, including the development of a CAM plan.

   [Civil Action Number 3:12-cv-00076-GFVT, paragraph 24].

k. In any periodic report submitted pursuant to Section VII. of Civil Action Number 3:12-cv-00076-GFVT, the permittee may incorporate by reference information previously submitted under its Title V permitting requirements, provided that the permittee attaches the Title V permit report (or the pertinent portions of such report) and provides a specific reference to the provisions of the Title V Permit report that are responsive to the information required in the periodic report [Civil Action Number 3:12-cv-00076-GFVT, paragraph 25].

l. Deviation Reports. In addition to the report required by sub-Section j. above, if the permittee violates or deviates from any provision of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to the United States a report on the violation or deviation within ten (10) business days after the permittee knew or should have known of the event. In the report, the permittee shall explain the cause or causes of the violation or deviation and any measures taken or to be taken by the permittee to cure the reported violation or deviation or to prevent

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such violation or deviations in the future. If at any time the provisions of Civil Action Number 3:12-cv-00076-GFVT are included in the Title V Permit, consistent with the requirements for such inclusion in Civil Action Number 3:12-cv-00076-GFVT, then the deviation reports required under the applicable Title V regulations shall be deemed to satisfy all the requirements of this paragraph, provided that such reports are also submitted to the United States [Civil Action Number 3:12-cv-00076-GFVT, paragraph 26].

m. All reports required by Civil Action Number 3:12-cv-00076-GFVT shall be submitted to the persons designated in Section XVII (Notices) of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 27].

7. Specific Control Equipment Operating Conditions:

a. The ~~electrostatic precipitator/~~pulse jet fabric filter, wet limestone forced-oxidation sulfur dioxide scrubber, low nitrogen oxides burners, selective catalytic reduction unit, and dry sorbent injection system shall be operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the ~~electrostatic precipitator~~/pulse jet fabric filter, wet limestone forced-oxidation sulfur dioxide scrubber, low nitrogen oxides burners, selective catalytic reduction unit, and dry sorbent injection system shall be maintained [40 CFR 63.10032 and 401 KAR 52:020, Section 10].

Emission Unit 02: **Indirect Heat Exchanger**

Description:
Pulverized coal-fired, dry bottom, tangentially-fired boiler
Construction commenced: prior to September 18, 1978
Number two fuel oil used for startups and stabilization Maximum continuous rating: 5,500 MMBtu/hour

Control Equipment:
~~Electrostatic Precipitator (to be removed in 2015)~~
Low Nitrogen Oxides Burners
Wet Limestone Forced-Oxidation Sulfur Dioxide Scrubber (WFGD) GH2
Dry Sorbent Injection SAM Control
Dry Sorbent Injection Hg Control and Pulse-Jet Fabric Filter (~~to be~~ Iinstalled in 2015)

Stack: EO3, shared with EU 03

APPLICABLE REGULATIONS
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers

401 KAR 52:060, Acid rain permits (See Section J)

401 KAR 59:005, General requirements

40 CFR 60, Subpart D, Standards of performance for fossil-fuel-fired steam generators

40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal and Oil-fired Electric Utility Steam Generating Units

40 CFR Part 64, Compliance Assurance Monitoring (for SO_2, SAM and PM)

40 CFR Part 75, Continuous Emission Monitoring

40 CFR 97, Subpart AAAAA, TR NO_x Annual Trading Program (See Section L)

40 CFR 97, Subpart BBBBB, TR NO_x Ozone Season Trading Program(See Section L)

40 CFR 97, Subpart CCCCC TR SO_2 Group 1 Trading Program (See Section L)

APPLICABLE CONSENT DECREES:
Civil Action Number 3:12-cv-00076-GFVT, filed August 21, 2013

1. **Operating Limitations:**
   ~~a.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

a.

1. **Operating Limitations (Continued):**

b. ~~Beginning no later than December 20, 2012, T~~the permittee will continuously operate the existing SAM controls at Ghent Station Units 1, 2, 3 and 4 [Civil Action Number 3:12-cv-00076-GFVT, paragraph 19].

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to sub-Section 4.n., **Specific Monitoring Requirements**.

~~c. By no later than June 30, 2013, t~~The permittee shall install and continuously operate a ~~new~~ dry sorbent SAM emission control system at Unit 2 designed to reduce SAM emissions to achieve a SAM emissions rate of no greater than 3 ppmvd (at 3% O_2). ~~The permittee shall take the following steps in procuring the new sorbent control system:~~

~~i. The permittee shall obtain a written vendor assurance/guarantee that the new sorbent control system is designed to control SAM emissions at Unit 2 to levels no greater than 3 ppmvd (at 3% O_2) taking into account all anticipated unit operating parameters; and~~

~~ii. The permittee shall ensure that the new sorbent control system includes sorbent milling capabilities and shall consider the use of sorbent milling to enhance SAM emissions reduction [Civil Action Number 3:12-cv-00076-GFVT, paragraph 21.b.].~~

2. **Emission Limitations:**

a. Particulate matter emissions shall not exceed 0.10 lb/MMBtu based on a three (3)-hour average [40 CFR 60.42(a)(1)].

Compliance Demonstration Method:
Compliance with the particulate matter emission limit shall be demonstrated by performance testing as required in sub-Section 3.a., **Testing Requirements**.

b. Emissions shall not exceed 20 percent opacity based on a six (6)-minute average except that a maximum of 27 percent opacity shall be permissible for not more than one (1) six (6)-minute period in any sixty (60) consecutive minutes [40 CFR 60.42(a)(2)].

Compliance Demonstration Method:
Compliance with the opacity standard shall be demonstrated by Method 9 testing as required in sub-Section 4.o., **Specific Monitoring Requirements**.

c. Sulfur dioxide emissions shall not exceed 1.2 lbs/MMBtu based on a three (3)-hour average [40 CFR 60.43(a)(2)].

Compliance Demonstration Method:
Compliance with SO_2 emission limits shall be demonstrated by SO_2 CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

d. Nitrogen oxides (NO_x) emissions expressed as nitrogen dioxide shall not exceed 0.70 lb/MMBtu based on a three (3)-hour average [40 CFR 60.44(a)(3)].

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~~1.~~2. **Emission Limitations (Continued):**

Compliance Demonstration Method:
Compliance with NO_x emission limits shall be demonstrated by NO_x CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

e. ~~Commencing June 30, 2013, t~~The permittee shall achieve and maintain compliance with a SAM emission rate of 4 ppmvd (at 3% O_2) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 21.c.]. If the permittee installs selective catalytic reduction (SCR) on this unit in order to control emissions of NO_x, the permittee shall achieve and maintain compliance with a permanent SAM emission rate of 5 ppmvd (at 3% O_2) following commencement of operation of the SCR [Civil Action Number 3:12-cv-00076-GFVT, paragraph 21.d.].

Compliance Demonstration Method:
Compliance with the SAM emission rate shall be demonstrated through the use of stack tests as described in sub-Section 3., **Testing Requirements**.

~~f. The permittee shall comply with all applicable provisions of 40 CFR 63.9991. , no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

f.

***General MATS Compliance Demonstration Method*:**

~~i.~~ The permittee shall comply with 40 CFR 63, Subpart UUUUU, ~~no later than April 16, 2015 [40 CFR 63.9984(b)]. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

i.

~~ii.~~ The permittee shall meet the notification requirements in 40 CFR 63.10030 according to the schedule in 40 CFR 63.10030 and in 40 CFR 63, Subpart A. Some of the notifications must be submitted before compliance with the emission limits and work practice standards in 40 CFR 63, Subpart UUUUU is required [40 CFR 63.9984(c)]. ~~However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

ii.

iii. The permittee shall demonstrate that compliance has been achieved, by conducting the required performance tests and other activities, no later than one-hundred-eighty (180) days after the applicable date in paragraph (b) or (c) of 40 CFR 63.9984 [40 CFR 63.9984(f)]. ~~However, t~~The Division ~~has~~ granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].

~~iv.~~ The permittee shall demonstrate continuous compliance according to 40 CFR 63.10000 through 40 CFR 63.10023, ~~no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

iv. Filterable Particulate Matter (PM) emissions shall not exceed 0.030 lb/MMBtu OR 0.30 ln/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 3. The 03 stack (emissions for Unit 2 and Unit 3) also has a 30-day, boiler operating day, emission averaging group emission limit with Ghent Units 1 & 4 for filterable PM of 0.30 lb/MmBtu.

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v. Hg emissions shall not exceed 0.013 lbs/GWh, ~~or~~OR 1.2 lb/TBtu heat input, based on a thirty (30) operating day emission averaging group with Ghent Unit 3. The 03 stack (emission for Unit 2 and Unit 3) also has a 30-day, boiler operating day, emission averaging group emission limit with Ghent Units 1 & 4 for Hg of 0.013 lb/GWh.

vi. Hydrogen Chloride (HCL) emissions shall not exceed 0.0020 lb/GWh OR 0.020 lb/MWh based on a thirty (30) operating day averaging group with Ghent Unit 03. (See Table in Section D).

~~2.~~3. **Testing Requirements:**

a.If no additional PM stack tests are performed pursuant to sub-Section 4.f., **Specific Monitoring Requirements**, the permittee shall conduct a performance test for particulate matter (filterable) emissions by the start of the fourth (4^{th}) year of the term of this permit to demonstrate compliance with the applicable standard within the life of the permit. This requirement may be satisfied with the successful completion of testing performed in conjunction with PM CEMS compliance certification/recertification when approved by the Division [401 KAR 50:045, Section 1].

~~a.~~ Performance t~~T~~esting shall be conducted in accordance with 40 CFR 60.46, 401 KAR 50:045, and 40 CFR 64.4(c)(1). Testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit [401 KAR 50:045, Section 5].

b.

~~b.~~ PM CEMS compliance certification/recertification monitor tests to audit the correlation of the reference method mass emissions and the particulate matter monitor (PMCEM) according to the Relative Response Audit (RRA) Test procedures in Performance Specification 11 of 40 CFR 60 shall be conducted annually, once per calendar year; except, every three years, when an Response Correlation Audit (RCA) must be performed. ~~.~~

c. The permittee shall comply with all applicable provisions of 40 CFR 63.10005 through 40 CFR 63.10009 and 40 CFR 63.10011, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].

d. The permittee shall perform quarterly HCL stack testing to demonstrate compliance with the applicable HCL emission limit **2. Emission Limitations** [Table 2 of 40 CFR 63, subpart UUUUU].

e) For affected units meeting the LEE requirements of 40 CFR 63.10005(h), the owner or operator shall repeat the performance test once every 3 years (once every year for Hg) according to Table 5 and 40 CFR 63.10007. Should subsequent emissions testing results show the unit does not meet the LEE eligibility requirements, LEE status is lost. If this should occur permittee defaults back to : (40 CFR 63.10006(b))

~~3.~~(a) For all pollutant emission limits except for Hg, the owner or operator shall conduct emissions testing quarterly, except as otherwise provided in 40 CFR 63.10021(d)(1). (40 CFR 63.10006(b)(1))

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~~a.~~f. Compliance with each SAM emission rate set forth in sub-Sections 2.e., **Emission Limitations**, shall be determined through stack tests conducted pursuant to the most recent procedures set forth in Appendix A of Civil Action Number 3:12-cv-00076-GFVT. Such stack tests shall be conducted under representative unit operating conditions, taking into account fuel sulfur content, load, and other parameters known to impact SAM emissions [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.a.].

~~b.~~g. The permittee shall conduct an ~~bi-~~annual SAM stack test using procedures set forth in sub-Section 3., **Testing Requirements**, ~~at this unit for the two (2) years following August 21, 2013. If, after the initial two (2) year period of bi-annual stack tests, the permittee is able to demonstrate during any subsequent stack test that the SAM emission rate for this unit is less than 80% of the permanent SAM emission rate for this unit, then the permittee may reduce the frequency of the stack tests required for this unit under the Consent Decree to an annual basis~~ until termination of the Consent Decree [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.b.].

~~c.~~h. The permittee may petition EPA to change the annual SAM stack test and reporting requirements if it can demonstrate that appropriate continuous emissions devices for SAM are available, but the permittee shall submit SAM emissions control parameters and data on at least an annual basis [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.c.].

4. Specific Monitoring Requirements:

a. CEMS shall be installed, calibrated, maintained, and operated for measuring sulfur dioxide emissions, nitrogen oxides emissions and either oxygen or carbon dioxide emissions [40 CFR 60.45(a)]. The permittee shall ensure the CEMS are in compliance with, and the permittee shall comply with, the requirements of 40 CFR 60, Appendix B [401 KAR 59:005, Section 4(1)] and 40 CFR 75 [401 KAR 52:020, Section 10].

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b. CEMS shall be used to satisfy the CAM requirements for sulfur dioxide and nitrogen oxides. When CEMS data shows excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and the CEMS and take any corrective action as soon as practicable [40 CFR 64.3(d)(1)].

c. Methods 6, 7, and 3B of 40 CFR 60, Appendix A, as applicable, shall be used for the performance evaluations of SO_2 CEMS. Acceptable alternative methods for Methods 6, 7, and 3B of Appendix A are given in 40 CFR 60.46(d) [40 CFR 60.45(c)(1)].

d. Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of 40 CFR 60, Appendix B [40 CFR 60.45(c)(2)].

e. The span values for the CEMS measuring sulfur dioxide and nitrogen oxides emissions shall be in accordance with 40 CFR 60.45(c)(3) and (4).

f. CEMS shall be installed, calibrated, maintained, and operated for measuring particulate matter emissions. The PM-CEMS shall comply with Appendix B to 40 CFR 60 [401 KAR 59:005, Section 4(1)]. The permittee must follow the most current applicable compliance and monitoring provisions in 40 CFR 60.48Da and 40 CFR 60.49Da, which includes 40 CFR 60, Appendix F, Procedure 2 [40 CFR 60.45(g)(4)].

g. CEMS shall be used to satisfy the CAM requirements for PM. When CEMS data shows excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and CEMS and take any corrective action as soon as practicable [40 CFR 64.3(d)(1)].

h. Continuous emission monitoring data shall be converted into the units of applicable standards using the conversion procedure described in 40 CFR 60.45(e).

i. The permittee shall monitor the duration of each start-up [401 KAR 52:020, Section 10].

~~j.~~ The permittee shall comply with all applicable continuous monitoring requirements of 40 CFR 63.10010, 40 CFR 63.10020 and 40 CFR 63.10021~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

j.

k. The permittee shall implement CAM for SAM at EU 02 based on the most recent CAM plan approved by the Division and as follows:

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TABLE 1 – PRIMARY - SAM COMPLIANCE INDICATOR

Indicator	SAM Indicative Monitor Output is the primary compliance indicator.
Applicability	The correlated output of the SAM indicative monitoring system at this unit will be compared to applicable SAM rates.
Monitoring Frequency, Data Collection, and Averaging Period	The continuous SAM indicative monitor output will be recorded as hourly averages and the data captured will be reduced to 3-hour rolling averages by a performance indicator data collection (PI) system.
Compliance Indication	Using the results of compliance demonstration stack tests performed pursuant to sub-Section 3., **Testing Requirements**, and average SAM indicative monitor output values collected during those tests, a correlation will be developed using regression analysis. Following development of the correlation, the SAM indicative monitor's output will be adjusted according to that correlation. The correlation adjusted SAM indicative monitor's output data will be reduced to 3-hour rolling averages and compared with the applicable SAM emission rate in sub-section 2.e., **Emission Limitations**. An excursion of SAM indicative monitor data is defined as occurring when the 3-hour rolling average of correlated SAM indicative monitor output values exceeds ~~90% of~~ the applicable SAM emission rate.
QA/QC Practices and Critieria	A. The permittee shall follow the installation, calibration, and startup procedures of the SAM indicative monitoring system in accordance with good engineering practices. B. The permittee shall continue to calibrate and maintain the SAM indicative monitoring system in accordance with good engineering practices.
Recordkeeping	Hourly SAM indicative monitor output and 3-hour rolling averages of the SAM indicative monitor output will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion, the permittee shall: A. Complete an inspection of the SAM indicative monitor system to determine any potential problems with data collection or validation and correct any revealed performance issues in an expedient manner, and B. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. C. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

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TABLE 2 – ALTERNATE - SAM COMPLIANCE INDICATOR

Indicator	DSI Injection rates are the secondary compliance indicator.
Applicability	DSI data will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data. The DSI injection rates will be determined from data collected during compliance demonstration stack testing.
Monitoring Frequency, Data Collection, and Averaging Period Monitoring Methods	DSI rate will be used when valid SAM indicative monitor data is unavailable. DSI rate (lb/hr) will be monitored continuously, an average will be recorded hourly, and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Minimum DSI rates will be determined using operational data gathered during compliance demonstration stack testing performed pursuant to sub-Section 3., **Testing Requirements**. If, based on performance tests, the current acceptable DSI indicator ranges need to be amended, the permittee shall submit the new ranges to the Division's Florence Regional Office for approval pursuant to consent decree requirements. An excursion of this section of the CAM plan will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data (i.e., malfunction or undergoing maintenance). An excursion of this section of the CAM plan will be defined if the three-hour rolling average of the DSI rates are below the minimum injection levels determined from the appropriate correlations. Current appropriate DSI indicator ranges are in the table below.
QA/QC Practices and Critieria	A. The permittee shall follow the installation, operation, and maintenance procedures of the DSI system in accordance with good engineering practices. B. The permittee shall continue to calibrate and maintain the DSI system in accordance with good engineering practices.
Recordkeeping	Hourly DSI rate and 3-hour rolling averages of the DSI rate will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion measured by the DSI method, the permittee shall: A. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. B. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

l. If any of the events listed below occur at this unit, the permittee shall conduct a stack test consistent with sub-Section 3., **Testing Requirements**, within sixty (60) days of the relevant change at this unit and use the results of the stack test to adjust, as necessary, the CAM- determined sorbent injection rates for applicable load ranges for this unit described in sub- Sections 6.a., b., and c., **Specific Reporting Requirements**:

i. The monthly average sulfur content of fuel burned at this unit calculated at the end of any calendar month is greater than 20% above the highest sulfur content used at this unit during the most recent stack test; or

ii. To the extent that the permittee reasonably expects any of the following changes to remain in effect for more than sixty (60) days:

~~a.~~1. The material replacement, or change in design, of SAM emissions control equipment at this unit.

~~b.~~2. A change in the type of fuel used at this unit to a fuel not permitted for use at this unit prior to August 21, 2013; or

~~c.~~3. A change in the type of sorbent material used for SAM emission control at this unit.

~~d.~~4. Any other change that the permittee would reasonably expect to result in an increase in the SAM emission rate prior to adjustment of control parameters.

iii. The permittee may rely on the results of a previously scheduled stack test in lieu of conducting an additional stack test if the previously scheduled stack test will occur during the sixty (60)-day period after implementation of the relevant change [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.c.].

m. Following approval by KDAQ of a CAM plan revision submitted pursuant to sub-Section l., above, or sub-Sections 6.b. or c., **Specific Reporting Requirements**, at all times that this unit is in operation, the permittee shall monitor the continuous monitored indication of SAM and the sorbent injection rate for this unit for comparison to the applicable performance indicators determined in the CAM plan for the relevant load.

i. Any excursion from the applicable CAM-determined performance indicators shall be addressed through compliance with the response protocols set forth in the CAM plan. Such an excursion shall not be considered a violation subject to stipulated penalties under the Consent Decree, notwithstanding any language in Section IX (Stipulated Penalties) of Civil Action Number 3:12-cv-00076-GFVT.

ii. Any excursions from the CAM plan shall be subject to the applicable reporting requirements of Section VII of Civil Action Number 3:12-cv-00076-

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GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.d.].

4. Specific Monitoring Requirements (Continued):

n. The permittee shall maintain a daily log of the sorbent injection rates and other relevant operating data, including date, average daily unit load (MWg), operating hours for each day, sorbent injection flow rate (gallons per minute and tons per hour), and sorbent injection density (if injecting liquid sorbent) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.e.].

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o. The permittee shall determine the opacity of emissions from the stack by Method 9 in accordance with the schedule prescribed in 40 CFR 60.45(b)(7). Method 9 testing may also be requested more frequently by the cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

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5. Specific Recordkeeping Requirements:

a. The permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems and devices; and all other information required by 401 KAR 59:005 recorded in a permanent form suitable for inspection [401 KAR 59:005, Section 3(4)].

b. The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the affected facility, any malfunction of the air pollution control equipment; or any period during which a continuous monitoring system or monitoring device is inoperative [401 KAR 59:005, Section 3(2)].

c. The permittee shall record the type (cold, warm, or hot) of each start-up [401 KAR 52:020, Section 10].

d. The permittee shall maintain records of:
   i. Each fuel analysis;

   ii. The rate of fuel burned for each fuel type, on a daily basis;

   iii. The heating value, in Btu/lb, and ash content, in percent by weight, of fuel as-burned on a weekly basis;

   iv. The average electrical output and the minimum and maximum hourly generation rate on a daily basis;

   v. When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted;

   vi. Data collected either by the continuous monitoring systems or as necessary to convert monitoring data to the units of the applicable standard; and

   vii. Results of all compliance tests [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements (Continued):**
   e. For each Method 9 test, the permittee shall maintain records of the date and time intervals of each test; name, affiliation, and copy of current visible emission reading certification for each visible emission observer participating in the performance test; and copies of all visible emission observer opacity field data sheets [40 CFR 60.45(h)(1)].

   f. The permittee shall keep visible observation records and Method 9 observations in a designated logbook or electronic format. Records shall be maintained for five (5) years [401 KAR 52:020, Section 10].

   g. The permittee shall comply with all applicable recording provisions of 40 CFR 63.10030 through 40 CFR 63.10033~~, no later than April 16, 2015. However, T~~the Division ~~has~~ granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].

   h. The permittee shall retain, and shall instruct it's contractors and agents to preserve, all non-identical copies of documents, records, or other information (including documents, records, or other information in electronic form) in it's or it's contractors' or agents' possession or control, that relate directly to the permittee's performance of it's obligations under Civil Action Number 3:12-cv-00076-GFVT for the following periods: (a) until August 21, 2023 for records concerning physical or operational changes undertaken in accordance with Section VI (Sulfuric Acid Mist Reduction and Controls) of Civil Action Number 3:12-cv-00076-GFVT; and (b) until August 21, 2020 for all other records. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information retention period, upon request by the United States, the permittee shall provide copies of documents, records, or other information required to be maintained under this paragraph [Civil Action Number 3:12-cv-00076-GFVT, paragraph 74] or under sub-Section 4.m., **Specific Monitoring Requirements** [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
   a. The permittee has submitted an initial CAM plan under 40 C.F.R. Part 64, to satisfy the SAM emission rates in paragraph 21.a. of the consent decree, with a copy sent to EPA contemporaneously with the submittal to KDAQ [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.a.].

   b. Within sixty (60) days of completion of ~~the second stack test required for this unit under paragraph 22.b. of Civil Action Number 3:12-cv-00076-GFVT and~~ each ~~subsequent~~ SAM stack test for this unit, the permittee shall submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan that determines average continuous monitored indication of SAM values and minimum sorbent injection rates for applicable load ranges, as provided for in the CAM plan [Civil Action Number 3:12-cv- 00076-GFVT, paragraph 23.b.ii.].

   c. Notwithstanding sub-Sections a. and b. above, if the permittee demonstrates that the CAM-determined minimum sorbent injection rates for SAM control have remained

consistent for five (5) consecutive testing periods, then the permittee may submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan that provides for the permittee to thereafter use the previously determined minimum sorbent injection rates without recalculating based on subsequent testing periods [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.iii.].

d. Excess emission and monitoring system performance (MSP) reports shall be submitted to the Administrator quarterly ~~semiannually for each six (6) month period in the calendar year~~. All semiannual reports shall be submitted electronically or postmarked by the thirtieth (30^{th}) day following the end of each six (6)-month period. Periods of excess emissions and monitoring systems downtime that shall be reported are defined as follows:

   i. For particulate matter measurements, the report summary shall consist of the magnitude in actual pounds per million Btu (lb/MMBtu) of any rolling three (3)-hour average of particulate matter greater than the applicable standard for each hour of operation of the facility. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four (4) equally spaced, instantaneous particulate matter measurements per hour. Any time period exempted shall be considered before determining the excess average of particulate matter.

   ~~ii. Excess emissions are defined as any six (6) minute period during which the average opacity of emissions exceeds 20 percent opacity, except that one (1) six (6) minute average of up to 27 percent opacity need not be reported [40 CFR 60.45(g)(1)].~~

   ~~iii.~~ii. Excess emissions for SO_2 are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) of SO_2 as measured by a CEMS exceed the applicable standard in sub-Section 2.c., **Emission Limitations** [40 CFR 60.45(g)(2)].

   ~~iv.~~iii. Excess emissions for NO_x are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) exceed the applicable standards in sub-Section 2.d., **Emission Limitations** [40 CFR 60.45(g)(3)].

e. Each excess emission and MSP report shall include the following information:

   i. The magnitude of the excess emission computed in accordance with 40 CFR 60.13(h), any conversion factors used, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.

   ii. All hourly averages shall be reported for sulfur dioxide and nitrogen oxides monitors. The hourly averages shall be made available in the format specified by the Division.

   iii. Specific identification of each period of excess emissions that occurs during startups,

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shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventive measures adopted.

iv. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

v. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted.

[40 CFR 60.7(c), referenced by 40 CFR 60.45(g)].

f. For exceedances that occur as a result of start-up, the permittee shall report the type of start-up (cold, warm, or hot); and whether or not the duration of the start-up exceeded the manufacturer's recommendation or typical, historical durations, and if so, an explanation of how the start-up exceeded recommended or typical durations [401 KAR 52:020, Section 10].

~~g.~~ The permittee shall comply with all applicable reporting provisions of 40 CFR 63.10030 through 40 CFR 63.10033~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

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~~h.~~g. ~~Beginning sixty (60) days after the end of the second calendar quarter following August 21, 2013, and continuing~~ On a semi-annual basis, until termination of Civil Action Number 3:12- cv-00076-GFVT, the permittee shall submit to EPA a periodic progress report containing the following:

i. Information, including milestone dates, regarding the design and installation of the SAM control technologies required under Civil Action Number 3:12-cv-00076-GFVT, including any problems encountered or anticipated, together with implemented or proposed solutions;

ii. Any information indicating that the installation or commencement of operation of a SAM control device might be delayed, including the nature and cause of the delay, and any steps taken by the permittee to mitigate such delay;

iii. Beginning with the first report filed after June 30, 2013, information to demonstrate compliance with the relevant SAM emission rate during the preceding six (6)-month reporting period, including any compliance testing reports for SAM;

iv. Information regarding any events or changes identified in paragraph 23.c.(i)-(ii) of Civil Action Number 3:12-cv-00076-GFVT;

v. Information regarding the status of any permit applications submitted or any permit applications required to be submitted under the Consent Decree, including the

development of a CAM plan.

[Civil Action Number 3:12-cv-00076-GFVT, paragraph 24].

~~i.~~h. In any periodic report submitted pursuant to Section VII. of Civil Action Number 3:12-cv-00076-GFVT, the permittee may incorporate by reference information previously submitted under its Title V permitting requirements, provided that the permittee attaches the Title V permit report (or the pertinent portions of such report) and provides a specific reference to the provisions of the Title V permit report that are responsive to the information required in the periodic report [Civil Action Number 3:12-cv-00076-GFVT, paragraph 25].

~~j.~~i. Deviation Reports. In addition to the report required by sub-Section h. above, if the permittee violates or deviates from any provision of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to the United States a report on the violation or deviation within ten (10) business days after the permittee knew or should have known of the event. In the report, the permittee shall explain the cause or causes of the violation or deviation and any measures taken or to be taken by the permittee to cure the reported violation or deviation or to prevent such violation or deviations in the future. If at any time the provisions of Civil Action Number 3:12-cv-00076-GFVT are included in the Title V permit, consistent with the requirements for such inclusion in Civil Action Number 3:12-cv-00076-GFVT, then the deviation reports required under the applicable Title V regulations shall be deemed to satisfy all the requirements of this sub-Section, provided that such reports are also submitted to the United States [Civil Action Number 3:12-cv-00076-GFVT, paragraph 26].

~~k.~~j. All reports required by Civil Action Number 3:12-cv-00076-GFVT shall be submitted to the persons designated in Section XVII (Notices) of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 27].

7. Specific Control Equipment Operating Conditions:

a. The ~~electrostatic precipitator/~~pulse jet fabric filter, low nitrogen oxides burners, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the ~~electrostatic precipitator/~~pulse jet fabric filter, low nitrogen oxide burners, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be maintained [40 CFR 63.10032 and 401 KAR 52:020, Section 10].

Emission Unit 03: **Indirect Heat Exchanger**

Description:
Pulverized coal-fired unit, dry bottom, wall-fired boiler
Construction commenced: prior to September 18, 1978
Number two fuel oil used for startup and stabilization
Maximum continuous rating: 5,500 MMBtu/hour

Control Equipment:
Electrostatic Precipitator
Low Nitrogen Oxides Burners with Overfire Air
Selective Catalytic Reduction (SCR)
Wet Limestone Forced-Oxidation Sulfur Dioxide Scrubber (WFGD) GH3
Dry Sorbent Injection SAM Control
Dry Sorbent Injection Hg Control and Pulse-Jet Fabric Filter (Installed May 2014)~~to begin construction in 2012)~~

Stack: EO3, shared with EU 02

APPLICABLE REGULATIONS
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers

401 KAR 52:060, Acid rain permits (See Section J)

401 KAR 59:005, General requirements

40 CFR 60, Subpart D, Standards of performance for fossil-fuel-fired steam generators

40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal and Oil-fired Electric Utility Steam Generating Units

40 CFR Part 64, Compliance Assurance Monitoring (for PM, SO_2, SAM and NO_x)

40 CFR Part 75, Continuous Emission Monitoring

40 CFR 97, Subpart AAAAA, TR NO_x Annual Trading Program (See Section L)

40 CFR 97, Subpart BBBBB, TR NO_x Ozone Season Trading Program (See Section L)

40 CFR 97, Subpart CCCCC TR SO_2 Group 1 Trading Program (See Section L)

APPLICABLE CONSENT DECREES:
Civil Action Number 3:12-cv-00076-GFVT, filed August 21, 2013

1. **Operating Limitations:**
   ~~a.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991~~, no later than April 16, 2015 [40 CFR 63.9984(b)]. However, the Division has granted a compliance~~

a.

1. **Operating Limitations (Continued):**

~~extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

b. ~~Beginning no later than December 20, 2012, the permittee will continuously operate the existing SAM controls at Ghent Station Units 1, 2, 3 and 4 [Civil Action Number 3:12-cv-00076-GFVT, paragraph 19]. By no later than August 31, 2012, t~~The permittee will install and continuously operate enhanced sorbent injection controls to reduce SAM emissions with the goal of achieving a SAM emission rate of no greater than 5 ppmvd (at 3% O_2) for this unit [Civil Action Number 3:12-cv-00076-GFVT, paragraph 20.a.].

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to sub-Section 4.n., **Specific Monitoring Requirements**.

2. **Emission Limitations:**

a. Particulate matter emissions shall not exceed 0.10 lb/MMBtu based on a three (3)-hour average [40 CFR 60.42(a)(1)].

Compliance Demonstration Method:
Compliance with the particulate matter emission limit shall be demonstrated by performance testing as required in sub-Section 3.a., **Testing Requirements**.

b. Emissions shall not exceed 20 percent opacity based on a six (6)-minute average except that a maximum of 27 percent opacity shall be permissible for not more than one (1) six (6)-minute period in any sixty (60) consecutive minutes [40 CFR 60.42(a)(2)].

Compliance Demonstration Method:
Compliance with the opacity standard shall be demonstrated by Method 9 testing as required in sub-Section 4.o., **Specific Monitoring Requirements**.

c. Sulfur dioxide emissions shall not exceed 1.2 lbs/MMBtu based on a three (3)-hour average [40 CFR 60.43(a)(2)].

Compliance Demonstration Method:
Compliance with SO_2 emission limits shall be demonstrated by SO_2 CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

d. Nitrogen oxides emissions expressed as nitrogen dioxide shall not exceed 0.70 lb/MMBtu based on a three (3)-hour average [40 CFR 60.44(a)(3)].

Compliance Demonstration Method:
Compliance with NO_x emission limits shall be demonstrated by NO_x CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

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2. Emission Limitations (Continued):

e. ~~Between August 31, 2012 and June 30, 2014, emissions of SAM shall not exceed 7 ppmvd (at 3% O_2). After June 30, 2014, e~~Emissions of SAM shall not exceed 5 ppmvd (at 3% O_2) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 20.b.ii. and 20.c.ii.].

Compliance Demonstration Method:
Compliance with the SAM emission rate shall be demonstrated through the use of stack tests described in sub-Sections 3., **Testing Requirements**.

~~f.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991~~, no later than April 16, 2015 [40 CFR 63.9984(b)]. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

f.

***General MATS Compliance Demonstration Method*:**

~~i.~~ The permittee shall comply with 40 CFR 63, Subpart UUUUU~~, no later than April 16, 2015 [40 CFR 63.9984(b)]. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

i.

~~ii.~~ The permittee shall meet the notification requirements in 40 CFR 63.10030 according to the schedule in 40 CFR 63.10030 and in 40 CFR 63, Subpart A. Some of the notifications must be submitted before compliance with the emission limits and work practice standards in 40 CFR 63, Subpart UUUUU is required [40 CFR 63.9984(c)]. ~~However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

ii.

iii. The permittee shall demonstrate that compliance has been achieved, by conducting the required performance tests and other activities, no later than one-hundred-eighty (180) days after the applicable date in sub-Section (b) or (c) of 40 CFR 63.9984 [40 CFR 63.9984(f)]. ~~However, t~~The Division ~~has~~ granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].

iv. The permittee shall demonstrate continuous compliance according to 40 CFR 63.10000 through 40 CFR 63.10023~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

v. Filterable Particulate Matter (PM) emissions shall not exceed 0.030 lb/MMBtu OR 0.30 lb/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 2. The 03 stack (emissions for Unit 2 and Unit 3) also has a 30-day, boiler operating day, emission averaging group emission limit with Ghent Units 1 & 4 for filterable PM of 0.30 lb/MMBtu (See Table in Section D).

vii. Hg emissions shall not exceed 0.013 lbs/GWh, or 1.2 lb/TBtu heat input, based on a thirty (30) operating day emission averaging group with Ghent Unit 2. The 03 stack (emission for Unit 2 and Unit 3) also has a 30-day, boiler operating day, emission averaging group emission limit with Ghent Units 1 & 4 for Hg of 0.013 lb/GWh.

vi. Hydrogen Chloride (HCL) emissions shall not exceed 0.0020 lb/GWh OR 0.020 lb/MWh

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based on a thirty (30) operating day averaging group with Ghent Unit 02 (See Table in Section D).

~~iv.~~

3. **Testing Requirements:**
   a. If no additional stack tests are performed pursuant to sub-Section 4.f., **Specific Monitoring Requirements**, the permittee shall conduct a performance test for particulate matter (filterable) emissions by the start of the fourth (4^{th}) year of the term of this permit to demonstrate compliance with the applicable standard within the life of the permit. This requirement may be satisfied with the successful completion of particulate matter testing performed in conjunction with PM CEMS compliance certification/recertification when approved by the Division [401 KAR 50:045, Section 1].

Commented [MZP9]: Add to clarify and to match Unit1

3. Testing Requirements (Continued):

b. Performance t~~T~~esting shall be conducted in accordance with 40 CFR 60.46, 401 KAR 50:045, and 40 CFR 64.4(c)(1). Testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit [401 KAR 50:045, Section 5].

4. PM CEMS compliance certification/recertification monitor tests to audit the correlation of the reference method mass emissions and the particulate matter monitor (PMCEM) according to the Relative Response Audit (RRA) Test procedures in Performance Specification 11 of 40 CFR 60 shall be conducted annually, once per calendar year; except, every three years, when an Response Correlation Audit (RCA) must be performed.

~~b.~~c.

~~c.~~d. The permittee shall comply with all applicable provisions of 40 CFR 63.10005 through 40 CFR 63.10009 and 40 CFR 63.10011, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].

e) For affected units meeting the LEE requirements of 40 CFR 63.10005(h), the owner or operator shall repeat the performance test once every 3 years (once every year for Hg) according to Table 5 and 40 CFR 63.10007. Should subsequent emissions testing results show the unit does not meet the LEE eligibility requirements, LEE status is lost. If this should occur permittee defaults back to : (40 CFR 63.10006(b))

1) For all pollutant emission limits except for Hg, the owner or operator shall conduct emissions testing quarterly, except as otherwise provided in 40 CFR 63.10021(d)(1). (40 CFR 63.10006(b)(1))

~~2)~~

~~d.~~f. The permittee shall perform quarterly HCL stack testing to demonstrate compliance with the applicable HCL emission limit **2. Emission Limitations**. [Table 2 of 40 CFR 63, subpart UUUUU].

~~e.~~g. Compliance with the SAM emission rate set forth in sub-Section 2.e., **Emission Limitations**, shall be determined through stack tests conducted pursuant to the most recent procedures set forth in Appendix A of Civil Action Number 3:12-cv-00076-GFVT. Such stack tests shall be conducted under representative unit operating conditions, taking into account fuel sulfur content, load, and other parameters known to impact SAM emissions [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.a.].

~~f.~~h. The permittee shall conduct an ~~bi-~~annual SAM stack test ~~at this unit for the two (2) years following August 21, 2013. If, after the initial two (2) year period of bi-annual stack tests, the permittee is able to demonstrate during any subsequent stack test that the same emission rate for the unit is less than 80% of the permanent SAM Emission rate for this unit, then the permittee may reduce the frequency of the stack tests required for this unit under the Consent Decree to an annual basis~~ until termination of the Consent Decree [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.b.].

~~g.~~i. The permittee may petition EPA to change the annual SAM stack test and reporting requirements if it can demonstrate that appropriate continuous emissions devices for SAM are available, but the permittee shall submit SAM emissions control parameters and data

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on at least an annual basis [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.c.].

4. **Specific Monitoring Requirements:**
   a. CEMS shall be installed, calibrated, maintained, and operated for measuring sulfur dioxide emissions, nitrogen oxides emissions and either oxygen or carbon dioxide emissions [40 CFR 60.45(a)]. The permittee shall ensure the CEMS are in compliance with, and the permittee shall comply with, the requirements of 40 CFR 60, Appendix B [401 KAR 59:005, Section 4(1)] and 40 CFR 75 [401 KAR 52:020, Section 10].

   b. CEMS shall be used to satisfy the CAM requirements for sulfur dioxide and nitrogen oxides. When CEMS data shows excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and CEMS and take corrective action as soon as practicable [40 CFR 64.3(d)(1)].

   c. Methods 6, 7, and 3B of 40 CFR 60, Appendix A, as applicable, shall be used for the performance evaluations of SO_2 and NO_x CEMS. Acceptable alternative methods for

Methods 6, 7, and 3B of Appendix A are given in 40 CFR 60.46(d) [40 CFR 60.45(c)(1)].

d. Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of 40 CFR 60, Appendix B [40 CFR 60.45(c)(2)].

e. The span values for the CEMS measuring sulfur dioxide and nitrogen oxides emissions shall be in accordance with 40 CFR 60.45(c)(3) and (4).

f. CEMS shall be installed, calibrated, maintained, and operated for measuring particulate matter emissions. The PM-CEMS shall comply with Appendix B to 40 CFR 60 [401 KAR 59:005, Section 4(1)]. The permittee must follow the most current applicable compliance and monitoring provisions in 40 CFR 60.48Da and 40 CFR 60.49Da, which includes 40 CFR 60, Appendix F, Procedure 2 [40 CFR 60.45(g)(4)].

g. CEMS shall be used to satisfy the CAM requirements for PM. When CEMS data show excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and CEMS and take any corrective action as soon as practicable [40 CFR 64.3(d)(1)].

h. Continuous emission monitoring data shall be converted into the units of applicable standards using the conversion procedure described in 40 CFR 60.45(e).

i. The permittee shall monitor the duration of each start-up [401 KAR 52:020, Section 10].

~~j.~~ The permittee shall comply with all applicable continuous monitoring requirements of 40 CFR 63.10010, 40 CFR 63.10020 and 40 CFR 63.10021, ~~no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

~~j.~~

k. The permittee shall implement CAM for SAM at EU 03 based on the most recent CAM plan~~t~~ approved by the Division and as follows:

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TABLE 1 – PRIMARY - SAM COMPLIANCE INDICATOR

Indicator	SAM indicative monitor output is the primary compliance indicator.
Applicability	The correlated output of the SAM indicative monitoring system at each location will be compared to applicable SAM emission rates.
Monitoring Frequency, Data Collection, and Averaging Period	The continuous SAM indicative monitor output will be recorded as hourly averages and the data captured will be reduced to 3-hour rolling averages by a performance indicator data collection (PI) system.
Compliance Indication	Using the results of compliance demonstration stack tests performed pursuant to sub-Section 3., **Testing Requirements**, and average SAM indicative monitor output values collected during those tests, a correlation will be developed using regression analysis. Following development of the correlation, the SAM indicative monitor's output will be adjusted according to that correlation. The correlation adjusted SAM indicative monitor's output data will be reduced to 3-hour rolling averages and compared with the applicable SAM emission rate in sub-section 2.e., **Emission Limitations**. An excursion of SAM indicative monitor data is defined as occurring when the 3-hour rolling average of correlated SAM indicative monitor output values exceeds ~~90% of~~ the applicable SAM rate.
QA/QC Practices and Criteria	A. The permittee shall follow the installation, calibration, and startup procedures of the SAM indicative monitoring system in accordance with good engineering practices. B. The permittee shall continue to calibrate and maintain the SAM indicative monitoring system in accordance with good engineering practices.
Recordkeeping	Hourly SAM indicative monitor output and 3-hour rolling averages of the SAM indicative monitor output will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion, the permittee shall: A. Complete an inspection of the SAM indicative monitor system to determine any potential problems with data collection or validation and correct any revealed performance issues in an expedient manner, and B. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. C. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

Commented [MZP10]: KU does not believe that an additional 10% must be subtracted from an **indicator.** The emission limit is based on the SAM stack test.

TABLE 2 – ALTERNATE SAM COMPLIANCE INDICATOR

Indicator	DSI injection rates are the secondary compliance indicator.
Applicability	DSI data will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data. The DSI injection rates will be determined from data collected during compliance demonstration stack testing.
Monitoring Frequency, Data Collection, and Averaging Period Monitoring Methods	DSI rate will be used when valid SAM indicative monitor data is unavailable. DSI rate (lb/hr) will be monitored continuously, an average will be recorded hourly, and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Minimum DSI rates will be determined using operational data gathered during compliance demonstration stack testing performed pursuant to sub-Section 3., **Testing Requirements**. If, based on performance tests, the current acceptable DSI indicator ranges need to be amended, the permittee shall submit the new ranges to the Division's Florence Regional Office for approval pursuant to consent decree requirements. An excursion of this section of the CAM plan will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data (i.e., malfunction or undergoing maintenance). An excursion of this section of the CAM plan will be defined if the three-hour rolling average of the DSI rates are below the minimum injection levels determined from the appropriate correlations. Current appropriate DSI indicator ranges are in the table below.
QA/QC Practices and Critieria	A. The permittee shall follow the installation, operation, and maintenance procedures of the DSI system in accordance with good engineering. B. The permittee shall continue to calibrate and maintain the DSI system in accordance with good engineering practices.
Recordkeeping	Hourly DSI rate and 3-hour rolling averages of the DSI rate will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion measured by the DSI method, the permittee shall: A. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. B. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

l. If any of the events listed below occur at this unit, the permittee shall conduct a stack test consistent with sub-Section 3., **Testing Requirements**, within sixty (60) days of the relevant change at this unit and use the results of the stack test to adjust, as necessary, the CAM-determined sorbent injection rates for applicable load ranges for this unit described in sub-Sections 6.a., b., and c., **Specific Reporting Requirements**:

i. The monthly average sulfur content of fuel burned at this unit calculated at the end of any calendar month is greater than 20% above the highest sulfur content used at this unit during the most recent stack test; or

ii. To the extent that the permittee reasonably expects any of the following changes to remain in effect for more than sixty (60) days:
   a. The material replacement, or change in design, of SAM emissions control equipment at this unit.

   b. a change in the type of fuel used at this unit to a fuel not permitted for use at this unit prior to August 21, 2013; or

   c. A change in the type of sorbent material used for SAM emission control at this unit.

   d. Any other change that the permittee would reasonably expect to result in an increase in the SAM emission rate prior to adjustment of control parameters.

iii. The permittee may rely on the results of a previously scheduled stack test in lieu of conducting an additional stack test if the previously scheduled stack test will occur during the sixty (60)-day period after implementation of the relevant change [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.c.].

m. Following approval by KDAQ of a CAM plan revision submitted pursuant to sub-Section k., above, or sub-Sections 6.b. or c., **Specific Reporting Requirements**, at all times that this unit is in operation, the permittee shall monitor the continuous monitored indication of SAM and the sorbent injection rate for this unit for comparison to the applicable performance indicators determined in the CAM plan for the relevant load.

i. Any excursion from the applicable CAM-determined performance indicators shall be addressed through compliance with the response protocols set forth in the CAM plan. Such an excursion shall not be considered a violation subject to stipulated penalties under the Consent Decree, notwithstanding any language in Section IX (Stipulated Penalties) of Civil Action Number 3:12-cv-00076-GFVT.

ii. Any excursions from the CAM plan shall be subject to the applicable reporting requirements of Section VII of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.d.].

4. Specific Monitoring Requirements (Continued):

n. The permittee shall maintain a daily log of the sorbent injection rates and other relevant operating data, including date, average daily unit load (MWg), operating hours for each day, sorbent injection flow rate (gallons per minute and tons per hour), and sorbent injection density (if injecting liquid sorbent) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.e.].

o. The permittee shall determine the opacity of emissions from the stack by Method 9 in accordance with the schedule prescribed in 40 CFR 60.45(b)(7). Method 9 testing may also be requested more frequently by the cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; and adjustments and maintenance performed on these systems and devices; and all other information required by 401 KAR 59:005, recorded in a permanent form suitable for inspection [401 KAR 59:005, Section 3(4)].

b. The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the affected facility, any malfunction of the air pollution control equipment; or any period during which a continuous monitoring system or monitoring device is inoperative [401 KAR 59:005, Section 3(2)].

c. The permittee shall record the type (cold, warm, or hot) of each start-up [401 KAR 52:020, Section 10].

d. The permittee shall maintain records of:
   i. Each fuel analysis;

   ii. The rate of fuel burned for each fuel type, on a daily basis;

   iii. The heating value, in Btu/lb, and ash content, in percent by weight, of fuel as-burned on a weekly basis;

   iv. The average electrical output and the minimum and maximum hourly generation rate on a daily basis;

   v. When no excess emissions have occurred and the continuous monitoring system(s) have not been inoperative, repaired, or adjusted;

   vi. Data collected either by the continuous monitoring systems or as necessary to convert monitoring data to the units of the applicable standard; and

   vii. Results of all compliance tests [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements (Continued):**

e. For each Method 9 test, the permittee shall maintain records of the date and time intervals of each test; name, affiliation, and copy of current visible emission reading certification for each visible emission observer participating in the performance test; and copies of all visible emission observer opacity field data sheets [40 CFR 60.45(h)(1)].

f. The permittee shall keep visible observation records and Method 9 observations in a designated logbook or electronic format. Records shall be maintained for five (5) years [401 KAR 52:020, Section 10].

~~g.~~ The permittee shall comply with all applicable recording provisions of 40 CFR 63.10030 through 40 CFR 63.10033, ~~no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

g.

h. The permittee shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control that relate directly to the permittee's performance of its obligations under Civil Action Number 3:12-cv-00076-GFVT for the following periods: (a) until August 21, 2023 for records concerning physical or operational changes undertaken in accordance with Section VI (Sulfuric Acid Mist Reduction and Controls) of Civil Action Number 3:12-cv-00076-GFVT; and (b) until August 21, 2020 for all other records. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information retention period, upon request by the United States, the permittee shall provide copies of documents, records, or other information required to be maintained under this Paragraph [Civil Action Number 3:12-cv-00076-GFVT, paragraph 74] or under sub-Section 4.m., **Specific Monitoring Requirements** [401 KAR 52:020, Section 10].

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6. **Specific Reporting Requirements:**

a. The permittee has submitted an initial CAM plan under 40 C.F.R. Part 64, to satisfy the SAM emission rates in paragraph 21.a. of the consent decree, with a copy sent to EPA contemporaneously with the submittal to KDAQ [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.a.].

b. Within sixty (60) days of completion of the second SAM stack test required for this unit under sub- Section 3., **Testing requirements**, and each subsequent SAM stack test for this unit, the permittee shall submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan that determines average continuous monitored indication of SAM values and minimum sorbent injection rates for applicable load ranges, as provided for in the CAM plan [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.ii.].

c. Notwithstanding sub-Sections a. and b. above, if the permittee demonstrates that the CAM-determined minimum sorbent injection rates for SAM control have remained consistent for five (5) consecutive testing periods, then the permittee may submit to KDAQ for review and

approval, with a contemporaneous copy to EPA, a revision to its CAM plan that provides for the permittee to thereafter use the previously determined minimum sorbent injection rates without recalculating based on subsequent testing periods [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.iii.].

d. Excess emission and monitoring system performance (MSP) reports shall be submitted to the Administrator ~~semiannually for each six (6) month period in the calendar year~~ quarterly. All semiannual reports shall be submitted electronically or postmarked by the thirtieth (30^{th}) day following the end of each six (6)-month period. Periods of excess emissions and monitoring systems downtime that shall be reported are defined as follows:
   i. For particulate matter measurements, the report summary shall consist of the magnitude in actual pounds per million Btu (lb/MMBtu), of any rolling three (3)-hour average of particulate matter greater than the applicable standard for each hour of operation of the facility. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four (4) equally spaced, instantaneous particulate matter measurements per hour. Any time period exempted shall be considered before determining the excess average of particulate matter.

   ii. ~~Excess emissions are defined as any six (6) minute period during which the average opacity of emissions exceeds 20 percent opacity, except that one (1) six (6) minute average of up to 27 percent opacity need not be reported [40 CFR 60.45(g)(1)].~~

   iii. Excess emissions for SO_2 are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) of SO_2 as measured by a CEMS exceed the applicable standard in sub-Section 2.c., **Emission Limitations** [40 CFR 60.45(g)(2)].

   iv. Excess emissions for NO_x are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) exceed the applicable standards in sub-Section 2.d., **Emission Limitations** [40 CFR 60.45(g)(3)].

e. Each excess emission and MSP report shall include the following information:
   i. The magnitude of the excess emission computed in accordance with 40 CFR 60.13(h), any conversion factors used, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.

   ii. All hourly averages shall be reported for sulfur dioxide and nitrogen oxides monitors. The hourly averages shall be made available in the format specified by the Division.

   iii. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventive measures adopted.

Commented [MZP11]: Request deletion. We no longer have a COM. See 4o, testing per (40 CFR 60.45(b)(7).

iv. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

v. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted.

[40 CFR 60.7(c), referenced by 40 CFR 60.45(g)].

f. For exceedances that occur as a result of start-up, the permittee shall report the type of start-up (cold, warm, or hot); and whether or not the duration of the start-up exceeded the manufacturer's recommendation or typical, historical durations, and if so, an explanation of how the start-up exceeded recommended or typical durations [401 KAR 52:020, Section 10].

~~g.~~ The permittee shall comply with all applicable reporting provisions of 40 CFR 63.10030 through 40 CFR 63.10033~~, no later than April 16, 2015. However, the Division has granted a compliance extension request for this emission unit until March 11, 2016 [Approval letter, February 5, 2015].~~

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~~h.~~g. Beginning sixty (60) days after the end of the second calendar quarter following August 21, 2013, and continuing on a semi-annual basis until termination of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to EPA a periodic progress report containing the following:

i. Information, including milestone dates, regarding the design and installation of the SAM control technologies required under Civil Action Number 3:12-cv-00076-GFVT, including any problems encountered or anticipated, together with implemented or proposed solutions;

ii. Any information indicating that the installation or commencement of operation of a SAM control device might be delayed, including the nature and cause of the delay, and any steps taken by the permittee to mitigate such delay;

iii. Beginning with the first report filed after June 30, 2013, information to demonstrate compliance with the relevant SAM emission rate during the preceding six (6)-month reporting period, including any compliance testing reports for SAM;

iv. Information regarding any events or changes identified in paragraph 23.c.(i)-(ii) of Civil Action Number 3:12-cv-00076-GFVT;

v. Information regarding the status of any permit applications submitted or any permit applications required to be submitted under the Consent Decree, including the development of a CAM plan.

[Civil Action Number 3:12-cv-00076-GFVT, paragraph 24].

~~i.~~h. In any periodic report submitted pursuant to Section VII. of Civil Action Number 3:12-cv-00076-GFVT, the permittee may incorporate by reference information previously submitted under its Title V permitting requirements, provided that the permittee attaches the Title V Permit report (or the pertinent portions of such report) and provides a specific reference to the provisions of the Title V Permit report that are responsive to the information required in the periodic report [Civil Action Number 3:12-cv-00076-GFVT, paragraph 25].

~~j.~~i. Deviation Reports. In addition to the report required by paragraph h. above, if the permittee violates or deviates from any provision of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to the United States a report on the violation or deviation within ten (10) business days after the permittee knew or should have known of the event. In the report, the permittee shall explain the cause or causes of the violation or deviation and any measures taken or to be taken by the permittee to cure the reported violation or deviation or to prevent such violation or deviations in the future. If at any time the provisions of Civil Action Number 3:12-cv-00076-GFVT are included in the Title V permit, consistent with the requirements for such inclusion in Civil Action Number 3:12-cv-00076-GFVT, then the deviation reports required under the applicable Title V regulations shall be deemed to satisfy all the requirements of this sub-Section, provided that such reports are also submitted to the United States [Civil Action Number 3:12-cv-00076-GFVT, paragraph 26].

~~k.~~j. All reports required by Civil Action Number 3:12-cv-00076-GFVT shall be submitted to the persons designated in Section XVII (Notices) of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 27].

7. Specific Control Equipment Operating Conditions:

a. The electrostatic precipitator~~,~~/pulse jet fabric filter, low nitrogen oxides burners, selective catalytic reduction unit, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the electrostatic precipitator~~,~~/pulse jet fabric filter, low nitrogen oxide burners, selective catalytic reduction unit, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be maintained [40 CFR 63.10032 and 401 KAR 52:020, Section 10].

Emission Unit 04: **Indirect Heat Exchanger**

Description:
Pulverized coal-fired unit, dry bottom, wall-fired boiler
Construction commenced: prior to September 18, 1978
Number two fuel oil used for startups and stabilization Maximum continuous rating: 5,500 MMBtu/hour

Control Equipment:
Electrostatic Precipitator
Low Nitrogen Oxides Burners with Overfire Air
Selective Catalytic Reduction (SCR)
Wet Limestone Forced-Oxidation Sulfur Dioxide Scrubber (WFGD) GH4
Dry Sorbent Injection SAM Control
Dry Sorbent Injection Hg Control and Pulse-Jet Fabric Filter (Installed Dec. 2014)~~to begin construction in 2012)~~

Stack: EO26 (not shared)

APPLICABLE REGULATIONS
401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers

401 KAR 52:060, Acid rain permits (See Section J)

401 KAR 59:005, General requirements

40 CFR 60, Subpart D, Standards of performance for fossil-fuel-fired steam generators

40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal and Oil-fired Electric Utility Steam Generating Units

40 CFR Part 64, Compliance Assurance Monitoring (for PM, SO_2, and NO_x)

40 CFR Part 75, Continuous Emission Monitoring

40 CFR 97, Subpart AAAAA, TR NO_x Annual Trading Program (See Section L)

40 CFR 97, Subpart BBBBB, TR NO_x Ozone Season Trading Program(See Section L)

40 CFR 97, Subpart CCCCC TR SO_2 Group 1 Trading Program (See Section L)

APPLICABLE CONSENT DECREES:
Civil Action Number 3:12-cv-00076-GFVT, filed August 21, 2013

1. **Operating Limitations:**
   ~~a.~~ The permittee shall comply with all applicable provisions of 40 CFR 63.9991~~, no later than April 16, 2015.~~

1. **Operating Limitations (Continued):**

~~b.~~a. ~~Beginning no later than December 20, 2012, the permittee will continuously operate the existing SAM controls at Ghent Station Units 1, 2, 3 and 4 [Civil Action Number 3:12-cv-00076-GFVT, paragraph 19]. By no later than December 31, 2012, t~~The permittee will install and continuously operate enhanced sorbent injection controls to reduce SAM emissions with the goal of achieving a SAM emission rate of no greater than 5 ppmvd (at 3% O_2) for this unit [Civil Action Number 3:12-cv-00076-GFVT, paragraph 20.a.].

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to sub-Section 4.n., **Specific Monitoring Requirements**.

2. **Emission Limitations:**

a. Particulate matter emissions shall not exceed 0.10 lb/MMBtu based on a three (3)-hour average [40 CFR 60.42(a)(1)].

Compliance Demonstration Method:
Compliance with the particulate matter emission limit shall be demonstrated by performance testing as required in sub-Section 3.a., **Testing Requirements**.

b. Emissions shall not exceed 20 percent opacity based on a six (6)-minute average except that a maximum of 27 percent opacity shall be permissible for not more than one (1) six (6)-minute period in any sixty (60) consecutive minutes [40 CFR 60.42(a)(2)].

Compliance Demonstration Method:
Compliance with the opacity standard shall be demonstrated by Method 9 testing as required in sub-Section 4.o., **Specific Monitoring Requirements**.

c. Sulfur dioxide emissions shall not exceed 1.2 lbs/MMBtu based on a three (3)-hour average [40 CFR 60.43(a)(2)].

Compliance Demonstration Method:
Compliance with SO_2 emission limits shall be demonstrated by SO_2 CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

d. Nitrogen oxides emissions expressed as nitrogen dioxide shall not exceed 0.70 lb/MMBtu based on a three (3)-hour average [40 CFR 60.44(a)(3)].

Compliance Demonstration Method:
Compliance with NO_x emission limits shall be demonstrated by NO_x CEMS as required in sub-Section 4.a., **Specific Monitoring Requirements**.

e. ~~Between August 31, 2012 and June 30, 2014, emissions of SAM shall not exceed 10 ppmvd (at 3% O_2). After June 30, 2014, e~~Emissions of SAM shall not exceed 5 ppmvd (at 3% O_2) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 20.b.iii. and 20.c.iii.].

2. **Emission Limitations (Continued):**

Compliance Demonstration Method:
Compliance with the SAM emission rate shall be demonstrated through the use of stack tests described in sub-Sections 3., **Testing Requirements**.

f. The permittee shall comply with all applicable provisions of 40 CFR 63.9991, no later than April 16, 2015.

***General MATS Compliance Demonstration Method*:**

i. The permittee shall comply with 40 CFR 63, Subpart UUUUU~~, no later than April 16, 2015~~ [40 CFR 63.9984(b)].

ii. The permittee shall meet the notification requirements in 40 CFR 63.10030 according to the schedule in 40 CFR 63.10030 and in 40 CFR 63, Subpart A. Some of the notifications must be submitted before compliance with the emission limits and work practice standards in 40 CFR 63, Subpart UUUUU is required [40 CFR 63.9984(c)].

iii. The permittee shall demonstrate that compliance has been achieved, by conducting the required performance tests and other activities, no later than one-hundred-eighty (180) days after the applicable date in sub-Section (b) or (c) of 40 CFR 63.9984 [40 CFR 63.9984(f)].

~~iv.~~ The permittee shall demonstrate continuous compliance according to 40 CFR 63.10000 through 40 CFR 63.10023~~, no later than April 16, 2015.~~

iv. Filterable Particulate Matter (PM) emissions shall not exceed 0.030 lb/MMBtu~~-~~ OR 0.30 lb/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 1, 2 and 3 (See Table in Section D).

v. Hg emissions shall not exceed 0.013 lbs/GWh, or 1.2 lb/TBtu heat input, based on a thirty (30) operating day emission averaging group with Ghent Unit 1,2, and 3.

vi. Sulfur Dioxide (SO2) shall not exceed 0.020 lb/MMBtu OR 1.5 lb/MWh based on a thirty (30) operating day emission averaging group with Ghent Unit 1 (See Table in Section D).

3. **Testing Requirements:**

a. If no additional PM stack tests are performed pursuant to sub-Section 4.f., **Specific Monitoring Requirements**, the permittee shall conduct a performance test for particulate matter (filterable) emissions by the start of the fourth (4^{th}) year of the term of this permit to demonstrate compliance with the applicable standard within the life of the permit. This requirement may
be satisfied with the successful completion of particulate matter testing performed in conjunction with PM CEMS compliance certification/recertification when approved by the Division [401 KAR 50:045, Section 1].

b. Performance t~~T~~esting shall be conducted in accordance with 40 CFR 60.46, 401 KAR 50:045, and 40 CFR 64.4(c)(1). Testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit [401 KAR 50:045, Section 5].

5. PM CEMS compliance certification/recertification monitor tests to audit the correlation of the reference method mass emissions and the particulate matter monitor (PMCEM) according to the Relative Response Audit (RRA) Test procedures in Performance Specification 11 of 40 CFR 60 shall be conducted annually, once per calendar year; except,

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every three years, when an Response Correlation Audit (RCA) must be performed.

~~b.~~c.

~~c.~~d. The permittee shall comply with all applicable provisions of 40 CFR 63.10005 through 40 CFR 63.10009 and 40 CFR 63.10011, no later than April 16, 2015.

~~d.~~e. Compliance with each SAM emission rate set forth in sub-Section 2.e., **Emission Limitations**, shall be determined through SAM stack tests conducted pursuant to the most recent procedures set forth in Appendix A of Civil Action Number 3:12-cv-00076-GFVT. Such stack tests shall be conducted under representative unit operating conditions, taking into account fuel sulfur content, load, and other parameters known to impact SAM emissions

3. **Testing Requirements (Continued):**
   [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.a.].

   ~~e.~~f. The permittee shall conduct ~~a bi-~~annual SAM stack test ~~at each unit for the two (2) years following August 21, 2013. If, after the initial two (2) year period of bi-annual stack tests, the permittee is able to demonstrate during any subsequent stack test that the SAM emission rate for this unit is less than 80% of the permanent SAM Emission rate for this unit, then the permittee may reduce the frequency of the stack tests required for this unit under the Consent Decree to an annual basis~~ until termination of the Consent Decree [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.b.].

   ~~f.~~g. The permittee may petition EPA to change the annual SAM stack test and reporting requirements if it can demonstrate that appropriate continuous emissions devices for SAM are available, but the permittee shall submit SAM emissions control parameters and data on at least an annual basis [Civil Action Number 3:12-cv-00076-GFVT, paragraph 22.c.].

4. **Specific Monitoring Requirements:**
   a. CEMS shall be installed, calibrated, maintained, and operated for measuring sulfur dioxide emissions, nitrogen oxides emissions and either oxygen or carbon dioxide emissions [40 CFR 60.45(a)]. The permittee shall ensure the CEMS are in compliance with, and the permittee shall comply with, the requirements of 40 CFR 60, Appendix B [401 KAR 59:005, Section 4(1)] and 40 CFR 75 [401 KAR 52:020, Section 10].

   b. CEMS shall be used to satisfy the CAM requirements for sulfur dioxide and nitrogen oxides. When CEMS data shows excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and CEMS and take corrective action as soon as practicable [40 CFR 64.3(d)(1)].

   c. Methods 6, 7, and 3B of 40 CFR 60, Appendix A, as applicable, shall be used for the performance evaluations of SO_2 and NO_x CEMS. Acceptable alternative methods for Methods 6, 7, and 3B of Appendix A are given in 40 CFR 60.46(d) [40 CFR 60.45(c)(1)].

   d. Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of 40 CFR 60, Appendix B [40 CFR 60.45(c)(2)].

   e. The span values for the CEMS measuring sulfur dioxide and nitrogen oxides emissions shall be in accordance with 40 CFR 60.45(c)(3) and (4).

   f. CEMS shall be installed, calibrated, maintained, and operated for measuring particulate matter emissions. The PM-CEMS shall comply with Appendix B to 40 CFR 60 [401 KAR 59:005, Section 4(1)]. The permittee must follow the most current applicable compliance and monitoring provisions in 40 CFR 60.48Da and 40 CFR 60.49Da, which includes 40 CFR 60, Appendix F, Procedure 2 [40 CFR 60.45(g)(4)].

g. CEMS shall be used to satisfy the CAM requirements for PM. When CEMS data show excess emissions as defined in sub-Section 6.d., **Specific Reporting Requirements**, the permittee shall, as appropriate, initiate an investigation of the cause of the excess emissions and CEMS and take any corrective action as soon as practicable [40 CFR 64.3(d)(1)].

h. Continuous emission monitoring data shall be converted into the units of applicable standards using the conversion procedure described in 40 CFR 60.45(e).

i. The permittee shall monitor the duration of each start-up [401 KAR 52:020, Section 10].

j. The permittee shall comply with all applicable continuous monitoring requirements of 40 CFR 63.10010, 40 CFR 63.10020 and 40 CFR 63.10021, no later than April 16, 2015.

k. The permittee shall implement CAM for SAM at EU 04 based on the most recent CAM plan~~t~~ approved by the Division and as follows:

TABLE 1 – PRIMARY - SAM COMPLIANCE INDICATOR

Indicator	SAM indicative monitor output is the primary compliance indicator.
Applicability	The correlated output of the SAM indicative monitoring system at each location will be compared to applicable SAM emission rates.
Monitoring Frequency, Data Collection, and Averaging Period	The continuous SAM indicative monitor output will be recorded as hourly averages and the data captured will be reduced to 3-hour rolling averages by a performance indicator data collection (PI) system.
Compliance Indication	Using the results of compliance demonstration stack tests performed pursuant to sub-Section 3., **Testing Requirements**, the consent decree and average SAM indicative monitor output values collected during those tests, a correlation will be developed using regression analysis. Following development of the correlation, the SAM indicative monitor's output will be adjusted according to that correlation. The correlation adjusted SAM indicative monitor's output data will be reduced to 3-hour rolling averages and compared with the applicable SAM emission rate in sub-section 2.e, **Emission Limitations**. An excursion of SAM indicative monitor data is defined as occurring when the 3-hour rolling average of correlated SAM indicative monitor output values exceeds ~~90% of~~ the applicable SAM emission rate.
QA/QC Practices and Criteria	B. The permittee shall continue to calibrate and maintain the SAM indicative monitoring system in accordance with good engineering practices.
Recordkeeping	Hourly SAM indicative monitor output and 3-hour rolling averages of the SAM indicative monitor output will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion, the permittee shall: A. Complete an inspection of the SAM indicative monitor system to determine any potential problems with data collection or validation

Commented [MZP13]: KU does not believe that an additional 10% must be subtracted from an **indicator.** The emission limit is based on the SAM stack test.

Corrective Actions (Continued)	and correct any revealed performance issues in an expedient manner and B. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. C. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

TABLE 2 – ALTERNATE SAM COMPLIANCE INDICATOR

Indicator	DSI injection rates are the secondary compliance indicator.
Applicability	DSI data will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data. The DSI injection rates will be determined from data collected during compliance demonstration stack testing.
Monitoring Frequency, Data Collection, and Averaging Period Monitoring Methods	DSI rate will be used when valid SAM indicative monitor data is unavailable. DSI rate (lb/hr) will be monitored continuously, an average will be recorded hourly, and the data captured will be reduced to 3-hour rolling averages.
Compliance Indication	Minimum DSI rates will be determined using operational data gathered during compliance demonstration stack testing performed pursuant to sub-Section 3., **Testing Requirements**. If, based on performance tests, the current acceptable DSI indicator ranges need to be amended, the permittee shall submit the new ranges to the Division's Florence Regional Office for approval pursuant to consent decree requirements. An excursion of this section of the CAM plan will only be applicable during periods when the SAM indicative monitor is not capable of collecting accurate data (i.e., malfunction or undergoing maintenance). An excursion of this section of the CAM plan will be defined if the three-hour rolling average of the DSI rates are below the minimum injection levels determined from the appropriate correlations. Current appropriate DSI indicator ranges are in the table below.
QA/QC Practices and Critieria	A. The permittee shall follow the installation, operation, and maintenance procedures of the DSI system in accordance with good engineering. B. The permittee shall continue to calibrate and maintain the DSI system in accordance with good engineering practices.
Recordkeeping	Hourly DSI rate and 3-hour rolling averages of the DSI rate will be recorded. Associated upset conditions and monitoring malfunctions will be recorded as applicable.
Corrective Actions	In response to an excursion measured by the DSI method, the permittee shall:

Corrective Actions (Continued)	A. Complete an inspection of the DSI system as necessary to determine the cause of any injection problems and correct any revealed performance issues in an expedient manner. B. If corrective actions are not successful in returning the performance indicators to compliant ranges, the permittee shall perform an additional stack test to confirm or update the SAM indicative monitor correlation and DSI per MWg relationships.
Reporting	A summary of excursions and corrective actions will be included in the semi-annual Consent Decree report and in the Title V report.

l. If any of the events listed below occur at this unit, the permittee shall conduct a stack test consistent with sub-Section 3., **Testing Requirements**, within sixty (60) days of the relevant change at this unit and use the results of the stack test to adjust, as necessary, the CAM-determined sorbent injection rates for applicable load ranges for this unit described in paragraphs 6.a., b., and c., **Specific Reporting Requirements**:

i. The monthly average sulfur content of fuel burned at this unit calculated at the end of any calendar month is greater than 20% above the highest sulfur content used at this unit during the most recent stack test; or

ii. To the extent that the permittee reasonably expects any of the following changes to remain in effect for more than sixty (60) days:
   a. The material replacement, or change in design, of SAM emissions control equipment at this unit.

   b. A change in the type of fuel used at this unit to a fuel not permitted for use at this unit prior to August 21, 2013; or

   c. A change in the type of sorbent material used for SAM emission control at this unit.

   d. Any other change that the permittee would reasonably expect to result in an increase in the SAM emission rate prior to adjustment of control parameters.

iii. The permittee may rely on the results of a previously scheduled stack test in lieu of conducting an additional stack test if the previously scheduled stack test will occur during the sixty (60)-day period after implementation of the relevant change [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.c.].

m. Following approval by KDAQ of a CAM plan revision submitted pursuant to sub-Section k., above, or sub-Sections 6.b. or c., **Specific Reporting Requirements**, at all times that this unit is in operation, the permittee shall monitor the continuous monitored indication of SAM and the sorbent injection rate for this unit for comparison to the applicable performance indicators determined in the CAM plan for the relevant load.

i. Any excursion from the applicable CAM-determined performance indicators shall be addressed through compliance with the response protocols set forth in the CAM plan. Such an excursion shall not be considered a violation subject to stipulated penalties under this Consent Decree, notwithstanding any language in Section IX (Stipulated Penalties) of Civil Action Number 3:12-cv-00076-GFVT.

ii. Any excursions from the CAM plan shall be subject to the applicable reporting requirements of Section VII of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.d.].

n. The permittee shall maintain a daily log of the sorbent injection rates and other relevant operating data, including date, average daily unit load (MWg), operating hours for each day, sorbent injection flow rate (gallons per minute and tons per hour), and sorbent injection density (if injecting liquid sorbent) [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.e.].

o. The permittee shall determine the opacity of emissions from the stack by Method 9 in accordance with the schedule prescribed in 40 CFR 60.45(b)(7). Method 9 testing may also be requested more frequently by the cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

5. <u>Specific Recordkeeping Requirements:</u>

a. The permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; and adjustments and maintenance performed on these systems and devices; and all other information required by 401 KAR 59:005, recorded in a permanent form suitable for inspection [401 KAR 59:005, Section 3(4)].

b. The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the affected facility, any malfunction of the air pollution control equipment; or any period during which a continuous monitoring system or monitoring device is inoperative [401 KAR 59:005, Section 3(2)].

c. The permittee shall record the type (cold, warm, or hot) of each start-up [401 KAR 52:020, Section 10].

d. The permittee shall maintain records of:
i. Each fuel analysis;

ii. The rate of fuel burned for each fuel type, on a daily basis;

iii. The heating value, in Btu/lb, and ash content, in percent by weight, of fuel as-burned on a weekly basis;

5. Specific Recordkeeping Requirements (Continued):

iv. The average electrical output and the minimum and maximum hourly generation rate on a daily basis;

v. When no excess emissions have occurred and the continuous monitoring systems(s) have not been inoperative, repaired, or adjusted;

vi. Data collected either by the continuous monitoring systems or as necessary to convert monitoring data to the units of the applicable standard; and

vii. Results of all compliance tests [401 KAR 52:020, Section 10].

e. For each Method 9 test, the permittee shall maintain records of the date and time intervals of each test; name, affiliation, and copy of current visible emission reading certification for each visible emission observer participating in the performance test; and copies of all visible emission observer opacity field data sheets [40 CFR 60.45(h)(1)].

f. The permittee shall keep visible observation records and Method 9 observations in a designated logbook or electronic format. Records shall be maintained for five (5) years [401 KAR 52:020, Section 10].

g. The permittee shall comply with all applicable recording provisions of 40 CFR 63.10030 through 40 CFR 63.10033, no later than April 16, 2015.

h. The permittee shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control that relate directly to the permittee's performance of its obligations under Civil Action Number 3:12-cv-00076-GFVT for the following periods: (a) until August 21, 2023 for records concerning physical or operational changes undertaken in accordance with Section VI (Sulfuric Acid Mist Reduction and Controls) of Civil Action Number 3:12-cv-00076-GFVT; and (b) until August 21, 2020 for all other records. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information retention period, upon request by the United States, the permittee shall provide copies of documents, records, or other information required to be maintained under this Paragraph [Civil Action Number 3:12-cv-00076-GFVT, paragraph 74] or under sub-Section 4.m., **Specific Monitoring Requirements** [401 KAR 52:020, Section 10].

6. Specific Reporting Requirements:

a. The permittee has submitted an initial CAM plan under 40 C.F.R. Part 64, to satisfy the SAM emission rates in paragraph 21.a. of the consent decree, with a copy sent to EPA contemporaneously with the submittal to KDAQ [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.a.].

6. Specific Reporting Requirements (Continued):

b. Within sixty (60) days of completion of each stack test required for this unit under sub-Section 3.e., **Testing Requirements**, the permittee shall submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan, that determines average continuous monitored indication of SAM values and minimum sorbent injection rates for applicable load ranges, as provided for in the CAM plan [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.i.].

c. Notwithstanding sub-Sections a. and b. above, if the permittee demonstrates that the CAM-determined minimum sorbent injection rates for SAM control have remained consistent for five (5) consecutive testing periods, then the permittee may submit to KDAQ for review and approval, with a contemporaneous copy to EPA, a revision to its CAM plan that provides for the permittee to thereafter use the previously determined minimum sorbent injection rates without recalculating based on subsequent testing periods [Civil Action Number 3:12-cv-00076-GFVT, paragraph 23.b.iii.].

d. Excess emission and monitoring system performance (MSP) reports shall be submitted to the Administrator ~~semiannually for each six (6) month period in the calendar year~~ quarterly. All semiannual reports shall be submitted electronically or postmarked by the thirtieth (30^{th}) day following the end of each six (6)-month period. Periods of excess emissions and monitoring systems downtime that shall be reported are defined as follows:

i. For particulate matter measurements, the report summary shall consist of the magnitude in actual pounds per million Btu (lb/MMBtu) of any rolling three (3)-hour average of particulate matter greater than the applicable standard for each hour of operation of the facility. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four (4) equally spaced, instantaneous particulate matter measurements per hour. Any time period exempted shall be considered before determining the excess average of particulate matter.

~~ii. Excess emissions are defined as any six (6) minute period during which the average opacity of emissions exceeds 20 percent opacity, except that one (1) six (6) minute average of up to 27 percent opacity need not be reported [40 CFR 60.45(g)(1)].~~

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~~iii.~~ii. Excess emissions for SO_2 are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) of SO_2 as measured by a CEMS exceed the applicable standard in sub-Section 2.c., **Emission Limitations** [40 CFR 60.45(g)(2)].

~~iv.~~iii. Excess emissions for NO_x are defined as any three (3)-hour period during which the average emissions (arithmetic average of three (3) contiguous one (1)-hour periods) exceed the applicable standards in sub-Section 2.d., **Emission Limitations** [40 CFR 60.45(g)(3)].

e. Each excess emission and MSP report shall include the following information:

i. The magnitude of the excess emission computed in accordance with 40 CFR 60.13(h), any conversion factors used, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.

ii. All hourly averages shall be reported for sulfur dioxide and nitrogen oxides monitors. The hourly averages shall be made available in the format specified by the Division.

iii. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventive measures adopted.

iv. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

v. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted.

[40 CFR 60.7(c), referenced by 40 CFR 60.45(g)].

f. For exceedances that occur as a result of start-up, the permittee shall report the type of start-up (cold, warm, or hot); and whether or not the duration of the start-up exceeded the manufacturer's recommendation or typical, historical durations, and if so, an explanation of how the start-up exceeded recommended or typical durations [401 KAR 52:020, Section 10].

g. The permittee shall comply with all applicable reporting provisions of 40 CFR 63.10030 through 40 CFR 63.10033, no later than April 16, 2015.

h. Beginning sixty (60) days after the end of the second calendar quarter following August 21, 2013, and continuing on a semi-annual basis until termination of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to EPA a periodic progress report containing the following:

i. Information, including milestone dates, regarding the design and installation of the SAM control technologies required under Civil Action Number 3:12-cv-00076-GFVT, including any problems encountered or anticipated, together with implemented or proposed solutions;

ii. Any information indicating that the installation of commencement or operation of a SAM control device might be delayed, including the nature and cause of the delay, and any steps taken by the permittee to mitigate such delay;

iii. Beginning with the first report filed after June 30, 2013, information to demonstrate compliance with the relevant SAM emission rate during the preceding six (6)-month reporting period, including any compliance testing reports for SAM;

iv. Information regarding any events or changes identified in Paragraph 23.c(i)-(ii) of Civil Action Number 3:12-cv-00076-GFVT;

v. Information regarding the status of any permit applications submitted or any permit applications required to be submitted under the Consent Decree, including the development of a CAM plan.

[Civil Action Number 3:12-cv-00076-GFVT, paragraph 24].

i. In any periodic report submitted pursuant to Section VII. of Civil Action Number 3:12-cv-00076-GFVT, the permittee may incorporate by reference information previously submitted under its Title V permitting requirements, provided that the permittee attaches the Title V permit report (or the pertinent portions of such report) and provides a specific reference to the provisions of the Title V permit report that are responsive to the information required in the periodic report [Civil Action Number 3:12-cv-00076-GFVT, paragraph 25].

j. Deviation Reports. In addition to the report required by paragraph h. above, if the permittee violates or deviates from any provision of Civil Action Number 3:12-cv-00076-GFVT, the permittee shall submit to the United States a report on the violation or deviation within ten (10) business days after the permittee knew or should have known of the event. In the report, the permittee shall explain the cause or causes of the violation or deviation and any measures taken or to be taken by the permittee to cure the reported violation or deviation or to prevent such violation or deviations in the future. If at any time the provisions of Civil Action Number 3:12-cv-00076-GFVT are included in the Title V permit, consistent with the requirements for such inclusion in Civil Action Number 3:12-cv-00076-GFVT, then the deviation reports required under the applicable Title V regulations shall be deemed to satisfy all the requirements of this sub-Section, provided that such reports are also submitted to the United States [Civil Action Number 3:12-cv-00076-GFVT, paragraph 26].

k. All reports required by Civil Action Number 3:12-cv-00076-GFVT shall be submitted to the persons designated in Section XVII (Notices) of Civil Action Number 3:12-cv-00076-GFVT [Civil Action Number 3:12-cv-00076-GFVT, paragraph 27].

7. <u>Specific Control Equipment Operating Conditions:</u>

a. The electrostatic precipitator, /pulse jet fabric filter, low nitrogen oxides burners, selective catalytic reduction unit, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the electrostatic precipitator,/pulse jet fabric filter, low nitrogen oxide burners, selective catalytic reduction unit, wet limestone flue gas desulfurization unit, and dry sorbent injection unit shall be maintained [40 CFR 63.10032 and 401 KAR 52:020, Section 10].

Emission Unit: 05 Coal Receiving Operations
Emission Unit: 07 Coal Handling Operations
Emission Unit: 08 Coal Conveying and Handling Operations
Emission Unit: 25 Limestone Handling and Receiving
Emission Unit: 27 Limestone Stockpile Operations West

Description:

EU 05 Equipment includes: Barge Unloader and Unloading Operations (Coal use)
Construction commenced: prior to November 15, 1973
Maximum Operating Rate: 3,600 tons/hour
Controls: Enclosures (Barge unloader itself is not enclosed)

EU 08 Equipment includes: Conveyors 1A, 1B, 1C, and transfer points
(From Barge Unloader thru Transfer House 1 to Sample House)
Construction commenced: before October 24, 1974
Maximum Operating Rate: 3,600 tons/hour, each
Controls: Enclosures

EU 07 Equipment includes: Coal Belt Conveyors and Coal Stockpiles and Operations Listed Below
(From Sample House to Coal Stockpiles, or Sample House thru Transfer House 4 thru Crusher 1 House to Generating Units)
Construction commenced: before October 24, 1974

Operation	Maximum Operating Rate (Tons/hour)
Conveyors 1D, 1E, 1F and Transfer Points	3,600 each
Conveyor 1J, and Transfer Points	900 each
Conveyor 1G, and Transfer Points	1,500 each
Conveyors 1H, and Transfer Points	1,800 each
Coal Stockpile and Operations	3,600

Controls: Enclosures, Fabric Filters, or Wet Suppression

EU 25 Equipment includes: Barge Unloader and Unloading Operations (New Lime use)
Construction commenced: 2008
Maximum Operating Rate (Receiving): 1,000 Tons/hour
Controls: Enclosures (Barge unloader itself is not enclosed)

EU 27 Equipment includes: (LSP1) Limestone Storage Pile
Construction commenced: 2008
Maximum Operating Rate: 1,000 Tons/hour
Controls: Wet Suppression

APPLICABLE REGULATIONS:
401 KAR 63:010, Fugitive emissions

1. **Operating Limitations:**
   NA

2. **Emission Limitations:**
   a. Reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:
      i. Application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces which can create airborne dusts;

      ii. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.

      iii. Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne.

      iv. The maintenance of paved roadways in a clean condition [401 KAR 63:010, Section 3].

   b. Discharge of visible fugitive dust emissions beyond the property line is prohibited [401 KAR 63:010, Section 3].

   c. Open bodied trucks, operating outside company property, transporting materials likely to become airborne shall be covered at all times when in motion [401 KAR 63:010, Section 4(1)].

   d. The permittee shall not allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway [401 KAR 63:010, Section 4(4)].

3. **Testing Requirements:**
   Testing shall be conducted at such times as may be requested by the cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

4. **Specific Monitoring Requirements:**
   a. The permittee shall monitor the amount of coal received, and limestone received, in tonnages, monthly [401 KAR 52:020, Section 10].

   b. Visual observations shall be made weekly,~~on a daily basis each day~~ when in ~~of~~ operation, of all operations and control equipment to ensure the control equipment is functioning while the associated equipment is in operation and to determine if any fugitive air emissions are being generated in such a manner as to cause a nuisance or to cross the property line. If such a condition develops, water or another wetting agent shall be applied to suppress the fugitive air

Commented [MZP15]: Request that this be changed to weekly. Not aware of any regulatory requirement for daily monitoring of equipment with enclosures. Daily, as noted in 4c, would remain for the storage piles.

4. Specific Monitoring Requirements (Continued):

emissions so as to comply with the applicable requirements of 401 KAR 63:010 as listed above.

c. In addition, visual observations shall be made on a daily basis each day of operation to determine if fugitive dust is becoming airborne from storage piles and associated operations as a result of vehicular traffic or windy conditions. If such a condition develops, water or a chemical wetting agent shall be applied to these areas as specified in 401 KAR 63:010 as listed above.

d. See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**, Conditions 1, 2, and 3.

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain records of the coal received, and limestone received, in tonnages, monthly [401 KAR 52:020, Section 10].

b. Records of weekly and daily observations and support information as required in sub-Section 4.b and 4.c., **Specific Monitoring Requirements**, shall be kept in accordance with the provisions of Section F, **Monitoring, Recordkeeping, and Reporting Requirements**, Condition 2 [401 KAR 52:020, Section 10].

c. A log shall be kept of all routine and non-routine maintenance performed on each control device [401 KAR 52:020, Section 10].

d. See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**, Conditions 1 and 2.

6. Specific Reporting Requirements:

See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**, Conditions 5, 6, 7, and 8.

7. Specific Control Equipment Operating Conditions:

a. The air pollution control equipment (including but not limited to enclosures) shall be used to maintain compliance with applicable requirements, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the air pollution control equipment (including but not limited to enclosures) shall be maintained [401 KAR 52:020, Section 10].

c. See **Section E – Control Equipment Conditions** for further requirements.

Emission Unit 06: **Coal crushing operations (Crusher House #1)**

Description:
Construction commenced: before October 24, 1974
Equipment includes: four crushers and two surge bins
Maximum Operating Rate: 1,800 tons/hour

Control Equipment:
Enclosure and ~~Baghouse~~Wet Scrubber

APPLICABLE REGULATIONS:
401 KAR 61:020, Existing process operations

1. **Operating Limitations:**
   NA

2. **Emission Limitations:**
   a. Particulate matter emissions into the open air shall not exceed [55 $(P)^{0.11}$ - 40] pounds per hour based on a three (3)-hour average where P is the Process Weight Rate as defined in 401 KAR 61:020 Section 2(4), in tons per hour [401 KAR 61:020, Section 3(2)].

   b. Any continuous emission(s) into the open air shall not equal or exceed 40 percent opacity based on a six (6)-minute average [401 KAR 61:020, Section 3(1)(a)].

   Compliance Demonstration Method:
   Compliance with the PM and opacity emission limits shall be demonstrated by qualitative visual observations as required in sub-Section 4.b., **Specific Monitoring Requirements**.

3. **Testing Requirements:**
   Testing shall be conducted at such times as may be requested by the cabinet in accordance with 401 KAR 50:045, Section 4.

4. **Specific Monitoring Requirements:**
   a. The permittee shall monitor the operating rates and hours of operation on a daily basis [401 KAR 52:020, Section 10].

   b. The permittee shall perform a qualitative visual observation of the opacity of emissions from each stack on a weekly basis when the unit is in operation and maintain a log of the observations. If visible emissions from any stack are seen, then an inspection shall be initiated and corrective action taken. If visible emissions from a stack are seen (not including condensed water vapor in the plume), then an inspection shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation. In lieu of shutting the process down, the permittee may determine the opacity using Reference Method 9. If the opacity limit is not exceeded, the process may continue to operate [401 KAR 52:020, Section 10].

4. Specific Monitoring Requirements (Continued):

c. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 1, 2, and 3.

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain a log of qualitative visual observations of opacity and the opacity determined by Reference Method 9, if any were taken, and repairs that were made due to any opacity reading which exceeded the standard [401 KAR 52:020, Section 10].

b. The permittee shall maintain records of the coal processed (tonnages) and hours of operation on a daily basis [401 KAR 52:020, Section 10].

6. Specific Reporting Requirements:

a. The permittee shall report any visible emissions, the date and time of visible emissions, date and time of the excursions, and opacity value of all Method 9 tests taken semiannually [401 KAR 52:020, Section 10].

b. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 5, 6, 7, and 8.

7. Specific Control Equipment Operating Conditions:

a. The enclosures and baghouse shall be used and operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance and operation of the enclosures and baghouse shall be maintained [401 KAR 52:020, Section 10].

Emission Unit 09: **Coal Conveyor 2H**
Emission Unit 10: **Coal Conveyor 6H**
Emission Unit 11: **Coal Crushing**

Description:
Construction commenced before 1981 (operational in 1981), except for conveyors 2H (EU 09) and 2J (part of EU 11), for which construction commenced before 1977 (operational in 1977)

EU 09 Equipment includes: Conveyor 2H and transfer points Maximum Operating Rate: 1,800 tons/hour

EU 10 Equipment includes: Conveyor 6H and transfer points Maximum Operating Rate: 1,800 tons/hour

EU 11 Equipment includes: (below)

Operation	Maximum Operating Rate (Tons/hour)
Crusher House #2 (four crushers with one surge bin)	1,800
Conveyors 2J, 3J, 4J, 3M, 4M and Transfer Points	900 each
Conveyors 2G, and Transfer Points	1,500 each
Conveyors 5G, 6G, 7G, 8G, 3H, 4H, 5H, Coal Silo, and Transfer Points	1,800 each
Conveyors 3G, 4G and Transfer Points	2,400 each

Control Equipment: Enclosures and Fabric Filter or Wet Scrubber

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APPLICABLE REGULATIONS:
401 KAR 60:005, which incorporates by reference **40 CFR 60, Subpart Y, Standards of performance for coal preparation plants, for emission units commenced after October 24, 1974**

1. **Operating Limitations:**
   NA

2. **Emission Limitations:**
   Opacity from each of these emission units shall not exceed 20 percent [40 CFR 60.254(a)].

   Compliance Demonstration Method:
   Compliance with the opacity emission limit shall be demonstrated by qualitative visual observation and Method 9 testing as required in sub-Section 4.b., **Specific Monitoring Requirements**.

3. **Testing Requirements:**
   EPA Reference Method 9 shall be used to determine opacity. Method 9 tests shall be performed pursuant to sub-Section 4.b., **Specific Monitoring Requirements**, and as required by the Division [40 CFR 60.254].

4. Specific Monitoring Requirements:

a. The permittee shall monitor the amount of coal ~~received~~ burned, in tonnages, monthly [401 KAR 52:020, Section 10].

b. The permittee shall perform a qualitative visual observation of the opacity of emissions from the stack on a weekly basis and maintain a log of the observations. If visible emissions from the stack are seen, then an inspection shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation. In lieu of shutting the process down, the permittee may determine the opacity using Reference Method 9. If the opacity limit is not exceeded, the process may continue to operate [401 KAR 52:020, Section 10].

c. See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**, Conditions 1, 2, and 3.

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain records of the amount of coal ~~processed,~~ burned in tons, on a monthly basis [401 KAR 52:020, Section 10].

b. The permittee shall maintain records of the weekly log of qualitative visual observations of opacity of emissions and the opacity determined by Reference Method 9, if any were taken, and repairs that were made due to any opacity reading which exceeded the standard [401 KAR 52:020, Section 10].

6. Specific Reporting Requirements:

a. The permittee shall report the number of excursions above the opacity standard, date and time of the excursions and opacity value of the excursion semiannually [401 KAR 52:020, Section 10].

b. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 5, 6, 7, and 8.

7. Specific Control Equipment Operating Conditions:

a. The air pollution control equipment (including but not limited to enclosures and fabric filters or wet scrubber) shall be used to maintain compliance with applicable requirements, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the air pollution control equipment (including but not limited to enclosures) shall be maintained [401 KAR 52:020, Section 10].

Emission Unit 22: **Four Cooling Towers**

Description:
Construction commenced: prior to 1992

Tower Number	Maximum Operating ~~Rate~~ Design (Gallons per Minute)
1	191,000
2	197,000
3	172,000
4	172,000

APPLICABLE REGULATIONS:
401 KAR 63:010, Fugitive emissions

1. **Operating Limitations:**
   NA

2. **Emission Limitations:**
   a. Reasonable precautions shall be taken to prevent particulate matter from becoming airborne [401 KAR 63:010, Section 3].

   b. Discharge of visible fugitive dust emissions beyond the property line is prohibited [401 KAR 63:010, Section 3].

3. **Testing Requirements:**
   Testing shall be conducted at such times as may be requested by the cabinet in accordance with 401 KAR 50:045, Section 4.

4. **Specific Monitoring Requirements:**
   See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 1, 2, and 3.

5. **Specific Recordkeeping Requirements:**
   Records of the water circulation rates shall be maintained on a monthly basis, in millions of gallons of water throughput [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
   See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 5, 6, 7, and 8.

Emission Unit 26: **Limestone Handling and Processing**
Emission Unit 28: **Limestone Handling and Processing**

Description:
Construction commenced: April 2006
Controls: Enclosures and moist material

EU 26 Equipment includes: Conveyors L2, L3, and transfer points
Maximum Operating Rate: 1,000 Tons per hour, each

EU 28 Equipment includes: Conveyors L4, L5, L6, L7, and transfer points
Maximum Operating Rate: 225 Tons per hour, each

APPLICABLE REGULATIONS:
40 CFR 60, Subpart OOO, **Standards of Performance for Non-metallic Mineral Processing Plants**, applies to each of the emissions units listed above, commenced after August 31, 1983 but before April 22, 2008

1. **Operating Limitations:**
   NA

2. **Emission Standards:**
   Opacity from each of these emission units shall not exceed 10 percent [40 CFR 60.672(b)].

   Compliance Demonstration Method:
   Compliance with the opacity emission limit shall be demonstrated by qualitative visual observation and Method 9 testing as required in sub-Section 4.a., **Specific Monitoring Requirements**.

3. **Testing Requirements:**
   Testing shall be conducted at such times as may be requested by the cabinet in accordance with 401 KAR 50:045, Section 4.

4. **Specific Monitoring Requirements:**
   a. The permittee shall perform a qualitative visual observation of the opacity of emissions from the units on a weekly basis and maintain a log of the observations. If visible emissions from the units are seen, then an inspection shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation. In lieu of shutting the process down, the permittee may determine the opacity using Reference Method 9. If the opacity limit is not exceeded, the process may continue to operate [401 KAR 52:020, Section 10].

   b. The permittee shall monitor the amount of limestone processed, in tons, on a monthly basis [401 KAR 52:020, Section 10].

4. Specific Monitoring Requirements (Continued):

c. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 1, 2, and 3.

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain records of the amount of limestone processed, in tons, on a monthly basis [401KAR 52:020, Section 10].

b. The permittee shall maintain records of the weekly log of qualitative visual observations of opacity of emissions and the opacity determined by Reference Method 9, if any were taken, and repairs that were made due to any opacity reading which exceeded the standard [401 KAR 52:020, Section 10].

6. Specific Reporting Requirements:

a. The permittee shall report the number of excursions above the opacity standard, date and time of the excursions and opacity value of the excursion semiannually [401 KAR 52:020, Section 10].

b. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 5, 6, 7, and 8.

7. Specific Control Equipment Operating Conditions:

a. The air pollution control equipment (including but not limited to enclosures) shall be used to maintain compliance with applicable requirements, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

b. Records regarding the maintenance of the air pollution control equipment (including but not limited to enclosures) shall be maintained [401 KAR 52:020, Section 10].

Emission Unit 29: **Limestone Handling and Processing**

Description:
Equipment Includes: 3 Wet limestone sizing screens, 3 wet limestone mills, conveyors and transfer points.

Maximum Operating Rate: 100 Tons per hour, each
Controls: Building enclosure and Wet Process

APPLICABLE REGULATIONS:
401 KAR 59:010, New process operations

NON-APPLICABLE REGULATIONS:
40 CFR 60, Subpart OOO, **Standards of Performance for Non-metallic Mineral Processing Plants**, does not apply as these are wet material processing operations [40 CFR 60.670(a)(2)].

1. **Operating Limitations:**
   NA

2. **Emission Standards:**
   a. Visible emissions shall not exceed 20% opacity [401 KAR 59:010, Section 3(1)(~~b~~a)].

   b. ~~Visible emissions shall not remain visible beyond the lot line of the property [401 KAR 59:010, Section 3(1)(b)].~~

   Compliance Demonstration Method:
   Compliance with visible emission standards shall be demonstrated by sub-Section 4.a., **Specific Monitoring Requirements**.

3. **Testing Requirements:**
   Testing shall be conducted at such times as may be requested by the cabinet in accordance with 401 KAR 50:045, Section 4.

4. **Specific Monitoring Requirements:**
   a. The permittee shall perform a qualitative visual observation of the opacity of emissions from the openings and vents of the building on a weekly basis and maintain a log of the observations. If visible emissions are seen, then an inspection shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation. In lieu of shutting the process down, the permittee may determine the opacity using Reference Method 9. If the opacity limit is not exceeded, the process may continue to operate [401 KAR 52:020, Section 10].

   b. See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 1, 2, and 3.

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Commented [MZP17]: 3(1)(b) only applies to units in non-attainment areas. Ghent is located in an attainment area.

5. **Specific Recordkeeping Requirements:**
The permittee shall maintain records of the weekly log of qualitative visual observations of opacity of emissions and the opacity determined by Reference Method 9, if any were taken, and repairs that were made due to any visible emissions [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
See Section F, **Monitoring, Recordkeeping, and Reporting**, Conditions 5, 6, 7, and 8.

7. **Specific Control Equipment Operating Conditions:**
   a. The air pollution control equipment (including but not limited to enclosures) shall be used to maintain compliance with applicable requirements, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

   b. Records regarding the maintenance of the air pollution control equipment (including but not limited to enclosures) shall be maintained [401 KAR 52:020, Section 10].

Emission Unit 34: **Emergency Air Compressor Engine**

Description:
Caterpillar C15 engine Tier III rated

Primary Fuel:	# 2 distillate oil (diesel)
Rated Capacity:	540 hp
Manufactured:	2006
Construction commenced:	2009

APPLICABLE REGULATIONS:
40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

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

1. **Operating Limitations:**
   This engine is not required to meet any of the requirements of 40 CFR 63, Subpart ZZZZ, or 40 CFR 63, Subpart A, except for the initial notification requirements of 40 CFR 63.6645(f) [40 CFR 63.6590(b)(1)(i)].

   Compliance Demonstration Method:
   The notification was submitted March 3, 2010.

2. **Emission Limits:**
   N/A

3. **Testing Requirements:**
   N/A

4. **Specific Monitoring Requirements:**
   The permittee shall monitor hours of operation and fuel usage (gallons) for this engine [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements:**
   The permittee shall maintain records of hours of operation and fuel usage (gallons) for this engine [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
   N/A

Fugitive operations tied to material transport/vehicle movement of dry material
~~Construction commenced: June 2012~~
~~Ash~~ CCR landfill
Construction commenced: October 2012

Controls: Wet Suppression by watering, cleaning and road maintenance

APPLICABLE REGULATIONS:
401 KAR 63:010, Fugitive emissions

NON-APPLICABLE REGULATION:
40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills

1. **Operating Limitations:**
   a. The permittee shall not accept any waste from the public. The landfill shall not receive any material other than coal related material, CCR/coal combustion residue (~~,~~ gypsum, bottom ~~and~~ fly ash products) ~~(~~to preclude 40 CFR 60, Subpart WWW~~)~~.
   ~~a.~~b. No person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:
      1. Use, where possible, of water or chemicals for control of dust in the demolition of existing building or structures, construction operations, the grading of roads or the clearing of land;
      2. Application and maintenance of asphalt, oil, water or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts;
      3. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling. Adequate containment methods shall be employed during sandblasting or other similar operations;
      4. Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne;
      5. The maintenance of paved roadways in a clean condition;
      6. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water.

   [401 KAR 63:010, Section 3(1)]

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1. **Operating Limitations (Continued):**
   ~~b.~~c. Discharge of visible fugitive dust emissions beyond the property line is prohibited [401 KAR 63:010, Section 3(2)].

   ~~c.~~d. When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from the landfill or equipment in such a manner and amount as to cause a nuisance or to violate any administrative regulation, the secretary may order that the building or equipment in which processing, handling and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air [401 KAR 63:010, Section 3(3)].

   ~~d.~~e. At all times when in motion, open bodied trucks, operating outside company property, transporting materials likely to become airborne shall be covered. No one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway [401 KAR 63:010, Section 4].

2. **Emission Limitations:**
   The permittee shall not cause or permit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate [401 KAR 63:010, Section 2].

   Compliance Demonstration:
   The permittee shall demonstrate compliance with this requirement by good procedures listed above, posting a 15 mile per hour sign for each road way to be enforced as a speed limit, and meeting the requirements of sub-Sections 4., **Specific Monitoring Requirements**, and 5., **Specific Recordkeeping Requirements**.

3. **Testing Requirements:**
   N/A

4. **Specific Monitoring Requirements:**
   a. The permittee shall monitor actions taken (e.g. water usage for roads, enclosures are in good operating condition) to prevent the discharge of visible fugitive emissions beyond the property line for each unit on a monthly basis [401 KAR 52:020, Section 10].

   b. The permittee shall monitor the rate of material hauled (tons, VMT, gallons/hr, etc.) for each unit or vehicle on paved and unpaved roadways on a monthly basis [401 KAR 52:020, Section 10].

   c. Visual observations shall be made each operating day to determine if fugitive dust is becoming airborne from associated operations as a result of vehicular traffic or windy conditions on paved and unpaved roadways. If such a condition develops, water or a chemical wetting agent shall be applied to these areas as specified in 401 KAR 63:010 as listed above.

5. **Specific Recordkeeping Requirements:**
   a. The permittee shall maintain records of the visual observations and actions taken to prevent the discharge of visible fugitive emissions beyond the property line on a monthly basis [401 KAR 52:020, Section 10].

   b. The permittee shall maintain records of the processing rate (tons, VMT, gallons/hr, etc.) for each vehicle or unit for paved and unpaved roadways on a monthly basis [401 KAR 52:020, Section 10].

   c. Records regarding the maintenance and use of the air pollution control equipment (spray nozzles) shall be maintained [401 KAR 52:020, Section 10].

   d. The permittee shall maintain records of the calculations to determine the fugitive emissions from paved and unpaved roads with all data used in calculations. Emission calculations shall be based on the most current AP-42 emission factors for paved and unpaved roadways for that year.

6. **Specific Reporting Requirements:**
   See Section F, **Monitoring, Recordkeeping, and Reporting**.

7. **Specific Control Equipment Operating Conditions:**
   The associated air pollution control equipment for the emission unit shall be operated to maintain compliance with permitted emission limitations, consistent with manufacturer's specifications and standard operating practices [401 KAR 50:055].

Emission Unit 40: **One Emergency Stationary RICE**

Emission Unit	Make	Location	Manufacture Date	Hp Rating	Fuel	Control Equipment
40	Cummins	Fire Pump	1972	340 HP	Diesel	None

APPLICABLE REGULATIONS:

40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)

1. **Operating Limitations:**
   a. ~~No later than May 3, 2013 [40 CFR 63.6595(a)(1)] ,~~ T~~t~~he permittee shall be in compliance with the applicable emission limitations, operating limitations, and other requirements in 40 CFR 63, Subpart ZZZZ at all times [40 CFR 63.6605(a)].

   b. ~~No later than May 3, 2013 [40 CFR 63.6595(a)(1)], a~~At all times the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source [40 CFR 63.6605(b)].

   c. ~~Beginning January 1, 2015, i~~If the stationary emergency RICE is operated or is contractually obligated to be available for more than fifteen (15) hours per year for the purposes of demand response as specified in 40 CFR 63.6640(f), the permittee must use diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to January 1, 2015, may be used until depleted [40 CFR 63.6604(b)].

   d. The permittee shall operate and maintain the stationary emergency RICE and any after-treatment control devices according to the manufacturer's emission-related written instructions or develop the permittee's own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions [40 CFR 63.6625(e)(2)].

   e. The permittee shall minimize the stationary emergency RICE's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed thirty (30) minutes [40 CFR 63.6625(h)].

   f. In order for the emergency stationary RICE to be considered an emergency engine under 40 CFR 63, Subpart ZZZZ, the permittee must operate the emergency stationary RICE

1. **Operating Limitations (Continued):**
   according to the requirements for emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for fifty (50) hours per year, as described in 40 CFR 63.6640(f). There is no time limit on the use of emergency stationary RICE in emergency situations, when those emergency situations meet the requirements of 40 CFR 63.6640(f).

   g. The permittee shall change the oil and filter every five hundred (500) hours of operation or annually, whichever comes first. The permittee shall inspect the air cleaner every one thousand (1,000) hours of operation or annually, whichever comes first, and replace as necessary. The permittee shall inspect all hoses and belts every five hundred (500) hours of operation or annually, whichever comes first, and replace as necessary [40 CFR 63 Subpart ZZZZ, Table 2c., Item 1.]. The permittee has the option of utilizing an oil analysis program as specified in 40 CFR 63.6625(i) in order to extend the specified oil change requirement.

2. **Emission Limitations:**
   N/A

3. **Testing Requirements:**
   N/A

4. **Specific Monitoring Requirements:**
   a. ~~By no later than May 3, 2013, t~~The permittee shall install a non-resettable hour meter if one is not already installed [40 CFR 63.6625(f)].

   b. ~~The permittee shall monitor and collect data according to 40 CFR 63.6635.~~

5. **Specific Recordkeeping Requirements:**
   a. The permittee must keep records of each notification and report that is submitted, the occurrence and duration of each malfunction of operation of any air pollution control and monitoring equipment, records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii), records of all required maintenance performed on any air pollution control and monitoring equipment, and records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation [40 CFR 60.6655(a)].

   b. The permittee shall maintain records of the maintenance conducted on the engines in order to demonstrate that the engines were operated and maintained, including any after-treatment control devices, according to the maintenance plans for the engines [40 CFR 63.6655(e)].

   c. Records must be in a form suitable and readily available for expeditious review according to 40 CFR 63.10(b)(1). The permittee must keep each record readily accessible in hard copy or electronic form. The permittee must keep each record for five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1) [40 CFR 63.6660].

Commented [MZP19]: Perhaps this was a typo. 40 CFR 63.6635 does not apply; however, 40 CFR 63.6625 does apply. The requirement in 40 CFR 63:6625(e)2, (h) &(i) should also be noted

5. Specific Recordkeeping Requirements (Continued):

d. The permittee must keep records of the hours of operation of the engines that is recorded through the non-resettable hour meters. The permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response, records must be kept of the notification of the emergency situation, and the time the engines were operated as part of demand response [40 CFR 63.6655(f)(1)].

6. Specific Reporting Requirements:

a. The permittee must report each instance in which the operating limitations in sub-Section 1., **Operating Limitations**, have not been met. These instances are deviations from the emission and operating limitation in 40 CFR 63 Subpart ZZZZ and must be reported according to 40 CFR 63.6650 [40 CFR 63.6640(b)].

b. The permittee must report each instance in which the requirements of Table 8. to 40 CFR 63 Subpart ZZZZ, that apply, have not been met [40 CFR 63.6640(e)]. The notifications listed in 40 CFR 63.7(b) and (c), 40 CFR 63.8(e), (f)(4) and (f)(6), 40 CFR 63.9(b) through (e), and (g) are not required [40 CFR 63.6645(a)(5)].

c. See Section F., **Monitoring, Recordkeeping, and Reporting Requirements**.

Emission Units: 36-39 **Four Emergency Generator Engines**

Emission Unit	Make	Location	Manufacture Date	Hp Rating	Fuel	Control Equipment
36	Caterpillar	Unit 3	1980	755 HP	Diesel	None
37	Caterpillar	Unit 4	1983	755 HP	Diesel	None
38	Caterpillar	Unit 1	1972	505 HP	Diesel	None
39	Caterpillar	Unit 2	1976	505 HP	Diesel	None

Commented [MZP20]: Request that a statement be added for Units 38 and 39. Units 38 and 39 will cease operation once Units 42 and 43 are placed in operation. I suspect this will occur before the permit is issued as a draft. If this occurs then KU requests removal of Units 38 and 39.

APPLICABLE REGULATIONS:

401 KAR 63:002, 40 CFR Part 63 national emission standards for hazardous air pollutants, incorporating by reference **40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**. However, these engines do not have to meet the requirements of 40 CFR 63, Subpart ZZZZ or 40 CFR 63, Subpart A, including notification requirements [40 CFR 63.6590(b)(3)(ii)].

1. **Operating Limitations:**
   N/A

2. **Emission Limitations:**
   N/A

3. **Testing Requirements:**
   N/A

4. **Specific Monitoring Requirements:**
   The permittee shall monitor hours of operation for these engines [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements:**
   The permittee shall maintain records of hours of operation for these engines [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
   See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**.

Emission Unit 41: Non-Emergency Diesel-fired Generator Engine

Description:
Kubota V3600-T-E3BG engine, Tier IV rated
Primary Fuel: low sulfur diesel
Rated Capacity: 53 hp
Manufactured: 2013
Construction commenced: 2013

APPLICABLE REGULATIONS:
40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Although this regulation is applicable to this engine, the permittee shall meet the requirements of this regulation by meeting the requirements of 40 CFR 60, Subpart IIII. No further requirements apply to this engine under 40 CFR 63, Subpart ZZZZ.

1. **Operating Limitations:**
   The permittee shall purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel [40 CFR 60.4207(b)].

2. **Emission Limitations:**
   a. The permittee shall comply with the emission standards for new CI engines in 40 CFR 60.4201, as applicable [40 CFR 60.4204(b)].

      Compliance Demonstration Method:
      The permittee shall purchase the engine certified to the emissions standards above, for the same model year and maximum engine power. The engine shall be installed and configured according to manufacturer's emission-related specifications, except as permitted in 40 CFR 60.4211(g) [40 CFR 60.4211(c)]. The permittee shall operate and maintain the engine according to manufacturer's emission-related written instructions; change only those settings that are permitted by the manufacturer; and meet the requirements of 40 CFR Parts 89, 94, or 1068 as they apply to the engine [40 CFR 60.4211(a)].

   b. The permittee shall achieve the emission standards over the entire life of the engine [40 CFR 60.4206].

3. **Testing Requirements:**
   N/A

4. **Specific Monitoring Requirements:**
   The permittee shall monitor hours of operation for this engine [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements:**
   The permittee shall maintain records of hours of operation for this engine [401 KAR 52:020, Section 10].

6. **Specific Reporting Requirements:**
   See Section F, **Monitoring, Recordkeeping, and Reporting Requirements**.

Emission Unit 42 - 43 – Two Emergency Generator Engines (Replacements for Units 38 & 39)

Description:
Tier 3 certified, 4 stroke lean burn,
Nameplate Capacity: 469 HP or 350 ekW (each)
Installed: 4th Quarter 2017
Location: Unit 42 (Unit 1); Unit 43 (Unit 2)
Fuel: Diesel

APPLICABLE REGULATIONS:
40 CFR 60, Subpart IIII, Standards of Performance for Compression Ignition Internal Combustion Engines.

40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The permittee shall meet the requirements of this regulation by meeting the requirements of 40 CFR 60, Subpart IIII.
Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart IIII that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4211(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

1. Operating Limitations:
a. In order for the engines to be considered emergency stationary internal combustion engines under 40 CFR 60, Subpart IIII, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described below, is prohibited. If the permittee does not operate the engines according to the requirements below, the engines will not be considered emergency engines and must meet all requirements for non-emergency engines [40 CFR 60.4211(f)].

i. There is no time limit on the use of emergency stationary ICE in emergency situations [40 CFR 60.4211(f)(1)].

ii. Emergency stationary RICE may be operated for any combination of the purposes specified below for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by **1.a.ii.(2)** of this section counts as part of the 100 hours per calendar year allowed [40 CFR 60.4211(f)(2)].

(1) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. [40 CFR 4211(f)(2)(i)].

(2) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations, subject to requirements in 40 CFR 4211(f)(3).

b. The permittee shall [40 CFR 60.4211(a)]:

i. Operate and maintain the stationary CI internal combustion engines and control devices according to the manufacturer's emission-related written instructions;
ii. Change only those emission-related settings that are permitted by the manufacturer; and
iii. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as applicable.

c. Diesel fuel shall meet the requirements of 40 CFR 80.510(b) for nonroad diesel fuel [40 CFR 60.4207(b)].

2. Emissions Limitations

a. Exhaust emissions for each engine shall not exceed:

Emission Standards (g/kW-hr)		
NMHC + NOx (FEL)	CO	PM
6.4	3.5	0.20

Compliance shall be demonstrated by purchasing engines certified to the above emission standards. See also **3.b. Testing Requirements.**

3. Testing Requirements:

a. Testing shall be conducted at such times as may be required by the Cabinet in accordance with 401 KAR 59:005, Section 2(2) and 401 KAR 50:045, Section 4.

b. If the engine or control device is not operated and maintained according to the manufacturer's written emission-related instructions, the permittee shall conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission related written instructions, or within 1 year after the permittee changes emission related settings in a way that is not permitted by the manufacturer. The permittee shall conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards [40 CFR 60.4211(g)].

4. Specific Monitoring Requirements:

a. The permittee shall install non-resettable hour meters prior to startup of each engine [40 CFR 60.4209(a)].

b. If the engine is equipped with a diesel particulate filter to comply with the emission standards, the diesel particulate filter shall be installed with a backpressure monitor

that notifies the permittee when the high backpressure limit of the engine is approached [40 CFR 60.4209(b)].

c. The permittee shall maintain the records of the fuel combusted and hours of operation on a monthly basis [401 KAR 52:020, Section 10].

5. Specific Recordkeeping Requirements:

a. If the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the permittee shall keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The permittee shall record the time of operation of the engine and the reason the engine was in operation during that time [40 CFR 60.4214(b)].

b. For engines equipped with a diesel particulate filter, the permittee shall keep records of any corrective action taken after the backpressure monitor has notified the permittee that the high backpressure limit of the engine is approached [40 CFR 60.4214(c)].

c. The permittee shall compile and maintain records of hours of operation of each engine and the amount of fuel consumed by each generator on a monthly basis [401KAR 52:020, Section 10].

d. The permittee shall maintain records of the manufacturer's certified emissions certificate, manufacturer's written operating instructions, and any procedures developed by the permittee that are approved by the engine manufacturer, over the entire life of the engine [401 KAR 52:020, Section 10].

e. See Section F, **Monitoring, Recordkeeping and Reporting Requirements**.

6. Specific Reporting Requirements:

a. The permittee shall report hours of operation of each engine and the amount of fuel consumed by each generator in its semi-annual reporting.

b. If the engines operate or are contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in 40 CFR 60.4211(f)(3) the permittee shall submit an annual report according to the requirements in 40 CFR 60.4214(d).

c. See Section F, **Monitoring, Recordkeeping and Reporting Requirements**.

Permit

SECTION C – INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. While these activities are designated as insignificant the permittee must comply with the applicable regulation and some minimal level of periodic monitoring may be necessary. Process and emission control equipment at each insignificant activity subject to a general applicable regulation shall be inspected monthly and qualitative visible emission evaluation made. The results of the inspections and observations shall be recorded in a log, noting color, duration, density (heavy or light), cause and any conservative actions taken for any abnormal visible emissions.

Description	Generally Applicable Regulation
1. The following fuel oil storage tanks:	
525,000 gallons	None
100,000 gallons	None
20,000 gallons	None
12,000 gallons	None
1000 gallons	None
five 500 gallons	None
two 150 gallons	None
one 300 gallons	None
three 240 gallons	None
two 500 gallons (Kerosene)	None
2. The following unleaded gasoline storage tanks:	
one 1000 gallons	401 KAR 59:050
one 500 gallon	401 KAR 59:050
3. The following lubricating oil storage tanks:	
four 15,000 gallon tanks	None
four 550 gallon motor oil tanks	None
4. SO_3 mitigation system	401 KAR 59:010
5. Infrequent evaporation of boiler cleaning solutions	401 KAR 59:010
6. Paved and unpaved roadways (at plant)	401 KAR 63:010
7. Infrequent burning of deminimis quantities of used oil for energy recovery	None
8. Limestone slurry transfer from slurry tanks to scrubbers	401 KAR 59:010
9. Bottom ash handling process	401 KAR 63:010
10. Fly ash handling process	401 KAR 63:010

Commented [MZP21]: Several correction have been made to the IA list. Please see the revised DEP7007DD form.

11. Gypsum processing (no crushing or grinding)	401 KAR 63:010
12. Fly ash separator units (4)	401 KAR 59:010
13. Fly ash storage silos (3)	401 KAR 59:010
14. CCR Landfill truck loading station	401 KAR 63:010
15. Bottom ash transport	401 KAR 63:010
16. Fly ash transport	401 KAR 63:010
17. Gypsum transport	401 KAR 63:010
18. Storage pile at CCR landfill truck station	401 KAR 63:010
19. Active area of the CCR landfill (wind erosion)	401 KAR 63:010
20. Powdered Activated Carbon handling for each boiler	401 KAR 63:010
21. Turbine Oil Reservoirs for Units 1-4 four at 11,500 gallons	None
22. FGD Forced Oxidation Blower lube oil cooler turbine oil reservoirs for Units 1-4 (nine at 110 gallons)	None
23. Coal Mill gear box oil reservoirs for Units 1-4 (24 at 375 gallons)	None
24. FGD hydraulic control valve hydraulic fluid Reservoirs for Units 1-4 (4 at 165 gallons)	None
25. Electro-hydraulic control system EH fluid Reservoirs for Units 2, 3, and 4 (3 at 375 gallons)	None
26. Electro-hydraulic control system EH fluid Reservoir for Unit 1 (1 at 165 gallons)	None
27. ID fan lube oil turbine oil reservoirs for Units 1 and 2 (4 at 180 gallons)	None
28. Hydrogen seal oil turbine oil reservoirs for Units 2,3, and 4 (3 at 605 gallons)	None
29. Hydrogen seal oil turbine oil reservoir for Unit 1 (1 at 350 gallons)	None

30. Boiler feed pump turbine oil reservoir for Unit 1 (2 at 900 gallons)	None
31. Boiler feed pump turbine oil reservoir for Unit 2 (2 at 1,000 gallons)	None
32. Limestone ball mill lubricating oil reservoirs (3 at 250 gallons)	None
33. Coal unloading bucket drive lubricating oil Reservoir (1 at 150 gallons)	None
34. ID fan lubricating oil reservoirs for Units 3 and 4 (4 at 150 gallons)	None
~~35.~~	
35.	
36. Limestone surge bin with dust collector	None
37. Fuel Additive Facility (Conveyors, (2) silos, mix tank and feed- hopper)	None
38. Liquid Hg Control Additives	None
39. 150 HP (<1 mmbtu/hr) Indirect Heat Exchanger	401 KAR 59:015
40. Paved and Unpaved Roads - Transport of CCR material during periods of maintenance and/or repair of CCRT facility	401 KAR 63:010

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SECTION D – SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.

2. PM, SO_2, Sulfuric Acid Mist, NO_x and visible emissions (opacity) as measured by applicable reference methods, or an equivalent or alternative method specified in 40 CFR Chapter 1, or by a test method specified in the approved state implementation plan shall not exceed the respective limitations specified herein. Compliance with the visible emissions limitations for the indirect heat exchangers (emissions unit 01, 02, 03, and 04) shall be determined using continuous particulate matter monitoring data, visual observations, and Reference Method 9 as applicable.

3. **SOURCE-WIDE 40 CFR 63, SUBPART UUUUU REQUIREMENTS:**

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1. Operating Limitations:

a. For Units 01-04, the applicable pollutants selected by the permittee from the table in Section D and measured by the applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan, shall not exceed the respective limitations specified herein.

b. For Units 01-04, the permittee shall conduct a tune-up of the burner and combustion controls at least each thirty-six (36) calendar months, or each forty-eight (48) calendar months if neural network combustion optimization software is employed, as specified in 40 CFR 63.10021(e) [Item 1. of Table 3. of 40 CFR 63, Subpart UUUUU].

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Compliance Demonstration Method:
The permittee shall report the date of the first tune-up in hard copy to the Division's Florence Regional Office, and electronically to the U.S. EPA as required in 40 CFR 63.10031. Subsequent tune-ups shall only be reported electronically [40 CFR 63.10021(e)(9)(i)].

c. For Units 01-04, the permittee shall use clean fuels, either natural gas or distillate oil or a combination of clean fuels for ignition, as defined in 40 CFR 63.10042. Once the permittee converts to firing coal, the permittee shall engage all of the applicable control technologies except dry scrubber and SCR. The permittee shall start dry scrubber and SCR systems, if present, appropriately to comply with relevant standards applicable during normal operation [Item 3. of Table 3. of 40 CFR 63, Subpart UUUUU].

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Startup means either the first-ever firing of fuel in Emission Units 01 - 04 for the purpose of producing electricity, or the firing of fuel in Emission Units 01 - 04 after a shutdown event for any purpose. Startup ends when any of the steam from Emission Units 01 – 04 is used to generate electricity for sale over the grid or for any other purpose (including on-site use). Any fraction of an hour in which startup occurs constitutes a full hour of startup;

Or startup means the period in which operation of Emission Units 01 - 04 is initiated for any purpose. Startup begins with either the firing of any fuel in Emission Units 01 - 04 for the purpose of producing electricity or useful thermal energy (such as heat or steam) for industrial, commercial, heating, or cooling purposes (other than the first-ever firing of fuel in Emission Units 01- 04 following construction of Emission Units 01-04 or for any other purpose after a shutdown event. Startup ends four (4) hours after Emission Unit 01- 04 makes useful thermal energy (such as heat or steam) for industrial, commercial, heating, or cooling purposes (16 U.S.C. 796(18)(A) and 18 CFR 292.202(c)), whichever is earlier. Any fraction of an hour in which startup occurs constitutes a full hour of startup.
[40 CFR 63.10042].

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Compliance Demonstration Method:
The permittee shall keep records during periods of startup and shutdown. The permittee shall provide reports concerning activities and periods of startup, as specified in 40 CFR 63.10011(g) and 40 CFR 63.10021(h) and (i) [Items 3. and 4. of Table 3. of 40 CFR 63, Subpart UUUUU].

d. The permittee shall operate all applicable control technologies. Shutdown ends when there is both no electricity being generated and no fuel being fired in the boiler [Item 4. of Table 3. of 40 CFR 63, Subpart UUUUU].

Shutdown means the period in which cessation of operation of Emission Unit 01 – 04 is initiated for any purpose. Shutdown begins when Emission Unit 01 - 04 no longer generates electricity or makes useful thermal energy (such as heat or steam) for industrial, commercial, heating, or cooling purposes or when no coal, liquid oil, syngas, or solid oil-derived fuel is being fired in Emission Unit 01- 04, whichever is earlier. Shutdown ends when Emission Unit 01 -04 no longer generates electricity or makes useful thermal energy (such as steam or heat) for industrial, commercial, heating, or cooling purposes, and no fuel is being fired in Emission Units 01- 04. Any fraction of an hour in which shutdown occurs constitutes a full hour of shutdown. [40 CFR 63.10042].

Compliance Demonstration Method:
The permittee shall keep records during periods of startup and shutdown. The permittee shall provide reports concerning activities and periods of startup, as specified in 40 CFR 63.10011(g) and 40 CFR 63.10021(h) and (i) [Items 3. and 4. of Table 3. of 40 CFR 63, Subpart UUUUU].

e. At all times the permittee shall operate and maintain the coal-fired boilers, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the EPA Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source [40 CFR 63.10000(b)].

f. The permittee shall operate all continuous monitoring systems (CMS) during startup [Item 3. of Table 3. of 40 CFR 63, Subpart UUUUU] and shutdown [Item 4. of Table 3. of 40 CFR 63, Subpart UUUUU].

2. Emission Limitations:

a. The permittee shall comply with all applicable emission limits under 40 CFR 63, Subpart UUUUU at all times except for periods that meet the definitions of startup and shutdown in 40 CFR 63, Subpart UUUUU [Item 3. of Table 3. of 40 CFR 63, Subpart UUUUU].

Compliance Demonstration Method:
The permittee shall keep records during periods of startup and shutdown. The permittee shall provide reports concerning activities and periods of startup and shutdown, as specified in 40 CFR 63.10011(g) and 40 CFR 63.10021(h) and (i) [Item 3. of Table 3. of 40 CFR 63, Subpart UUUUU].

b. Emissions from each unit shall not exceed the limitations in the table below [40 CFR 63 Subpart UUUUU, Table 2, Item 1]. [40 CFR 63.9984(f)].

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Pollutant	Emission Limit	Compliance Demonstration
PM	0.030 lb/MMBtu **OR** 0.30 lb/MWh	Quarterly stack testing **OR** PM CEMS. [Table 5., Item 1; and Table 7. also 40 CFR 63.10005.]
OR		
Total non-HgHAP Metals	0.000050 lb/MMBtu **OR** 0.50 lb/GWh	Quarterly stack testing [Table 5., Item 2; and Table 7. also 40 CFR 63.10005.]
OR		
All of these: antimony	0.80 lb/TBtu **OR** 0.0080 lb/GWh	Quarterly stack testing for each [Table 5., Item 2; and Table 7. also 40 CFR 63.10005.]
arsenic	1.1 lb/TBtu **OR** 0.020 lb/GWh	
beryllium	0.20 lb/TBtu **OR** 0.0020 lb/GWh	
Cadmium	0.30 lb/TBtu **OR** 0.0030 lb/GWh	
Chromium	2.8 lb/TBtu **OR** 0.030 lb/GWh	
Cobalt	0.80 lb/TBtu OR 0.0080 lb/GWh	
Lead	1.2 lb/TBtu OR 0.020 lb/GWh	
Manganese	4.0 lb/TBtu OR 0.050 lb/GWh	

Pollutant	Emission Limit	Compliance Demonstration

Nickel	3.5 lb/TBtu OR 0.040 lb/GWh	
Selenium	5.0 lb/TBtu OR 0.060 lb/GWh	
AND		
HCl **OR** SO2	0.0020 lb/MMBtu OR 0.020 lb/MWh 0.20 lb/MMBtu OR 1.5 lb/MWh	Quarterly stack testing OR HCl/Hf CEMS. [Table 5., Item 3; and Table 7. also 40 CFR 63.10005.] SO2 CEMS. [Table 5., Item 3; and Table 7.]
AND		
Hg	1.2 lb/TBtu, OR 0.013 lb/GWh	Hg CEMS. [Table 5., Item 4; and Table 7. also 40 CFR 63.10005.] OR Sorbent Trap Monitoring. [Table 5., Item 4; and Table 7. also 40 CFR 63.10005.]

3. Testing Requirements:
For Emission Unit 0 1 - 0 4 , performance testing, which may include the use of CEMS in some cases, to demonstrate compliance with the requirements of 40 CFR 63, Subpart UUUUU shall be performed according to Table 5. of 40 CFR 63, Subpart UUUUU. Initial performance testing is required for all pollutants limited under 40 CFR 63, Subpart UUUUU [40 CFR 63.10000(c), 40 CFR 63.10011(a)]. Test protocols shall be submitted for the Division's approval a minimum of sixty (60) days prior to the scheduled test date [401 KAR 50:045, Section 1].

4. Recordkeeping Requirements:
Permittee shall maintain records according to 40 CFR 63.10032 and 63.10033.

5. Reporting Requirements;
Permittee shall submit semi-annual compliance reports according to the requirements in 40 CFR 63.10031(b). The report shall contain the information required in 40 CFR 63.10031(c)(1) through (4). If there are no deviations from any emission limitation (emission limit and operating limit) that applies to these units and there are no deviations from the requirements for work practice standards in Table 3. of 40 CFR 63, Subpart UUUUU that apply to these units, the reports shall contain a statement that there were no deviations from the emission limitations and work practice standards during the reporting period. If there were no periods during which the

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CMS's, including continuous emissions monitoring systems (CEMS) and operating parameter monitoring systems, were out-of-control as specified in 40 CFR 63.8(c)(7), the report shall contain a statement that there were no periods during which the CMS's were out-of-control during the reporting period. If there is a deviation from any emission limitation (emission limitation and operating limit) or work practice standard during the reporting period, the report shall contain the information in 40 CFR 63.10031(d). If there were periods during which the CMS's, including CEMS and continuous parameter monitoring systems (CPMS) were out-of-control as specified in 40 CFR 63.8(c)(7), the report shall contain the information in 40 CFR 63.10031(e) [Table 8. of 40 CFR 63, Subpart UUUUU].

c. The permittee shall submit Notification of Compliance Status reports according to 40 CFR 63.10030(e) [40 CFR 63.10011(e)].

SECTION E – SOURCE CONTROL EQUIPMENT REQUIREMENTS

Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

1. Pursuant to Section 1b-IV-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include:
   a. Date, place as defined in this permit, and time of sampling or measurements;
   b. Analyses performance dates;
   c. Company or entity that performed analyses;
   d. Analytical techniques or methods used;
   e. Analyses results; and
   f. Operating conditions during time of sampling or measurement.

2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [Sections 1b-IV-2 and 1a-8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

3. In accordance with the requirements of 401 KAR 52:020, Section 3(1)h, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times:
   a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation;
   b. To access and copy any records required by the permit:
   c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements.

   Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.

4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:020, Section 23. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.

REQUIREMENTS (CONTINUED)

7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows:
   a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown.
   b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.

8. The owner or operator shall report emission related exceedances from permit requirements including those attributed to upset conditions (other than emission exceedances covered by Section F.7 above) to the Regional Office listed on the front of this permit within 30 days. Deviations from permit requirements, including those previously reported under F.7 above, shall be included in the semiannual report required by F.6 [Sections 1b-V, 3 and 4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

9. Pursuant to 401 KAR 52:020, Title V permits, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit, by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit and the U.S. EPA in accordance with the following requirements:
   a. Identification of the term or condition;
   b. Compliance status of each term or condition of the permit;
   c. Whether compliance was continuous or intermittent;
   d. The method used for determining the compliance status for the source, currently and over the reporting period.
   e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit.
   f. The certification shall be submitted by January 30th of each year. Annual compliance certifications shall be sent to the following addresses:

Division for Air Quality Florence Regional Office 8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042	U.S. EPA Region 4 Air Enforcement Branch Atlanta Federal Center 61 Forsyth St. Atlanta, GA 30303-8960

10. In accordance with 401 KAR 52:020, Section 22, the permittee shall provide the Division with all information necessary to determine its subject emissions within thirty (30) days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee.

SECTION G - GENERAL PROVISIONS

1. General Compliance Requirements

   a. The permittee shall comply with all conditions of this permit. Noncompliance shall be a violation of 401 KAR 52:020, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to termination, revocation and reissuance, revision or denial of a permit [Section 1a-3 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-6 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:020, Section 19. The permit will be reopened for cause and revised accordingly under the following circumstances:
      (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:020, Section 12;
      (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements;
      (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit;
      (4) New requirements become applicable to a source subject to the Acid Rain Program.

      Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.

   d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 7 and 8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:020, Section 3(1)(c)].

   f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect

information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:020, Section 7(1)].

g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-14 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-15 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-10 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:020, Section 11(3) 2.].

l. This permit does not convey property rights or exclusive privileges [Section 1a-9 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.

n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry [401 KAR 52:020, Section 11(3) 4.].

o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders [401 KAR 52:020, Section 11(3) 1.].

p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.

q. Pursuant to 401 KAR 52:020, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with:
(1) Applicable requirements that are included and specifically identified in this permit; and
(2) Non-applicable requirements expressly identified in this permit.

2. Permit Expiration and Reapplication Requirements

a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:020, Section 12].

b. The authority to operate granted shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:020, Section 8(2)].

3. Permit Revisions

a. A minor permit revision procedure may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:020, Section 14(2).

b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.

4. Construction, Start-Up, and Initial Compliance Demonstration Requirements

Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the construction of the equipment described herein, ~~dry sorbent injection Hg control and pulse jet fabric filters~~ for Emission Units 42 &43~~1, 2, 3, and 4, and Emission Unit 35, the ash landfill~~, in accordance with the terms and conditions of this permit.

a. Construction of any process and air pollution control equipment authorized by this permit shall be conducted and completed only in compliance with the conditions of this permit.

b. Within thirty (30) days following commencement of construction and within fifteen (15) days following start-up and attainment of the maximum production rate specified in the permit application, or within fifteen (15) days following the issuance date of this permit, whichever is later, the permittee shall furnish to the Regional Office listed on the front of this permit in writing, with a copy to the Division's Frankfort Central Office, notification of the following:
   (1) The date when construction commenced.
   (2) The date of start-up of the affected facilities listed in this permit.
   (3) The date when the maximum production rate specified in the permit application was achieved.

c. Pursuant to 401 KAR 52:020, Section 3(2), unless construction is commenced within eighteen (18) months after the permit is issued, or begins but is discontinued for a period of eighteen (18) months or is not completed within a reasonable timeframe then the construction and operating authority granted by this permit for those affected facilities for which construction was not completed shall immediately become invalid. Upon written request, the Cabinet may extend these time periods if the source shows good cause.

d. For those affected facilities for which construction is authorized by this permit, a source shall be allowed to construct with the proposed permit. Operational or final permit approval is not granted by this permit until compliance with the applicable standards specified herein has been demonstrated pursuant to 401 KAR 50:055. If compliance is not demonstrated within the prescribed timeframe provided in 401 KAR 50:055, the source shall operate, thereafter, only for the purpose of demonstrating compliance, unless otherwise authorized by Section I of this permit or order of the Cabinet.

e. This permit shall allow time for the initial start-up, operation, and compliance demonstration of the affected facilities listed herein. However, within sixty (60) days after achieving the maximum production rate at which the affected facilities will be operated but not later than one-hundred-eighty (180) days after initial start-up of such facilities, the permittee shall conduct a performance demonstration on the affected facilities in accordance with 401 KAR 50:055, General compliance requirements. Testing must also be conducted in accordance with General Provisions G.5 of this permit.

f. Terms and conditions in this permit established pursuant to the construction authority of 401 KAR 51:017 or 401 KAR 51:052 shall not expire.

5. Testing Requirements

a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least thirty (30) days prior to the test.

b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.

c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five (45) days or sooner if required by an applicable standard, after the completion of the fieldwork.

6. Acid Rain Program Requirements

a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.

b. The permittee shall comply with all applicable requirements and conditions of the Acid Rain Permit and the Phase II permit application (including the Phase II NOx compliance plan and averaging plan, if applicable) incorporated into the Title V permit issued for this source. The source shall also comply with all requirements of any revised or future acid rain permit(s) issued to this source.

7. Emergency Provisions

a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that:
   (1) An emergency occurred and the permittee can identify the cause of the emergency;
   (2) The permitted facility was at the time being properly operated;
   (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
   (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.01-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
   (5) This requirement does not relieve the source of other local, state or federal notification requirements.

b. Emergency conditions listed in General Condition G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:020, Section 24(3)].

c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:020, Section 24(2)].

8. Ozone Depleting Substances

a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:
   (1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156.
   (2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158.
   (3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161.
   (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.166
   (5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156.
   (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.

b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, *Servicing of Motor Vehicle Air Conditioners*.

9. Risk Management Provisions

a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to:

   RMP Reporting Center
   P.O. Box 1515
   Lanham-Seabrook, MD 20703-1515.

b. If requested, submit additional relevant information to the Division or the U.S. EPA.

SECTION H – ALTERNATE OPERATING SCENARIOS

N/A

SECTION I – COMPLIANCE SCHEDULE

N/A

SECTION J -ACID RAIN PERMIT

1. Statutory and Regulatory Authority

In accordance with KRS 224.10-100 and Titles IV and V of the Clean Air Act, the Kentucky Environmental and Public Protection Cabinet, Division for Air Quality issues this permit pursuant to 401 KAR 52:020, Title V Permits, 401 KAR 52:060, Acid Rain Permits, and 40 CFR Part 76.

2. Permit Requirements:

This Acid Rain Permit covers Acid Rain Units 1-4 (Emission Units 01-04). They are coal-fired base load electric generating units. The Acid Rain Permit Application and NO_x Compliance Plan received on July 3, 2007 are hereby incorporated into and made part of this permit and the permittee must comply with the standard requirements and special provisions set forth in the application [40 CFR 72.9(a)(2)].

3. Acid Rain Program Emission and Operating Limitations:

The applicable Acid Rain emission limitations for the permittee are set in 40 CFR 73.10, Table 2, 40 CFR 76.5, and 40 CFR 76.11 and they are tabulated in the table below:

Affected Unit: 1					
Year for SO_2 Allowances	2012	2013	2014	2015	2016
40 CFR Part 73.10	12,272*	12,272*	12,272*	12,272*	12,272*

NO_x Limits and Requirements

(i) Pursuant to 40 CFR Part 76, the Kentucky Division for Air Quality approves the NO_x emissions averaging plan for this unit. This plan is effective for calendar year 2012 through 2016. Under this plan, determined in accordance with 40 CFR Part 75, this unit's NO_x emissions shall not exceed the annual average alternative contemporaneous emissions limitation (ACEL) of 0.45 lb/MMBtu.

(ii) In addition, the actual BTU-weighted annual average NO_x emissions rate for the unit in the plan shall be less than or equal to the BTU-weighted annual average NO_x emissions rate for the same unit had it been operated, during the same period of time, in compliance with the applicable emissions limitations under 40 CFR Part 76.5, 76.6, or 76.7.

(iii)If the designated representative demonstrates that the requirement of condition (ii) (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emissions limitation set in condition (i).

In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.

*** The number of allowances allocated to Phase II affected units by the U.S. EPA may change under 40 CFR part 73. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U. S. EPA. Neither of the aforementioned conditions necessitates a revision to the unit SO_2 allowance allocations identified in this permit (See 40 CFR 72.84).**

Affected Unit: 2					
Year for SO_2 Allowances	2012	2013	2014	2015	2016
40 CFR Part 73.10	10,038*	10,038*	10,038*	10,038*	10,038*

NO_x Limits and Requirements

(i) Pursuant to 40 CFR Part 76, the Kentucky Division for Air Quality approves the NO_x emissions averaging plan for this unit. This plan is effective for calendar year 2012 through 2016. Under this plan, determined in accordance with 40 CFR Part 75, this unit's NO_x emissions shall not exceed the annual average alternative contemporaneous emissions limitation (ACEL) of 0.40 lb/MMBtu.

(ii) In addition, the actual BTU-weighted annual average NO_x emissions rate for the unit in the plan shall be less than or equal to the BTU-weighted annual average NO_x emissions rate for the same unit had it been operated, during the same period of time, in compliance with the applicable emissions limitations under 40 CFR Part 76.5, 76.6, or 76.7.

(iii)If the designated representative demonstrates that the requirement of condition (ii) (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emissions limitation set in condition (i).

In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.

*** The number of allowances allocated to Phase II affected units by the U.S. EPA may change under 40 CFR part 73. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U. S. EPA. Neither of the aforementioned conditions necessitates a revision to the unit SO_2 allowance allocations identified in this permit (See 40 CFR 72.84).**

Affected Unit: 3					
Year for SO_2 Allowances	2012	2013	2014	2015	2016
40 CFR Part 73.10	13,985*	13,985**	13,985*	13,985*	13,985*

NO_x Limits and Requirements

(i) Pursuant to 40 CFR Part 76, the Kentucky Division for Air Quality approves the NO_x emissions averaging plan for this unit. This plan is effective for calendar year 2012 through 2016. Under this plan, determined in accordance with 40 CFR Part 75, this unit's NO_x emissions shall not exceed the annual average alternative contemporaneous emissions limitation (ACEL) of 0.46 lb/MMBtu.

(ii) In addition, the actual BTU-weighted annual average NO_x emissions rate for the unit in the plan shall be less than or equal to the BTU-weighted annual average NO_x emissions rate for the same unit had it been operated, during the same period of time, in compliance with the applicable emissions limitations under 40 CFR Part 76.5, 76.6, or 76.7.

(iii)If the designated representative demonstrates that the requirement of condition (ii) (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emissions limitation set in condition (i).

In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.

*** The number of allowances allocated to Phase II affected units by the U.S. EPA may change under 40 CFR part 73. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U. S. EPA. Neither of the aforementioned conditions necessitates a revision to the unit SO_2 allowance allocations identified in this permit (See 40 CFR 72.84).**

Affected Unit: 4					
Year for SO_2 Allowances	2012	2013	2014	2015	2016
40 CFR Part 73.10	13,742*	13,742*	13,742*	13,742*	13,742*

NO_x Limits and Requirements

(i) Pursuant to 40 CFR Part 76, the Kentucky Division for Air Quality approves the NO_x emissions averaging plan for this unit. This plan is effective for calendar year 2012 through 2016. Under this plan, determined in accordance with 40 CFR Part 75, this unit's NO_x emissions shall not exceed the annual average alternative contemporaneous emissions limitation (ACEL) of 0.46 lb/MMBtu.

(ii) In addition, the actual BTU-weighted annual average NO_x emissions rate for the unit in the plan shall be less than or equal to the BTU-weighted annual average NO_x emissions rate for the same unit had it been operated, during the same period of time, in compliance with the applicable emissions limitations under 40 CFR Part 76.5, 76.6, or 76.7.

(iii)If the designated representative demonstrates that the requirement of condition (ii) (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emissions limitation set in condition (i).

In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.

*** The number of allowances allocated to Phase II affected units by the U.S. EPA may change under 40 CFR part 73. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U. S. EPA. Neither of the aforementioned conditions necessitates a revision to the unit SO_2 allowance allocations identified in this permit (See 40 CFR 72.84).**

4. <u>Compliance Plan:</u>

a. The permittee shall operate in compliance with the requirements contained in the Acid Rain application and incorporated into this permit [40 CFR 72.9].

b. The Division approves the NO_X Average Plan submitted for these units for the NO_x Emissions Compliance Plan, effective for the duration of this permit. Under this plan, a unit's NO_x emissions shall not exceed the applicable annual average alternative contemporaneous emissions limitation (ACEL) listed in Subsection 3(a). [40 CFR 76]

(1) The actual Btu-weighted annual average NO_X emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average NO_x emission rate for the same unit had it been operated, during the same period of time, in compliance with the individual applicable emission limitations under 40 CFR 76.5, 76.6, or 76.7 and listed in Subsection 3(a).

(2) For each unit, if the designated representative demonstrates that the requirement of Subsection 4(b)(1) is met for the plan year, then the unit shall be deemed to be in compliance for the year with its ACEL and associated heat input limit in Subsection 3.

(3) If the designated representative cannot make the demonstration in Subsection 4(b)(1), according to 40 CFR 76.11(d)(1)(ii), for the plan year and if a unit fails to meet the annual average ACEL or has a heat input greater than the applicable value listed in Subsection 3, then excess emissions of NO_x have occurred during the year for that unit.

(4) As an alternative means of compliance demonstration, this emission unit shall not cause the system weighted average to exceed the applicable emission rate in accordance with 40 CFR 76.11(d)(B)(ii).

SECTION K – CLEAN AIR INTERSTATE RULE (CAIR)

1) Statement of Basis

Statutory and Regulatory Authorities: In accordance with KRS 224.10-100, the Kentucky Energy and Environmental Cabinet issues this permit pursuant to 401 KAR 52:020, Title V permits, 401 KAR 51:210, CAIR NO_x annual trading program, 401 KAR 51:220, CAIR NO_x ozone season trading program, and 401 KAR 51:230, CAIR SO_2 trading program.

2) CAIR Application

The CAIR application for four electrical generating units was submitted to the Division and received on July 3, 2007. CAIR Requirements contained in that application are hereby incorporated into and made part of this Permit. Pursuant to 401 KAR 52:020, Section 3, the source shall operate in compliance with those requirements.

3) Comments, notes, justifications regarding permit decisions and changes made to the permit application forms during the review process, and any additional requirements or conditions.

The Affected unit is four (4) pulverized coal-fired steam generators (Emission Units 01-04). The affected units each have a nameplate capacity to generate greater than 25 megawatts of electricity, which is offered for sale. The unit uses coal as fuel source, and are authorized as base load electric generating units.

4) Summary of Actions

The CAIR Permit is being issued as part of the Title V permit for this source. Public, affected state, and U.S. EPA review will follow procedures specified in 401 KAR 52:100.

A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement Clean Air Act requirements concerning the transport of air pollution across state boundaries. On July 6, 2011, the U.S. EPA finalized the Cross-State Air Pollution Rule (CSAPR). On December 30, 2011, CSAPR was stayed prior to implementation. On April 29, 2014, the U.S. Supreme Court issued an opinion reversing an August 21, 2012 D.C. Circuit decision that had vacated CSAPR. Following the remand of the case to the D.C. Circuit, EPA requested that the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the D.C. Circuit granted EPA's request. CSAPR Phase I implementation is now in place and replaces requirements under EPA's 2005 Clean Air Interstate Rule.

SECTION L – CROSS-STATE AIR POLLUTION RULE (CSAPR)

The TR subject unit(s), and the unit-specific monitoring provisions at this source, are identified in the following table(s). These unit(s) are subject to the requirements for the Insert TR NO_X Annual Trading Program, TR NO_X Ozone Season Trading Program, and TR SO_2 Group 1 Trading Program.

Unit ID: 01-04, four pulverized coal-fired indirect heat exchangers					
Parameter	Continuous emission monitoring system or systems (CEMS) requirements pursuant to 40 CFR part 75, subpart B (for SO_2 monitoring) and 40 CFR part 75, subpart H (for NO_X monitoring)	Excepted monitoring system requirements for gas- and oil-fired units pursuant to 40 CFR part 75, appendix D	Excepted monitoring system requirements for gas- and oil-fired peaking units pursuant to 40 CFR part 75, appendix E	Low Mass Emissions excepted monitoring (LME) requirements for gas- and oil-fired units pursuant to 40 CFR 75.19	EPA-approved alternative monitoring system requirements pursuant to 40 CFR part 75, subpart E
SO_2	X				
NO_X	X				
Heat input	X				

1. The above description of the monitoring used by a unit does not change, create an exemption from, or otherwise affect the monitoring, recordkeeping, and reporting requirements applicable to the unit under 40 CFR 97.430 through 97.435 (TR NO_X Annual Trading Program), 97.530 through 97.535 (TR NO_X Ozone Season Trading Program), 97.630 and through 97.635 (TR SO_2 Group 1 Trading Program). The monitoring, recordkeeping and reporting requirements applicable to each unit are included below in the standard conditions for the applicable TR trading programs.

2. Owners and operators must submit to the Administrator a monitoring plan for each unit in accordance with 40 CFR 75.53, 75.62 and 75.73, as applicable. The monitoring plan for each unit is available at the EPA's website at http://www.epa.gov/airmarkets/emissions/monitoringplans.html.

3. Owners and operators that want to use an alternative monitoring system must submit to the Administrator a petition requesting approval of the alternative monitoring system in accordance with 40 CFR part 75, subpart E and 40 CFR 75.66 and 97.435 (TR NO_X Annual Trading Program), 97.535 (TR NO_X Ozone Season Trading Program), and 97.635 (TR SO_2 Group 1 Trading Program). The Administrator's response approving or disapproving any petition for an alternative monitoring system is available on the EPA's website at http://www.epa.gov/airmarkets/emissions/petitions.html.

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4. Owners and operators that want to use an alternative to any monitoring, recordkeeping, or reporting requirement under 40 CFR 97.430 through 97.434 (TR NO_X Annual Trading Program), 97.530 through 97.534 (TR NO_X Ozone Season Trading Program), and 97.630 through 97.634 (TR SO_2 Group 1 Trading Program) must submit to the Administrator a petition requesting approval of the alternative in accordance with 40 CFR 75.66 and 97.435 (TR NO_X Annual Trading Program), 97.535 (TR NO_X Ozone Season Trading Program), and 97.635 (TR SO_2 Group 1 Trading Program). The Administrator's response approving or disapproving any petition for an alternative to a monitoring, recordkeeping, or reporting requirement is available on EPA's website at http://www.epa.gov/airmarkets/emissions/petitions.html.

5. The descriptions of monitoring applicable to the unit included above meet the requirement of 40 CFR 97.430 through 97.434 (TR NO_X Annual Trading Program), 97.530 through 97.534 (TR NO_X Ozone Season Trading Program), and 97.630 through 97.634 (TR SO_2 Group 1 Trading Program), and therefore minor permit modification procedures, in accordance with 40 CFR 70.7(e)(2)(i)(B) or 71.7(e)(1)(i)(B), may be used to add to or change this unit's monitoring system description.