PUBLIC NOTICE

Tennessee Valley Authority (TVA) Bull Run Fossil Plant (01-0009 /567519) has applied to the Tennessee Air Pollution Control Division (TAPCD) for the renewal of their major source Title V operating permit, their Acid Rain Permit, and their CAIR permit subject to the provisions of paragraph 1200-3-9-.02(11) of the Tennessee Air Pollution Control Regulations (also frequently referred to as Title V regulations). A major source (Title V) operating permit and Title IV Acid Rain/CAIR Permit are required by both the Federal Clean Air Act and the Tennessee Air Pollution Control Regulations.

The applicant is Tennessee Valley Authority Bull Run Fossil Plant with a site address of 1265 Edgemoor Road, Clinton, TN. They seek to renew their Title V operating permit, their Acid Rain Permit, and their CAIR Permit.

(1) Division identification number 01-0009/567519 - Title V Operating Permit.
(2) Division identification number 01-0009/869161 – Acid Rain Permit.
(3) Division identification number 01-0009/869022 - CAIR Permit.

EPA has agreed to treat this draft Part 70 permit as a proposed Part 70 permit and to perform its 45-day review provided by the law concurrently with the public notice period. If any substantive comments are received, EPA's 45-day review period will cease to be performed concurrently with the public notice period. EPA's 45-day review period will start once the public notice period has been completed and EPA receives notification from the Tennessee Air Pollution Control Division that comments have been received and resolved. Whether EPA's 45-day review period is performed concurrently with the public comment period or after the public comment period has ended, the deadline for citizen's petitions to the EPA Administrator will be determined as if EPA's 45-day review period is performed after the public comment period has ended (i.e., sequentially). The status regarding EPA's 45-day review of these permits and the deadline for submitting a citizen's petition can be found at the following website address:

http://www.epa.gov/region4/air/permits/Tennessee.htm

Copies of the draft permits and the application materials used by the TAPCD are available for public inspection during normal business hours at the following locations:

Clinton Public Library
118 South Hicks Street
Clinton, TN 37716-2826

and

Tennessee Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243.

Also, if you require a copy of the draft permit it is available electronically by accessing the TDEC internet site located at:

http://www.tn.gov/environment/ppo/#air

Interested parties are invited to review these materials and comment. In addition, a public hearing may be requested at which written or oral presentations may be made. To be considered, written comments or requests for a public hearing must be made within thirty (30) days of the date of this notice and should be addressed to **Mr. Barry R. Stephens, P.E., Director, Air Pollution Control Division, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243.** Questions concerning the source may be addressed to Malcolm Butler at the same address or by calling (615)-532-0600. A final determination will be made after weighing all relevant comments.

Individuals with disabilities who wish to review information maintained at the above-mentioned depositories should contact the Tennessee Department of Environment and Conservation to discuss any auxiliary aids or services needed to facilitate such review. Such contact may be in person, by writing, telephone, or other means, and should be made no less than ten days prior to the end of the public comment period to allow time to provide such aid or services. Contact the Tennessee Department of Environment and Conservation ADA Coordinator, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 2nd Floor, Nashville, TN 37243, (866) 253-5827. Hearing impaired callers may use the Tennessee Relay service, (800)848-0298.

For the ***The Oak Ridger and Knoxville News Sentinel***-- publish once during the time period of December 23, 2014 through December 29, 2014.

Air Pollution Control DATE: December 22, 2014 Assigned to – Malcolm Butler

No alterations to the above are allowed:
Tennessee Valley Authority must pay to place this advertisement in the newspaper. Air Pollution Control must be furnished with an affidavit from the newspaper stating that the ad was run and the date of the ad or one complete sheet from the newspaper showing this advertisement, the name of the newspaper and the date of publication. Mail to Malcolm Butler, Air Pollution Control Division, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243. C:/Ttitle V tva/brLn1.doc

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23, 2014

Mr. Brian Keeling, Plant Manager
Bull Run Fossil Plant
Tennessee Valley Authority
1265 Edgemoor Road
Clinton, TN 37716-6270

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Mr. Keeling:

Enclosed is a copy of the Division's draft Major Source (Title V) Operating Permit Renewal for your facility. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. Also enclosed is a public notice which must be run, at your expense, in the Legal Notice Section of the Classified Ads in the **The Oak Ridger and Knoxville News-Sentinel** for one day. This notice should be published once during the time period of December 23, 2014 through December 29, 2014.

This advertisement is required in order to complete your responsibility for public notification and 30 day comment period under part 1200-3-9-.02(11)(f)8. of the Tennessee Air Pollution Control Regulations.

Please send an affidavit from the newspaper that the ad was run and the date of the ad or the entire page from the newspaper (including date) to the Division. Your request for a major source operating permit renewal, including an Acid Rain Permit renewal and a CAIR Permit renewal, cannot be processed until this is received and the comment period has closed. Please feel free to contact Malcolm Butler at 615-532-0600, if you have any questions or comments concerning this source.

Thank you for your cooperation.

Sincerely,

Barry R. Stephens, P.E.
Director
Tennessee Air Pollution Control Division

Enclosures - copy of the draft permit and copy of the public notice

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

CERTIFIED MAIL 7006 3450 0003 9091 0366
RETURN RECEIPT REQUESTED

December 23, 2014

Ms. Jane A. Giles, Director
Clinton Public Library
118 South Hicks Street
Clinton, TN 37716-2826

Re: TVA – Bull Run Fossil Plant

Dear Ms. Giles:

Please find enclosed a copy of the draft major source (Title V) operating permit renewal and review materials for:

Tennessee Valley Authority
Bull Run Fossil Plant
1265 Edgemoor Road
Clinton, TN 37716

Please place these documents in the public depository files. This review was performed by the Tennessee Air Pollution Control Division in accordance with Paragraph 1200-3-9-.02(11) for sources subject to the Title V regulations.

The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal.

Please retain this document for inspection by interested parties for 60 days. At that time you may discard the document.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures -a copy of the draft permits, a copy of the public notice, and a copy of the application

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23, 2014

Mr. Scott Davis, Chief
Air Planning Branch
Environmental Protection Agency, Region IV (APTMD)
61 Forsyth Street
Atlanta, GA 30303

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Mr. Davis:

Enclosed for your information is a copy of the Division's draft Major Source (Title V) Operating Permit renewal for the TVA Bull Run Fossil Plant. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. Also, included is a public notice for the TVA Bull Run Fossil Plant with a site address of 1265 Edgemoor Road, Clinton, TN 37716-6270. The draft permit is available electronically by accessing the TDEC internet site located at: http://tn.gov/environment/ppo/#air.

This notice will be placed in the legal section of **The Oak Ridger and Knoxville News-Sentinel**. You are invited to review and comment.

Please feel free to contact Malcolm Butler at 615-532-0600, if you have any questions or comments concerning this source.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures - copy of the draft permits and copy of the public notice

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23, 2014

Ms. Lynne Liddington, Director
Knox County Dept. of Air Quality Management
c/o Knox County Health Department – Suite 242
140 Dameron Avenue
Knoxville, TN 37917-6413

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Ms Liddington:

Enclosed for your information is a copy of the public notice for the Division's draft major source (Title V) Permit Renewal for Tennessee Valley Authority Bull Run Fossil Plant. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. This notice will be placed in the legal section of the **The Oak Ridger and Knoxville News-Sentinel** for the Bull Run Fossil Plant. This review was performed by the Tennessee Air Pollution Control Division in accordance with Paragraph 1200-3-9-.02(11) for sources subject to the Title V regulations. The draft permit is available electronically by accessing the TDEC internet site located at: http://tn.gov/environment/ppo/#air. You are invited to review and comment. To be considered, written comments must be made within thirty (30) days of the date of this notice and should be addressed to me.

Please feel free to contact Malcolm Butler at 615-532-0600, if you have any questions concerning this source.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures - copy of the public notice

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23,2014

Mr. James Morse, Permit Review Branch, Supervisor
Permit Review Branch
KY division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Mr. Morse:

Enclosed for your information is a copy of the public notice for the Division's draft major source (Title V) Permit Renewal for Tennessee Valley Authority Bull Run Fossil Plant. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. This notice will be placed in the legal section of the **The Oak Ridger and Knoxville News-Sentinel** for the Bull Run Fossil Plant. This review was performed by the Tennessee Air Pollution Control Division in accordance with Paragraph 1200-3-9-.02(11) for sources subject to the Title V regulations. The draft permit is available electronically by accessing the TDEC internet site located at: http://tn.gov/environment/ppo/#air. You are invited to review and comment. To be considered, written comments must be made within thirty (30) days of the date of this notice and should be addressed to me.

Please feel free to contact Malcolm Butler at 615-532-0600, if you have any questions concerning this source.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures - copy of the public notice

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23, 2014

Ms. Sheila Holman, Director
Division of Air Quality
The NC Department of Environment and Natural Resources
1641 Mail Services Center
Raleigh, NC 27699-1641

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Ms. Holman:

Enclosed for your information is a copy of the public notice for the Division's draft major source (Title V) Permit Renewal for Tennessee Valley Authority Bull Run Fossil Plant. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. This notice will be placed in the legal section of the **The Oak Ridger and Knoxville News-Sentinel** for the Bull Run Fossil Plant. This review was performed by the Tennessee Air Pollution Control Division in accordance with Paragraph 1200-3-9-.02(11) for sources subject to the Title V regulations. The draft permit is available electronically by accessing the TDEC internet site located at: http://tn.gov/environment/ppo/#air. You are invited to review and comment. To be considered, written comments must be made within thirty (30) days of the date of this notice and should be addressed to me.

Please feel free to contact Malcolm Butler at 615-532-0600 if you have any questions concerning this source.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures - copy of the public notice

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TENNESSEE 37243-1531

December 23, 2014

Mr. Mike Dowd
Director of the Air Division
Virginia Department of Environmental Quality
629 E. Main Street, 8th Floor
Richmond, VA 23219

Re: 01-0009/567519 - Title V Operating Permit Renewal,
01-0009/869161 – Acid Rain Renewal
01-0009/869022 - CAIR Permit Renewal …

Dear Mr. Dowd:

Enclosed for your information is a copy of the public notice for the Division's draft major source (Title V) Permit Renewal for Tennessee Valley Authority Bull Run Fossil Plant. The draft major source permit renewal includes a draft Acid Rain Permit renewal and a draft CAIR Permit renewal. This notice will be placed in the legal section of the **The Oak Ridger and Knoxville News-Sentinel** for the Bull Run Fossil Plant. This review was performed by the Tennessee Air Pollution Control Division in accordance with Paragraph 1200-3-9-.02(11) for sources subject to the Title V regulations. The draft permit is available electronically by accessing the TDEC internet site located at: http://tn.gov/environment/ppo/#air. You are invited to review and comment. To be considered, written comments must be made within thirty (30) days of the date of this notice and should be addressed to me.

Please feel free to contact Malcolm Butler at 615-532-0600 if you have any questions concerning this source.

Sincerely,

Barry R. Stephens, P.E.
Director
Division of Air Pollution Control

Enclosures - copy of the public notices

TITLE V PERMIT STATEMENT

Facility Name:	**Tennessee Valley Authority - Bull Run Fossil Plant**
City:	**Clinton**
County:	**Anderson**

Date Application Received:	**November 10, 2003, revisions dated June 16, 2011, May 23, 2011, March 18, 2011; Renewal date July 8, 2013**
Date Application Deemed Complete:	**December 4, 2003 August 30, 2013**

Emission Source Reference No.:	**01-0009**	
Permit No.:	**556854**	**567519**

INTRODUCTION

This narrative is being provided to assist the reader in understanding the content of the attached Title V operating permit. This Title V Permit Statement is written pursuant to Tennessee Air Pollution Control Rule 1200-03-09-.02(11)(f)1.(v). The primary purpose of the Title V operating permit is to consolidate and identify existing state and federal air requirements applicable to Tennessee Valley Authority - Bull Run Fossil Plant and to provide practical methods for determining compliance with these requirements. The following narrative is designed to accompany the Title V Operating Permit. It initially describes the facility receiving the permit, then the applicable requirements and their significance, and finally the compliance status with those applicable requirements. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public participation process will be described in an addendum to this narrative.

Acronyms

PSD - Prevention of Significant Deterioration

NESHAP - National Emission Standards for Hazardous Air Pollutants
NSPS - New Source Performance Standards
MACT - Maximum Achievable Control Technology
NSR - New Source Review

I. Identification Information

A. Source Description

Listing and description of emission sources:

01: Fuel Burning Installation: One (1) coal fired boiler for steam and electricity generation

02, 03, & 04: Fuel Burning Installation: Auxiliary startup boilers 1A & 1B for the coal fired boiler, & auxiliary comfort heating boiler 1H; all three auxiliary boilers no. 2 fuel oil fired

06: Ash Handling System: Dry fly ash storage and unloading, conditioned ash disposal, and bottom ash reclaim and disposal.

07: Coal Handling Facility: Coal crushing and coal storage yard reclaiming operations

99: General Facility: Ambient monitoring for sulfur dioxide and fugitive particulate emissions

Permitting Activities Since Original Permit Issuance (Previous Permit 548402)

10: Limestone Handling Process

12 88.0 MM Btu/hr. Temporary Auxiliary Startup Boiler

CAIR Permit 861320

13. Administrative Permit Amendment #1 Responsible Official Change from J.R. Bynum to Scott Hambrick.

14. Significant Modification #1 from construction permit on May 10, 2010, to install a dry fly ash handling system. Start-up of this system occurred on December 17, 2010. Condition 7 of the permit requires an application for a Significant Modification within 90 days of the initial start-up of this source. Also, an Administrative Permit Amendment request dated May 20, 2011, to correct condition E1 of the permit was added to the Significant Modification #1 request, which states the allowable emissions for the Non-VOC Gaseous Group (whthin the category of HAP without a standard). In the absence of a standard, allowable emissions are calculated as maximum actual emissions. The current stated allowable emissions are 8,000 tons per year. This amount is based on uncontrolled emission when the source was originally

permitted. However, since the end of 2008, Bull Run Fossil Plant (BRF) has operated a flue-gas desulfurization (FGD) system that reduced the maximum emission to 501 tons per year. TVA requested that the allowable emissions be changed to 501 tons per year to reflect the addition of the FGD system.

The category of HAP without a standard.

B. Facility Classification

1. Attainment or Non-Attainment Area Location

Area is designated as an attainment area for all criteria pollutants.

2. Company is located in a Class II area.

C. Regulatory Status

1. PSD/NSR

This facility is an existing major source that has not been subject to major modification.*

2. Title V Major Source Status by Pollutant

Pollutant	Is the pollutant emitted?	If emitted, what is the facility's status?	
		Major Source Status	Non-Major Source Status
PM	y	y	
PM_{10}	y	y	
SO_2	y	y	
VOC	y	y	
NO_X	y	y	
CO	y	y	
Individual HAP	y	y	
Total HAPs	y	y	

3. MACT Standards

This facility is a major source for HAPs. This facility is not subject to a proposed or final MACT Standard.

4. Program Applicability

Are the following programs applicable to the facility?

PSD: no *

NESHAP: no

NSPS: no *

II. Compliance Information

A. Compliance Status

Is the facility currently in compliance with all applicable requirements? Yes *

Are there any applicable requirements that will become effective during the permit term? no

III. Other Requirements

A. Emissions Trading

The facility is not involved in an emission trading program with the exception of any emissions trading that is allowed under the Title IV Acid Rain Program, and the CAIR Annual and Ozone Season Trading Programs.

B. Acid Rain Requirements

This facility is subject to the requirements in Title IV of the Clean Air Act. A copy of the acid rain permit for this facility is enclosed as Attachment 11 of the Title V permit.

C. Prevention of Accidental Releases

Not Applicable

D. Compliance Assurance Monitoring (CAM) Protocol This facility is subject to the requirements of that program. A copy of the CAM Protocol is enclosed as Attachment 9 of the Title V permit.

E. CAIR Permit CAIR Annual and Ozone Season Trading Programs.
A copy of the current CAIR Annual and Ozone Season Trading Programs Permit is enclosed as Attachment 10 of the Title V permit.

IV. <u>Public Participation Procedures</u>

Notification of this draft permit was mailed to the following environmental agencies:

1. EPA

2. Knox County Department of Air Pollution Control
3. Kentucky Department for Environmental Protection
4. State of North Carolina Division of Environmental Management
5. State of Virginia Department of Environmental Quality

* TVA is and will remain subject to state and federal enforcement for past and/or continuing violations. If any violations of federal PSD, the state SIP minor source construction review and/or federal NSPS programs are established in a state or federal judicial or administrative proceeding, such a decision could constitute cause for re-opening of this permit during its term under 1200-03-09-.02(11)(f)6. and condition A 13. of this permit to incorporate provisions necessary to facilitate compliance of TVA with requirements imposed to remedy past violations determined to have occurred in the final outcome of this litigation.

Nothing in the permit shield under condition A11 or in Attachment Five hereto has made any specific finding of non-applicability of any PSD, NSPS or SIP minor source review requirements for any major modifications to which these requirements could apply. In issuing this permit, the Tennessee Department of Environment and Conservation has not made a project level determination as to non-applicability of any of the above-listed requirements to any past maintenance projects at this source.

Notification of this Significant Permit Modification was mailed to the following environmental agencies:

1. EPA
2. Knox County Department of Air Pollution Control
3. Kentucky Department for Environmental Protection
4. State of North Carolina Division of Environmental Management
5. State of Virginia Department of Environmental Quality

1. Mr. Scott Davis, Chief
Air Planning Branch
Environmental Protection Agency, Region IV
(APTMD)
61 Forsyth, Southwest
Atlanta, GA 30303
land.eva@epa.gov
Purvis.james@epa.gov

2. Ms. Lynne Liddington, Director
Knox County Dept. of Air
Quality Management
c/o Knox County Health Dept. - Suite 242
140 Dameron Avenue
Knoxville, TN 37917-6413
laliddington@aqm.co.knox.tn.gov

3. Mr. James Morse, Permit Support Section
Permit Review Branch
Ky Division For Air Quality'
200 Fair Oaks Lane
Frankfort, Ky 40601
James.morse@ky.gov

4. Ms. Sheila Holman, Director
Division of Air Quality
The NC. Dept. of Environment
and Natural Resources
1641 Mail Service Center
Raleigh, NC 27699-1641
william.willets@ncdenr.gov

5. Mr. Mike Dowd
Director of The Air Division
Virginia Depart. Of Environmental
Quality
PO Box 10009
Richmond, VA 23240
Ashby.Scott@deq.virginia.gov

Permitting Activities Since Original Permit Issuance (Previous Permit 548402) Continued

01-0009-12 Permit 962208F Application Received July 28, 2008

Issued : August 13, 2008 Expires : March 1, 2009

88.0 MM Btu/hr. Temporary Auxiliary Startup Boiler

Burns Only Low-Sulfur, Distillate (No. 2) Fuel Oil.
Propane is fired only for ignition of the fuel oil when starting up Federal NSPS

Project Description

BRF's Title V permit currently lists two auxiliary startup boilers and an auxiliary heating boiler. These boilers are equipped to burn distillate (No. 2) fuel oil (see Table 1-1). The auxiliary startup boilers (1A and 1B) provide steam essential to the startup of the coal-fired boiler. The auxiliary heating boiler (1H) provides steam to the boiler building heating system as needed.

TABLE 1-1
AUXILIARY BOILERS CURRENTLY PERMITTED
BULL RUN FOSSIL PLANT

Auxiliary Boiler	Heat Input (MMBtu/hr)[1]
1A[2]	126
1B[2]	126
1H	16.75

Notes:

[1] MMBtu/hr denotes one million Btu per hour (i.e., 1×10^6 Btu/hr).

[2] Auxiliary boilers 1A and 1B are identical units and exhaust through a common stack.

BRF will install a temporary auxiliary startup boiler, which is rated at 88.0 MMBtu/hr. This boiler burns only distillate (No. 2) fuel oil (or alternate fuel oils, which meet all applicable standards) and is used to augment steam generation currently provided by 1A and 1B. Fuel oil ignition is achieved using propane.

The temporary startup boiler is subject to 40 CFR Part 60 Subpart Dc[1] requirements and Tennessee Air Pollution Control Regulations (TAPCR) emission standards for new boilers. Because the temporary boiler remains at BRF less than 180 days, it is exempt from 40 CFR Part 63 Subpart DDDDD[2] requirements.

[1] 40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (July 1, 2007)

[2] 40 CFR 63 Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (July 1, 2007)

Phase II Acid Rain Permit Summary of Previous Actions, and Present Action:

Previous Actions:

1.	Draft permit, including SO_2 compliance plan, issued for public comment.	August 5, 1997
2.	SO_2 portion of permit finalized and issued.	November 10, 1997
3.	Permit revised to include a draft nitrogen oxides Emissions Compliance Plan for Unit 1, issued for public comment on the NO_X portion only.	October 8, 1998
4.	NO_X portion of permit finalized and issued.	April 1, 1999
5.	Permit, revised to include a draft nitrogen oxides Averaging Plan for Unit 1, issued for public comment on the NO_X portion only.	February 20, 2001
6.	Permit, including NO_X Averaging Plan, Finalized and issued.	May 14, 2001
7.	Draft renewal permit including NOx averaging plan issued for public comment	October 15, 2008
8.	Renewal Permit, including NOx Averaging Plan, Finalized and issued.	January 6, 2009
9.	Renewal Application Due Date:	December 31, 2009
10.	Renewal Title V Permit Issued: Permit Number: 556854 Date Title V Permit Expires	January 6, 2009 January 5, 2014

Present Action:

11.	Issuing a public notice for the draft renewal Phase II Acid Rain Permit	April 22, 2010
	Phase II Acid Rain Renewal Permit Issued	June 7, 2010

Changes Made in Title V Permit Since Renewal Permit #556854 Issued January 6, 2009 Expires January 5, 2014

01-0009-06 Permit 963504P Application Received March 26, 2010

Date Issued: May 10, 2010 Date Expires: June 1, 2011

Upgrade of Dry Fly Ash Handling

TVA proposes to upgrade and add to redundancy the existing dry fly ash handling system at the Bull Run Fossil Plant (BRF) located in Anderson County about five (5) miles south of Clinton, Tennessee, on the eastern bank of the Clinch River. This will involve adding an additional storage silo, upgrading the particulate controls on the existing silo and replacing the hydroveyors, which remove fly ash from the ESP, with four (4) Liquid ring pumps controlled by filter separators. This upgrade will eliminate any potential for wet sluicing of ash at the facility. Fly ash from the ESPs will be removed in an air current generated by a vacuum-producing system which will replace the current hydroveyors. The vacuum system will consist of four (4) ring vacuums pumps (with one spare) and four (4) corresponding filter separators (with four spares). Each filter separator will be sized at a 4:1 air to cloth ratio and will contain 65 Ryton 16-ounce bags with a PTFE membrane. All filter separators will have a dust detector to verify that all bags are performing as designed. The vacuum system will have a total air flow of 2,940 standard cubic feet per minute, and the maximum clean air dust concentration exiting each filter separator will be 0.005 grains per dry standard cubic foot. The existing conveying piping under the ESPs will be modified to lie perpendicular to the precipitator gas flow.

The collected dry fly ash will be vacuumed into one of two (2) three-day storage silos. A new silo will be built to provide redundancy; fly ash will be conveyed to the silos alternately. Each silo will be equipped with two pin mixer ash unloaders, a dry ash unloader, and a bin vent. Each bin vent will have PTFE membrane Polyester sixteen ounce bags. The total air flow exiting each bin vent will be 3,264 standard cubic feet per minute. The maximum clean air dust concentration exiting each bin vent will be 0.005 grains per standard cubic foot.

Ash unloaded through the pin mixer ash unloaders will be conditioned at 15 percent moisture and loaded into dump trucks for dry stacking. The mixers are each capable of loading 250 tons of ash per hour and handling two trucks simultaneously. Ash that is sold will not be conditioned to 15 percent but will maintain their storage silo moisture content, which is approximately two (2) percent. Sold ash will be unloaded through the dry ash unloader (i.e., a spout) into tanker trucks and hauled offsite. The silos will share a common truck scale which will limit sold ash loading to one truck at a time. During dry fly ash (i.e., sold ash) unloading to tanker trucks, the exhaust will feed back into the silo for discharge through the bin vent filter into the atmosphere.

01-0009-13 Permit 962982P Application Received : June 30, 2009 and August 26, 2010

Date Issued: November 24, 2009, Date Renewal Issued: September 1, 2010 Date Expires: April 1, 2012

Hydrated Lime Injection System for Control of SO_3:

TVA Bull Run Fossil Plant is adding 4 silos which will be used to inject hydrated lime into the flue gas from the boilers at this facility in order to mitigate SO_3 emissions, which contribute to the formation of H2SO4 mist particulate emissions. PM emissions will be controlled by cartridge filters. Only emissions of hydrated lime will result from this source, at a maximum

of 0.26 pounds per hour of stack emissions. Because this facility is listed at 1200-03-09-.01(4)(b)(1.)(i)(I) Fossil fuel fired steam electric plants of more than 250 MMBTU per hour heat input, this source must include fugitive emissions in determining if the significance level found at 1200-03-09-.01(4)(b)24 of 25 tons PM (15 tons PM10) is attained. This determination is required by 1200-03-09-.01(4)(d)1(i) However, there will be road dust emissions of only approximately 6.81 tons per year. Therefore this source is well below pm significance thresholds. Due to the low (approx. 0.01 gr/dscf) limit for PM emissions proposed by TVA, the Division requested an opacity limit of 10%. TVA designated emission points 12 through 20.

01-0009-13

Renewal Permit #556854 Issued: January 6, 2009 Expires: January 5, 2014

Administrative Permit Amendment #1 request date February 11, 2011,

Responsible Official Change from J.R. Bynum to Scott Hambrick.

01-0009

Renewal Permit #556854 Issued: January 6, 2009 Expires: January 5, 2014

Administrative Permit Amendment #2 Application Received: May 23, 2011,

Administrative Permit Amendment #2 request dated May 20, 2011, to correct condition E1 of the permit **556854. This** request is to correct condition E1 of the permit, which states the allowable emissions for the Non-VOC Gaseous Group (whthin the category of HAP without a standard). In the absence of a standard, allowable emissions are calculated as maximum actual emissions. The current stated allowable emissions are 8,000 tons per year. This amount is based on uncontrolled emission when the source was originally permitted. However, since the end of 2008, Bull Run Fossil Plant (BRF) has operated a flue-gas desulfurization (FGD) system that reduced the maximum emission to 501 tons per year. TVA requested that the allowable emissions be changed to 501 tons per year to reflect the addition of the FGD system.

Changes Made in Title V Renewal Permit 556854

APA-2 E1. **Fee payment: mixed (actual and allowable) emissions basis.**

REGULATED POLLUTANTS	ALLOWABLE EMISSIONS (tons per AAP)	ACTUAL EMISSIONS (tons per AAP)	COMMENTS.
NON-VOC GASEOUS GROUP	**501 APA-2 (was 8,000)**	**N/A**	**Fee emissions are not included above. Maximum actual HAP emissions**

Significant Permit Modification #1 request date March 18, 2011

Changes Made in Title V Renewal Permit 556854

SM-1 E1. **Payment of the fee due and the actual emissions and allowable emissions analysis that were submitted to The Technical Secretary are now submitted to the following address:**

TN Department of Environment & Conservation
Division of Fiscal Services
Consolidated Fee Section – APC
14th Floor L & C Tower
401 Church Street
Nashville, TN 37243

SM-1 E2. Amended the address where the quarterly reports are to be sent.

These reports shall be submitted to The Technical Secretary at the following address:

The Technical Secretary
Division of Air Pollution Control
ATTN: East Tennessee Permit Program
9th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1531

E3-1. The fuel burning equipment at this installation consists of one Combustion Engineering coal fired boiler installed in 1966. The unit is a pulverized-coal, tangentially-fired, dry bottom boiler without flyash reinjection. The Boiler exhausts through a stack of 800 foot height and 28 foot diameter.

The facility is permitted to burn the following:
Coal with No. 2 fuel oil or reprocessed oil used for startup;
Wood waste blended with the coal;
Either no. 2 fuel oil or reprocessed oil may also be burned under non-steady-state and low-load conditions to ensure flame stability.

The source is required to monitor / measure emissions of sulfur dioxide (SO_2) in pounds per hour, nitrogen oxides (NO_X) in pounds per million Btu, carbon dioxide (CO_2) in tons per day, heat input in million Btu per hour, and opacity according to the Part 75 requirements of the Acid Rain Program. The acid rain permit for the source is enclosed as Attachment 3 of this permit.

The source shall comply with Rule 1200-3-27-.06 of the Tennessee Air Pollution Control Regulations (Nitrogen Oxides (NOx) Budget Trading Program. The Nox Budget trading Program permit for this source is enclosed as Attachment 9 of this permit.

TAPCR 1200-3-9

Condition was changed to the following to add clarifying rule citations per EPA request; delete NOx Budget Trading Program requirements; add Clean Air Interstate Rules requirements; and add a Transport Rule place holder requirement:

These changes were made to condition E3-1 on the permit after the public notice and EPA review periods ended.

SM-1 E3-1. The fuel burning equipment at this installation consists of one Combustion Engineering coal fired boiler installed in 1966. The unit is a pulverized-coal, tangentially-fired, dry bottom boiler without flyash reinjection. The Boiler exhausts through a stack of 800 foot height and 28 foot diameter.

The facility is permitted to burn the following:
Coal with No. 2 fuel oil or reprocessed oil used for startup;
Wood waste blended with the coal;
Either no. 2 fuel oil or reprocessed oil may also be burned under non-steady-state and low-load conditions to ensure flame stability.

TAPCR 1200-03-09-.02(6)

Acid Rain Program

The source is required to monitor / measure emissions of sulfur dioxide (SO_2) in pounds per hour, nitrogen oxides (NO_X) in pounds per million Btu, carbon dioxide (CO_2) in tons per day, heat input in million Btu per hour, and opacity according to the Part 75 requirements of the Acid Rain Program. The acid rain permit for the source is enclosed as Attachment 11 of this permit.

TAPCR 1200-03-30-.01(6)(b)

Clean Air Interstate Rules (CAIR)

The permittee shall comply with the applicable provisions of the CAIR SO2 Annual Trading Program (TAPCR 1200-03-14-.04 and 40 CFR §§96.201 -96.288), CAIR NOX Annual Trading Program (TAPCR 1200-03-27-.10 and 40 CFR §§96.101-96.188), and CAIR NOX Ozone Season Trading Program TAPCR (1200-03-27-.11 and 40 CFR §§96.301-96.388), and with the provisions of the CAIR permit for this facility (enclosed as Attachment 10 of this permit).

40 CFR §§96.101-96.188, §§96.201-96.288, §§96.301-96.388; TAPCR 1200-03-14-.04, 1200-03-27-.10 and 1200-03-27-11.

Transport Rule (TR) Requirements

The permittee shall comply with the applicable provisions of 40 CFR 97 Subparts AAAAA (TR NO_X Annual Trading Program),BBBBB (TR NOx Ozone Season Trading Program), and CCCCC (TR SO_2 Group 1 Trading Program).

TAPCR 1200-03-09-.03(8) and 40 CFR §§97.401-97.435, §§97.501-97.535, §§97.601-97.635

TAPCR 1200-03-09-.02(6); 1200-03-30-.01(6)(b)

E5-1. The stated nominal design input capacity of the dry fly ash storage silo is 88,400 pounds per hour of dry fly ash.

Condition was changed to:

SM-1 E5-1. The stated design throughput capacity of fly ash is 160,000 pounds per hour. The Technical Secretary may require the permittee to assure compliance with this rate. This emission limitation is established pursuant to TAPCR 1200-03-07-.01(5).

E5-2. The dry fly ash storage silo throughput shall not exceed 449,000 tons of ash per rolling 12 month period per year of ash. This limitation is established pursuant to the information contained in the agreement letter dated June 25, 1998 from the permittee for avoidance of PSD.

Compliance Method: Compliance with this limitation shall be assured by the following: (Coal input to boiler in tons per calendar month)(% ash content/100)(0.90) = silo throughput in tons/month. Compliance will be based on a rolling twelve (12) month average.
Based on 90% fly ash and 10% bottom ash split. The record of the coal input to the boiler average ash content of the coal and the above calculation shall be maintained on site (all based on monthly basis).

TAPCR 1200-03-09-.02(11)(e)1(iii)

Condition was changed to:

SM-1 E5-2. Particulate matter, PM_{10}, and $PM_{2.5}$ emitted from the following emissions points on the dry fly ash handling system shall not exceed the following limits:

(a) 0.126 pounds per hour (0.005 gr/dscf) and 0.55 tons per year total from 4 operating (1 standby) vacuum pumps with filter separators that will remove fly ash from the precipitators, SCRs, and economizers to one of (2) three-day storage silos. TVA designated emission points 22-26.

(b) 0.28 pounds per hour (0.005gr/dscf) and 1.23 tons per year from the two (2) storage silos' bin vents. . TVA designated emission points 6 and 21.

(c) 0.12 pounds per hour and 0.02 tons per year total from fly ash unloaded into dump trucks or tanker trucks.

(d) The handling of dry fly ash at this facility shall not exceed 449,000 tons in any 12-month period.

Compliance Method: The dry fly ash handling system shall be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years. Monthly records shall be maintained of the amount of fly ash handled by the facility. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required. The log must be maintained at the source location and kept available for inspection by the Technical Secretary or his representative. This log must be retained for a period of not less than five (5) years.

The above limits are based on an agreement letter dated March 25, 2010. TAPCR 1200-03-07-.01(5)

The above limits represent Best Available Control Technology (BACT) for emissions of $PM_{2.5}$. **TAPCR** 1200-03-09-.01(5)(b)2.(ii)

E5-3. Visible emissions shall not exceed 20% opacity as specified in Rule 1200-03-05-.01 of the Tennessee Air Pollution Control Regulations (aggregate count). Visible emissions from stacks will be determined by Tennessee Visible Emission Evaluation Method 2 as adopted by the Tennessee Air Pollution Control Board on August 24, 1984.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996 that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

Condition was changed to:

SM-1 E5-3. Visible emissions from this source shall not exhibit greater than ten percent (10%) opacity, except for one (1) six-minute period in any one (1) hour period, and for no more than four (4) six-minute periods in any twenty-four (24) hour period. Visible emissions from this source shall be determined by EPA Permit Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average). This emission limitation is established pursuant to TAPCR 1200-03-05-.03(6) and TAPCR 1200-03-05-.01(3).

Conditions that were added:

SM-1 E5-4. Fugitive emissions from this source shall be controlled as specified in Rule 1200-03-08-.01. Specifically, no person shall cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in Chapter 1200-03-20. Fugitive emissions from this source shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

SM-1 E5-5. Visible emissions from roads and parking areas shall not exhibit greater than ten percent (10%) opacity as determined by Tennessee Visible Emission Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982 and August 24, 1984. This emission limitation is established pursuant to TAPCR 1200-03-08-.03.

Attachment 8: NOx Budget Trading Program Permit deleted (Program replaced by CAIR Annual and Ozone Season Trading Program – see permit in Attachment 10)

Changes to permit shell conditions and section E conditions per EPA request:

- Please include references to applicable regulations for conditions A11; (TAPCR 1200-03-09-.02(11)(e)6. added to condition.

  A18; (TAPCR 1200-03-09-.02(11)(d)3. and 40 CFR Part 70.5(c)) added to condition.
  E3-16; (TAPCR 1200-03-10-.02(2) and 1200-03-09-.02(11)(e)1.(iii)))) added to condition.
  and E8-10. (TAPCR 1200-03-10-.02(2)(a)))) added to condition.

- Corrected referenced regulations for condition C6(c) from TAPCR 1200-3-9-.02(f)(5(ii) to: TAPCR 1200-03-09-.02(11)(f)5.(ii) and from TAPCR 1200-3-9-.02(11)(5)(iii) to TAPCR 1200-03-09-.02(11)(f)5.(iii)
- Conditions E3-1, E3-2, and E3-3 reference TAPCR 1200-3-9. This is too broad. Please provide the specific applicable regulations within TAPCR 1200-3-9.

Conditions changed to:

E3-1 TAPCR 1200-03-09-.02(6) for approved fuels for coal-fired boiler;
TAPCR 1200-03-30-.01(6)(b) for Acid Rain Program;
TAPCR 1200-03-09-.03(8) for Trans Port Rule;
TAPCR 1200-03-14-.04, 1200-03-27-.10, and 1200-03-27-.11 for Clean Air Interstate Rule

E3-2 TAPCR 1200-03-09-.02(6)

E3-3 TAPCR 1200-03-09-.02(6)

- Condition A11(a)2 refers to Attachment 8. Please change this to Attachment 7. Corrected condition.
- There were numerous pollutants in the Section E Emissions Summary Table that list "N/A" for both the allowable and actual emissions, however the Statement of Basis lists maximum emissions for sources. Please include allowable emissions for the pollutants in the Emissions Summary Table. Revised condition (see comments below).
- For Condition A11(a)2, the word "contrary" was misspelled. Corrected condition.
- For Condition B5(d), the phrase "into account" was misspelled. Corrected condition.
- For Condition B11, the word "information was misspelled. Corrected condition.
- For Condition C1(e), the word, "change" was misspelled. Corrected condition.
- For Condition E3-13 was mislabeled as "3-13". Corrected condition.

1. In regards to EPA's comment that there are numerous pollutants in the Section E Emissions Summary Table that list "N/A" for both the allowable and actual emissions, however the Statement of Basis lists maximum emissions for sources. Please include allowable emissions for the pollutants in the Emissions Summary Table.

For the pollutants listed as NA, we have added the following statement:
PM10 - Fee emissions are included in PM above.
HAP with a standard VOC Family Group, NON-VOC Gaseous Group and PM Family Group - No fee emissions subject to a MACT standard.
Each NSPS Pollutant Not Listed Above - Fee emissions are included in PM, SO2, VOC, and NOx above.

Newspaper Public Notice published on Wednesday, July 27, 2011

Comments and Responses on
Draft Title V Significant Modification Permit
TVA – Bull Run Fossil Plant
Permit no. 556584

Below are comments from the Environmental Protection Agency (EPA), Region 4 on the above referenced source. Our comments are divided into two categories: 1. Significant Comments and 2. General Comments. Significant comments are defined as those comments or issues that would trigger an objection under 40 CFR Part 70. EPA has significant and general comments for this permitting action. The general comments are provided as recommendations that could be incorporated into the final version of the permit. EPA's 45-day review period for this permit ends in September 16, 2011.

Please feel free to contact Andrew Parks at 404-562-9019 or parks.andrew@epa.gov should you have any questions or comments.

General Comments

2. References to applicable regulations are missing for conditions A11, A18, E3-16, and E8-10. Please include references to applicable regulations for these conditions.
3. Both of the referenced regulations for condition C6(c) are incorrect. Please include the correct references.
4. Conditions E3-1, E3-2, and E3-3 reference TAPCR 1200-3-9. This is too broad. Please provide the specific applicable regulations within TAPCR 1200-3-9.
5. Condition A11(a)2 refers to Attachment 8. Please change this to Attachment 7.
6. There are numerous pollutants in the Section E Emissions Summary Table that list "N/A" for both the allowable and actual emissions, however the Statement of Basis lists maximum emissions for sources. Please include allowable emissions for the pollutants in the Emissions Summary Table.
7. For Condition A11(a)2, the word "contrary" is misspelled.
8. For condition B6(d), the phrase "into account" is misspelled.
9. For Condition B11, the word "information" is misspelled.
10. For Condition C1(e), the word "change" is misspelled.
11. Condition E3-13 is mislabeled as "3-13"

Air Pollution Control response to comments from Andrew Parks, Environmental Engineer, Air Permits Section, U.S.EPA, Region 4.

Your comments have been reviewed and your recommendations have been incorporated into the permit.

Other changes made by TNDAPC after the end of the public notice and EPA review period.

Changed all TAPCR regulation citations in sections A,B,C,D, and E to new format of 1200-03-09 from 1200-3-9.

Revised, condition E2(b) for semiannual reports to add condition SM-1 E5-2 to condition E2(b)(1) and add condition SM-1 E5-3 to condition E2(b)(2).

Added rule citations to conditions SM-1 E5-1, SM-1 E5-5, E7-5, E7-6, E8-1, E8-2, and E8-3.

Conditions B6 and E2(c): Changed location for submittal of SAR and ACC to Knoxville EFO from TDEC / APC Central Office (L & C Annex, Nashville, TN)

Significant Permit Modification #2 request date October 11, 2012

Permit Modification	Issue Date	Condition or Section	Modification
Significant Modification #2 (SPM-2) Hydrated Lime Injection System for Control of SO_3 Source 13	May 6, 2013	E1.	Updated fee emissions.
		E2	Updated semiannual reporting requirements.
		E10-1.	Added throughput capacity limit.
		E10-2.	Added particulate matter limits from the Hydrated Lime Silos.
		E10-3.	Added an operational limit for the Hydrated Lime Injection System.
		E10-4.	Added a log requirement for the hydrated lime being delivered.
		E10-5.	Added visible emissions requirements.
		E10-6.	Added fugitive emissions requirements.
		E10-7.	Added visible emissions requirements for the roads and parking areas.

Title V Renewal Permit No. 567519 Application dated July 8, 2013

Permit Modification	Issue Date	Condition or Section	Changes
Title V Renewal Permit No. 567519 Application dated July 8, 2013		Front of Permit	Updated the Responsible Official from J.R. Bynum, Executive VP Fossil Power Group to Scott Sims, Plant Manager.
			Updated Facility Contact Person from Nathan .W. Burris, Plant Manager to Steel Stagnolia, Origran / Program Administrator-Environmental.
		Update E1.	Source choose to have the facility not pay its major source annual emission fee calculated on a mixture basis of actual and allowable emissions, but choose to have their facility pay its major source annual emission fee calculated on an actual emission basis per a letter signed July 8, 2013, by Mr. Scott Sims, Plant Manager.
		Update E2.	Change of the Division address from Consolidated Fee Section - APC 14th Floor L & C Annex, 401 Church Street, Nashville, TN 37243-1531 to Consolidated Fee Section – APC William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 10th Floor, Nashville, TN 37243
		Source 15 E-11	Added source 01-0009-15 Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump to the permit
		Source 13	Add 13 Hydrated Lime Infection System for Control of SO3
		Attachments 1 thru 15	Updated and reorganized the attachments to coin side with the application per source.
		Attachment 14 & 15	Received CAIR application on July 31, 2013, and updated application on August 11, 2014. Received Acid Rain application on August 11, 2014.

TENNESSEE AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-1531

OPERATING PERMIT (TITLE V) Issued Pursuant to Tennessee Air Quality Act

This permit fulfills the requirements of Title V of the Federal Clean Air Act (42 U.S.C. 7661a-7661e) and the federal regulations promulgated thereunder at 40 CFR Part 70. (FR Vol. 57, No. 140, Tuesday, July 21, 1992 p.32295-32312). This permit is issued in accordance with the provisions of paragraph 1200-03-09-.02(11) of the Tennessee Air Pollution Control Regulations. The permittee has been granted permission to operate an air contaminant source in accordance with emissions limitations and monitoring requirements set forth herein.

Date Issued: To Be Determined

Permit Number: **567519**

Date Expires: To Be Determined

Issued To:
Tennessee Valley Authority - Bull Run Fossil Plant

Installation Address:
1265 Edgemoor Road
Clinton

Installation Description:
Coal Fired Steam Electric Generating Plant:
01: (1) Coal Fired Boiler
02, 03, 04: Auxiliary Boilers 1A, 1B, & 1H
06: Ash Handling Process
07: Coal Handling Facility
10: Limestone Handling Process
13: Hydrated Lime Injection System for Control of SO_3
15: Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump
99: General Facility Ambient Air Monitoring

Emission Source Reference No.: **01-0009**

Renewal Application Due Date: Between and

Primary SIC: 49

Information Relied Upon:
Renewal Application dated November 07, 2003
Acid Rain Permit Renewal Application dated December 3, 2004; NOx Budget Permit Application dated October 23, 2002
CAIR Permit Application dated June 20, 2007; Significant Modification Application dated July 17, 2007
Administrative Permit Amendment #1 letter request dated February 9, 2011; Administrative Permit Amendment #2 letter request dated May 20, 2011; Significant Modification 1 Application dated March 17, 2011; Significant Modification 2 Application dated October 11, 2012.
Renewal Application dated July 8, 2013

Draft

(continued on the next page)

TECHNICAL SECRETARY

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

POST AT INSTALLATION ADDRESS

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SOURCE SPECIFIC EMISSION STANDARDS, OPERATING LIMITATIONS, and MONITORING, RECORDKEEPING and REPORTING REQUIREMENTS

SECTION A
GENERAL PERMIT CONDITIONS

A permit issued under the provisions of paragraph 1200-03-09-.02(11) is a permit issued pursuant to the requirements of title V of the Federal Act and its implementing Federal regulations promulgated at 40 CFR part 70.

A1. **Definitions.** Terms not otherwise defined in the permit shall have the meaning assigned to such terms in the referenced regulation.

TAPCR 1200-03

A2. **Compliance requirement.** All terms and conditions in a permit issued pursuant to paragraph 1200-03-09-.02(11) including any provisions designed to limit a source's potential to emit, are enforceable by the Administrator and citizens under the Federal Act.
The permittee shall comply with all conditions of its permit. Except for requirements specifically designated herein as not being federally enforceable (State Only), non-compliance with the permit requirements is a violation of the Federal Act and the Tennessee Air Quality Act and is grounds for enforcement action; for a permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Non-compliance with permit conditions specifically designated herein as not being federally enforceable (State Only) is a violation of the Tennessee Air Quality Act and may be grounds for these actions.

TAPCR 1200-03-09-.02(11)(e)2(i) and 1200-03-09-.02(11)(e)1(vi)(I)

A3. **Need to halt or reduce activity.** The need to halt or reduce activity is not a defense for noncompliance. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. However, nothing in this item shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in assessing penalties for noncompliance if the health, safety or environmental impacts of halting or reducing operations would be more serious than the impacts of continuing operations.

TAPCR 1200-03-09-.02(11)(e)1(vi)(II)

A4. **The permit.** The permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. This permit supersedes any previous permits.

TAPCR 1200-03-09-.02(11)(e)1(vi)(III)

A5. **Property rights.** The permit does not convey any property rights of any sort, or any exclusive privilege.

TAPCR 1200-03-09-.02(11)(e)1(vi)(IV)

A6. **Submittal of requested information.** The permittee shall furnish to the Technical Secretary, within a reasonable time, any information that the Technical Secretary may request in writing to determine whether cause exists for modifying, revoking and reissuing, or termination of the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Technical Secretary copies of records required to be kept by the permit. If the permittee claims that such information is confidential, the Technical Secretary may review that claim and hold the information in protected status until such time that the Board can hear any contested

proceedings regarding confidentiality disputes. If the information is desired by EPA, the permittee may mail the information directly to EPA. Any claims of confidentiality for federal purposes will be determined by EPA.

TAPCR 1200-03-09-.02(11)(e)1(vi)(V)

A7. **Severability clause.** The requirements of this permit are severable. A dispute regarding one or more requirements of this permit does not invalidate or otherwise excuse the permittee from their duty to comply with the remaining portion of the permit.

TAPCR 1200-03-09.02(11)(e)1.(v)

A8 **Fee payment**

This source subject to the major source operating permit requirements of Title V and the acidic precipitation requirements of Title IV of the Federal Clean Air Act shall pay a major source emission fee in the following fashion:

(a). The permittee shall pay an annual major source emission fee based upon the responsible official's choice of actual emissions or allowable emissions. An emission cap of 4,000 tons per year per regulated pollutant per major source SIC Code shall apply to actual or allowable based emission fees. A major source annual emission fee will not be charged for emissions in excess of the cap (s) or for carbon monoxide.

(b). Major sources who have filed a timely, complete operating permit application in accordance with 1200-03-09-.02(11), shall pay allowable emission based fees until the beginning of the next annual accounting period following receipt of their major source operating permit. At that time, the permittee shall begin paying their annual emission fee based upon their choice of actual or allowable based fees, or mixed actual and allowable based fees as stated under SECTION E of this permit. Once permitted, altering the existing choice shall be accomplished by a written request of the major source, filed in the office of the Technical Secretary at least one hundred eighty days prior to the expiration or reissuance of the major source operating permit.

(c). Major sources must conform to the following requirements with respect to fee payments:

1. If a major source choosing an allowable based annual emission fee wishes to restructure its allowable emissions for the purposes of lowering its annual emission fees, a mutually agreed upon, more restrictive regulatory requirement may be established to minimize the allowable emissions and thus the annual emission fee. The more restrictive requirement must be specified on the permit, and must include the method used to determine compliance with the limitation. The documentation procedure to be followed by the major source must also be included to insure that the limit is not exceeded. Restructuring the allowable emissions is permissible only in the annual accounting periods of eligibility and only, if the written request for restructuring is filed with the Technical Secretary at least 120 days prior to the beginning of the annual accounting period of eligibility. These periods of eligibility occur upon expiration of the initial major source operating permit, renewal of an expired major source operating permit or reissuance of a major source operating permit.

2. Beginning with the annual accounting period beginning July 1, 1997 to June 30, 1998, major sources paying on allowable based emission fees will be billed by the Division no later than April 1 prior to the end of the accounting period. The

major source annual emission fee is due July 1 following the end of the accounting period.

3. Beginning with the annual accounting period beginning July 1, 1997 to June 30, 1998, major sources choosing an actual based annual emission fee shall file an actual emissions analysis with the Technical Secretary which summarizes the actual emissions of all regulated pollutants at the air contaminant sources of their facility. Based upon the actual emissions analysis, the source shall calculate the fee due and submit the payment and the analysis each July 1st following the end of the annual accounting period.

4. Beginning with the annual accounting period beginning July 1, 1997 to June 30, 1998, major sources choosing a mixture of allowable and actual based emission fees shall file an actual emissions and allowable emissions analysis with the Technical Secretary which summarizes the actual and allowable emissions of all regulated pollutants at the air contaminant sources of their facility. Based upon the analysis, the source shall calculate the fee due and submit the payment and the analysis each July 1st following the end of the annual accounting period. The mixed based fee shall be calculated utilizing the 4,000 ton cap specified in subparagraph 1200-03-26-.02 (2) (i). In determining the tonnages to be applied toward the regulated pollutant 4,000ton cap in a mixed based fee, the source shall first calculate the actual emission based fees for a regulated pollutant and apply that tonnage toward the regulated pollutant's cap. The remaining tonnage available in the 4,000 ton category of a regulated pollutant shall be subject to allowable emission based fee calculations for the sources that were not included in the actual emission based fee calculations. Once the 4,000 ton cap has been reached for a regulated pollutant, no additional fee shall be required.

5. Major sources choosing to pay their major source annual emission fee based on actual based emissions or a mixture of allowable and actual based emissions may request an extension of time to file their emissions analysis with the Technical Secretary. The extension may be granted by the Technical Secretary up to ninety (90) days. The request for extension must be received by the Division no later than 4:30 p.m. on July 1 or the request for extension shall be denied. The request for extension to file must state the reason and give an adequate explanation. An estimated annual emission fee payment of no less than eighty percent (80%) of the fee due July 1 must accompany the request for extension to avoid penalties and interest on the underpayment of the annual emission fee. A remaining balance due must accompany the emission analysis.If there has been an overpayment, a refund may be requested in writing to the Division or be applied as a credit toward next year's major source annual emission fee. The request for extension of time is not available to major sources choosing to pay their major source annual emission fee based on allowable emissions.

6. Newly constructed major sources or minor existing sources modifying their operations such that they become a major source in the midst of the standard July 1st to June 30th annual accounting period, shall pay allowable based annual emission fees for the fractional remainder of the annual accounting period commencing upon their start-up. At the beginning of the next annual accounting period, the "responsible official" of the source may choose to pay

annual emission fees based on actual or allowable emissions or a mixture of the two as provided for in this rule 1200-03-26-.02.

(**d**). Where more than one (1) allowable emission limit is applicable to a regulated pollutant, the allowable emissions for the regulated pollutants shall not be double counted. Major sources subject to the provisions of paragraph 1200-03-26-.02(9) shall apportion their emissions as follows to ensure that their fees are not double counted.

1. Sources that are subject to federally promulgated hazardous air pollutant standards that can be imposed under Chapter 1200-03-11 or Chapter 1200-03-31 will place such regulated emissions in the specific hazardous air pollutant under regulation. If the pollutant is also in the family of volatile organic compounds or the family of particulates, the pollutant shall not be placed in that respective family category.

2. A miscellaneous category of hazardous air pollutants shall be used for hazardous air pollutants listed at part 1200-03-26-.2 (2)(i)12 that do not have an allowable emission standard. A pollutant placed in this category shall not be subject to being placed in any other category such as volatile organic compounds or particulates.

3. Each individual hazardous air pollutant and the miscellaneous category of hazardous air pollutants is subject to the 4,000 ton cap provisions of subparagraph 1200-03-26-.02(2)(i).

4. Major sources that wish to pay annual emission fees for PM10 on an allowable emission basis may do so if they have a specific PM10 allowable emission standard. If a major source has a total particulate emission standard, but wishes to pay annual emission fees on an actual PM 10 emission basis, it may do so if the PM10 actual emission levels are proven to the satisfaction of the Technical Secretary. The method to demonstrate the actual PM10 emission levels must be made as part of the source's major source operating permit in advance in order to exercise this option. The PM10 emissions reported under these options shall not be subject to fees under the family of particulate emissions. The 4,000 ton cap provisions of subparagraph 1200-03-26-.02(2)(i) shall also apply to PM10 emissions.

TAPCR 1200-03-26-.02 (3) & (9) and 1200-03-09-.02(11)(e)1.(vii)

A9. **Permit revision not required.** A permit revision will not be required under any approved economic incentives, marketable permits, emissions trading and other similar programs or process for changes that are provided for in the permit.

TAPCR 1200-03-09-.02(11)(e)1(viii)

A10. **Inspection and entry.** Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Technical Secretary or his authorized representative to perform the following for the purposes of determining compliance with the permit applicable requirements:

(a) Enter upon, at reasonable times, the permittee's premises where a source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

(d) As authorized by the Clean Air Act and Chapter 1200-03-10 of TAPCR, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

(e) "Reasonable times" shall be considered to be customary business hours unless reasonable cause exists to suspect noncompliance with the Act, Division 1200-03 or any permit issued pursuant thereto and the Technical Secretary specifically authorizes an inspector to inspect a facility at any other time.

TAPCR 1200-03-09-.02(11)(e)3.(ii)

A11. Permit shield.

(a) Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements as of the date of permit issuance, provided that:

1. Such applicable requirements are included and are specifically identified in the permit; or

2. The Technical Secretary, has, in acting on this original permit application of August 18, 1997 and any revision thereto, determined that certain requirements specifically identified and listed in Attachment 8 hereto are not applicable to the source. Notwithstanding any part of Attachment 8 that could be construed to the contarary, the Technical Secretary has not determined whether past maintenance projects at this source were major modifications subject to major source permitting requirements under federal or state new source review regulatory provisions.

(b) Nothing in this permit shall alter or affect the following:

1. The provisions of section 303 of the Federal Act (emergency orders), including the authority of the Administrator under that section. Similarly, the provisions of T.C.A. §68-201-109 (emergency orders) including the authority of the Governor under the section;

2. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

3. The applicable requirements of the acid rain program, consistent with section 408(a) of the Federal Act; or

4. The ability of EPA to obtain information from a source pursuant to section 114 of the Federal Act.

(c) Permit shield is granted to the permittee.

A12. Permit renewal and expiration.

(a) Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted at least 180 days, but no more than 270 days prior to the expiration of this permit.

(b) Provided that the permittee submits a timely and complete application for permit renewal the source will not be considered in violation of paragraph 1200-03-09-.02(11) until the Technical Secretary takes final action on the permit application, except as otherwise noted in paragraph 1200-03-09-.02(11).

(c) This permit, its shield provided in Condition A11, and its conditions will be extended and effective after its expiration date provided that the source has submitted a timely, complete renewal application to the Technical Secretary.

TAPCR 1200-03-09-.02(11)(f)3 and 2, 1200-03-09-.02(11)(d)1(i)(III), and 1200-3-9-.02(11)(a)2

A13. Reopening for cause.

(a) A permit shall be reopened and revised prior to the expiration of the permit under any of the circumstances listed below:

1. Additional applicable requirements under the Federal Act become applicable to the sources contained in this permit provided the permit has a remaining term of 3 or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the permit expiration date of this permit, unless the original has been extended pursuant to 1200-03-09-.02(11)(a)2.

2. Additional requirements become applicable to an affected source under the acid rain program.

3. The Technical Secretary or 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. The Technical Secretary or EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

(b) Proceedings to reopen and issue a permit shall follow the same proceedings as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists, and not the entire permit. Such reopening shall be made as expeditiously as practicable.

(c) Reopenings for cause shall not be initiated before a notice of such intent is provided to the permittee by the Technical Secretary at least 30 days in advance of the date that the permit is to be reopened except that the Technical Secretary may provide a shorter time period in the case of an emergency. An emergency shall be established by the criteria of T.C.A. 68-201-109 or other compelling reasons that public welfare is being adversely effected by the operation of a source that is in compliance with its permit requirements.

(d) If the Administrator finds that cause exists to terminate, modify, or revoke and reissue a permit as identified in A13, the Administrator is required under federal rules to notify the Technical Secretary and the permittee of such findings in writing. Upon receipt of such notification, the Technical Secretary shall investigate the matter in order to determine if he/she agrees or disagrees with the Administrator's findings. If he/she agrees with the Administrator's findings, the Technical Secretary shall conduct the reopening in the following manner:

1. The Technical Secretary shall within 90 days after receipt of such notification, forward to EPA a proposed determination of termination, modification, or revocation and reissuance, as appropriate. If the Administrator grants additional time to secure permit applications or additional information from the permittee, the Technical Secretary shall have the additional time period added to the standard 90 day time period.

2. EPA will evaluate the Technical Secretary's proposed revisions and respond as to their evaluation.

3. If EPA agrees with the proposed revisions, the Technical Secretary shall proceed with the reopening in the same manner prescribed under Condition A13. (b) and Condition A13. (c).

4. If the Technical Secretary disagrees with either the findings or the Administrator that a permit should be reopened or an objection of the Administrator to a proposed revision to a permit submitted pursuant to Condition A13.(d), he shall bring the matter to the Board at its next regularly scheduled meeting for instructions as to how he/she should proceed. The permittee shall be required to file a written brief expressing their position relative to the Administrator's objection and have a responsible official present at the meeting to answer questions for the Board. If the Board agrees that EPA is wrong in their demand for a permit revision, they shall instruct the Technical Secretary to conform to EPA's demand, but to issue the permit under protest preserving all rights available for litigation against EPA.

TAPCR 1200-03-09-.02(11)(f)6 and 7.

A14. **Permit transference.** An administrative permit amendment allows for a change of ownership or operational control of a source where the Technical Secretary determines that no other change in the permit is necessary, provided that the following requirements are met:

(a) Transfer of ownership permit application is filed consistent with the provisions of 1200-03-09-.03(6), and

(b) 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 Technical Secretary.

TAPCR 1200-03-09-.02(f)4.(i)(IV) and (1200-03-09-.03(6)

A15. **Air pollution alert.** When the Technical Secretary has declared that an air pollution alert, an air pollution warning, or an air pollution emergency exists, the permittee must follow the requirements for that episode level as outlined in TAPCR 1200-03-09-.03(1) and TAPCR 1200-03-15-.03.

A16. **Construction permit required.** Except as exempted in TAPCR 1200-03-09-.04 or excluded in subparagraph TAPCR 1200-03-02-.01 (aa) or subparagraph TAPCR 1200-03-02-.01(1)(cc), this facility shall not begin the construction of a new air contaminant source or the modification of an air contaminant source which may result in the discharge of air contaminants without first having applied for and received from the Technical Secretary a construction permit for the construction or modification of such air contaminant source.

TAPCR 1200-03-09-.01(1)a

A17. **Notification of changes.** The permittee shall notify the Technical Secretary 30 days prior to commencement of any of the following changes to an air contaminant source which would not be a modification requiring a construction permit.

(a) change in air pollution control equipment
(b) change in stack height or diameter
(c) change in exit velocity of more than 25 percent or exit temperature of more than 15 percent based on absolute temperature.

TAPCR 1200-03-09-.02(7)

A18. **Schedule of compliance.** The permittee will comply with any applicable requirement that becomes effective during the permit term on a timely basis. If the permittee is not in compliance the permittee must submit a schedule for coming into compliance which must include a schedule of remedial measure(s), including an enforceable set of deadlines for specific actions.

TAPCR 1200-03-09-.02(11)€1(iv)

A19. **Acid rain program**

(**a**). The permittee shall not produce emissions in excess of allowances held under Title IV of the Federal Clean Air Act and the regulations promulgated thereunder and TAPCR 1200-03-30.
(**b**). The permittee shall not be subject to the permit revision requirements of TAPCR 1200-03-09-.02(11)(f) for increases in emissions that are authorized by allowances acquired pursuant to the acid rain program, provided that such increases do not require a permit revision under any other applicable requirement.
(**c**). Where an applicable requirement of the Federal Act is more stringent than the Federal regulations promulgated under Title IV of the Federal Act, both provisions shall be incorporated into the permit and shall be enforceable by the administrator.
(**d**). No limit shall be placed on the number of allowances held by this source under the acid rain program. The permittee may not use allowances as a defense for noncompliance with any other applicable requirement.
(**e**). Any allowance shall be accounted for according to the regulations promulgated under Title IV of the Federal Clean Air Act and the provisions of TAPCR 1200-03-30.

TAPCR 1200-03-09-.02(11)(e)1(iv)

A20. **Title VI**

(a). The permittee shall comply with the standards for labeling of products using ozone -depleting substances pursuant to 40 CFR Part 82, Subpart E:
1. All containers containing a class I or class II substance is stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced into interstate commerce pursuant to § 82.106.
2. The placement of the required warning statement must comply with the requirements pursuant to § 82.108.

3. The form of the label bearing the required warning statement must comply with the requirements pursuant to § 82.110.

4. No person may modify,remove,or interfere with the required warning statement except as described in § 82.112.

(b). The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82,Subpart F, except as provided for MVACs in Subpart B:

1. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to § 82.156.

2. Equipment used during the maintenance,service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to § 82.158.

3. Persons performing maintenance,service,repair, or disposal of appliances must be certified by an approved technician certification program pursuant to § 82.161.

4. Persons disposing of small appliances,MVACs, and MVAC-like appliances must comply with recordkeeping requirements pursuant to § 82.166. ("MVAC-like appliance" as defined at § 82.152)

5. Persons owning commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to § 82.156.

6. Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to § 82.166.

(c). If the permittee manufactures, transforms, imports, or exports a class I or class II substance, the permittee is subject to all the requirements as specified in 40 CFR part 82,Subpart A, Production and Consumption Controls.

(d). If the permittee performs a service on motor(fleet) vehicles when this service involves ozone depleting substance refrigerant in the motor vehicle air conditioner(MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or system used on passenger buses using HCFC-22 refrigerant.

(e). The permittee shall be allowed to switch from any ozone-depleting substance to any alternative that is listed in the Significant New Alternatives Program(SNAP) promulgated pursuant to § CFR part 82, Subpart G, Significant New Alternatives Policy Program.

A21. **112 (r).** The permittee shall comply with the requirement to submit to the Administrator or designated State Agency a risk management plan, including a registration that reflects all covered processes, by June 21, 1999, if the permittee's facility is required pursuant to 40 CFR 68, to submit such a plan.

SECTION B
GENERAL CONDITIONS for MONITORING, REPORTING, and ENFORCEMENT

B1. **Recordkeeping.** Monitoring and related record keeping shall be performed in accordance with the requirements specified in the permit conditions for each individual permit unit. In no case shall reports of any required monitoring and record keeping be submitted less frequently than every six months.

(a) Where applicable, records of required monitoring information include the following:

1. The date, place as defined in the permit, and time of sampling or measurements;
2. The date(s) analyses were performed;
3. The company or entity that performed the analysis;
4. The analytical techniques or methods used;
5. The results of such analyses; and
6. The operating conditions as existing at the time of sampling or measurement.

(b) Digital data accumulation which utilizes valid data compression techniques shall be acceptable for compliance determination as long as such compression does not violate an applicable requirement and its use has been approved in advance by the Technical Secretary.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

B2. **Retention of monitoring data.** The permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

TAPCR 1200-03-09.02(11)(e)1.(iii)(II)II

B3. **Reporting.** Reports of any required monitoring and record keeping shall be submitted to the Technical Secretary in accordance with the frequencies specified in the permit conditions for each individual permit unit. Reporting periods shall be as specified as in Condition E2. Reports shall be submitted within 60 days of the close of the reporting periods. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by a responsible official. Reports required under "State only requirements" are not required to be certified by a responsible official.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

B4. **Certification.** Except for reports required under “State Only” requirements, any application form, written report or compliance certification submitted pursuant to the requirements of this permit shall contain certification by a responsible official of truth, accuracy and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

TAPCR 1200-03-09-.02(11)(d)4

B5. **Annual compliance certification.** The permittee shall submit annually compliance certifications with terms and conditions contained in sections A,B,D,& E of this permit, including emission limitations, standards, or work

practices. The submittals shall be due within 60 days after the end of December 31 of each year. This compliance certification shall include all of the following (provided that the identification of applicable information may cross-reference the permit or previous reports, as applicable):

(a) The identification of each term or condition of the permit that is the basis of the certification;

(b) The identification of the method(s) or other means used by the owner or operator for determining the compliance status with each term and condition during the certification period;

(c) Whether such method(s) or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the methods and means required by this permit If necessary, the owner or operator also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Federal Act, which prohibits knowingly making a false certification or omitting material information;

(d) The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means designated in B5(b) above. The certification shall identify each deviation and take it intaccouin the compliance certification; and

(e) Such other facts as the Technical Secretary may require to determine the compliance status of the source.

*"Excursion" shall mean a departure from an indicator range established for monitoring under this paragraph, consistent with any averaging period specified for averaging the results of the monitoring.

**"Exceedance" shall mean a condition that is detected by monitoring that provides data in terms of an emission limitation or

standard and that indicates that emissions (or opacity) are greater than the applicable emission limitation or standard (or les than the applicable standard in the case of a percent reduction requirement) consistent with any averaging period specified for averaging the results of the monitoring.

40 CFR Part 70.6(c)(5)(iii) as amended in the Federal Register Vol.62, No.204, October 22, 1997, pages 54946 and 54947

B6. **Submission of compliance certification.** The compliance certification shall be submitted to:

(a) The Technical Secretary
Environment and Conservation
Division of Air Pollution Control
Knoxville Environmental Field Office or pdf copy to: Air Pollution Control@TN.gov
3711 Middlebrook Pike
Knoxville, TN 37921

(b) Air and EPCRA Enforcement Branch
US EPA Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303

TAPCR 1200-03-09-.02(11)(e)(3)(v)(IV)

B7. **Emergency provisions.** An emergency constitutes an affirmative defense to an enforcement action brought against this source for noncompliance with a technology based emission limitation due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

(a) The affirmative defense of the emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An emergency occurred and that the permittee can identify the probable cause(s) of the emergency. "Probable" must be supported by a credible investigation into the incident that seeks to identify the causes and results in an explanation supported by generally accepted engineering or scientific principles.

2. The permitted source was at the time being properly operated. In determining whether or not a source was being properly operated, the Technical Secretary shall examine the source's written standard operating procedures which were in effect at the time of the noncompliance and any other code as detailed below that would be relevant to preventing the noncompliance. Adherence to the source's standard operating procedures will be the test of adequate preventative maintenance, careless operation, improper operation or operator error to the extent that such adherence would prevent noncompliance. The source's failure to follow recognized standards of practice to the extent that adherence to such a standard would have prevented noncompliance will disqualify the source from any claim of an emergency and an affirmative defense.

3. During the period of the emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit.

4. The permittee submitted notice of the emergency to the Technical Secretary according to the notification criteria for malfunctions in rule 1200-03-20-.03. For the purposes of this condition, "emergency" shall be substituted for "malfunctions(s)" in rule 1200-03-20-.03 to determine the relevant notification threshold. The notice shall include a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding the permittee seeking to establish the occurrence of an emergency has the burden of proof.

(c) The provisions of this condition are in addition to any emergency, malfunction or upset requirement contained in Division 1200-03 or other applicable requirement.

TAPCR 1200-03-09-.02(11)(e)7

B8. **Excess emissions reporting.**

(a) The permittee shall promptly notify the Technical Secretary when any emission source, air pollution control equipment, or related facility breaks down in such a manner to cause the emission of air contaminants in excess of the applicable emission standards contained in Division 1200-03 or any permit issued thereto, or of sufficient duration to cause damage to property or public health. The permittee must provide the Technical Secretary with a statement giving all pertinent facts, including the estimated duration of the breakdown. Violations of the visible emission standard which occur for less than 20 minutes in one day (midnight to midnight) need not be reported. Prompt notification will be within 24 hours of the malfunction and shall be provided by telephone to the Division's Nashville office. The Technical Secretary shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation. In attainment and unclassified areas if emissions other than from sources designated as significantly impacting on a nonattainment area in excess of the standards will not and do not occur over more than a 24-hour period (or will not recur over more than a 24-hour period) and no damage to property and or public health is anticipated, notification is not required.

(b) Any malfunction that creates an imminent hazard to health must be reported by telephone immediately to the Division's Nashville office and to the State Civil Defense.

(c) A log of all malfunctions, startups, and shutdowns resulting in emissions in excess of the standards in Division 1200-03 or any permit issued thereto must be kept at the plant. All information shall be entered in the log no later than twenty-four (24) hours after the startup or shutdown is complete, or the malfunction has ceased or has been corrected. Any later discovered corrections can be added in the log as footnotes with the reason given for the change. This log must record at least the following:

1. Stack or emission point involved

2. Time malfunction, startup, or shutdown began and/or when first noticed

3. Type of malfunction and/or reason for shutdown

4. Time startup or shutdown was complete or time the air contaminant source returned to normal operation

5. The company employee making entry on the log must sign, date, and indicate the time of each log entry

The information under items B8.(c) 1. and B8.(c) 2. above must be entered into the log by the end of the shift during which the malfunction or startup began. For any source utilizing continuous emission(s) monitoring, continuous emission(s) monitoring collection satisfies the above log keeping requirement.

TAPCR 1200-03-20-.03 and .04

B9. **Malfunctions, startups and shutdowns - reasonable measures required.** The permittee must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions. These measures may include installation and use of alternate control systems, changes in operating methods or procedures, cessation of operation until the process equipment and/or air pollution control equipment is repaired, maintaining sufficient spare parts, use of overtime labor, use of outside consultants and contractors, and other appropriate means. Failures that are caused by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. This provision does not apply to standards found in 40 CFR parts 60(Standards of performance for new stationary sources), 61(National emission standards for hazardous air pollutants) and 63(National emission standards for hazardous air pollutants for source categories).

TAPCR 1200-03-20-.02

B10. **Reserved.**

TAPCR 1200-03-20-.04(2)

B11. **Report required upon the issuance of notice of violation.** The permittee must submit within twenty (20) days after receipt of the notice of violation, the data shown below to assist the Technical Secretary in deciding whether to excuse or validate the violation. If this data has previously been available to the Technical Secretary prior to the issuance of the notice of violation no further action is required of the violating source. However, if the source desires to submit additional nformation, then this must be submitted within the same twenty (20) day time period. The minimum data requirements are:

(a) The identity of the stack and/or other emission point where the excess emission(s) occurred;

(b) The magnitude of the excess emissions expressed in pounds per hour and the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;

(c) The time and duration of the emissions;

(d) The nature and cause of such emissions;

(e) For malfunctions, the steps taken to correct the situation and the action taken or planned to prevent the recurrence of such malfunctions;

(f) The steps taken to limit the excess emissions during the occurrence reported, and

(g) If applicable, documentation that the air pollution control equipment, process equipment, or processes were at all time maintained and operated in a manner consistent with good operating practices for minimizing emissions.

Failure to submit the required report within the twenty (20) day period specified shall preclude the admissibility of the data for consideration of excusal for malfunctions.

TAPCR 1200-03-20-.06(2),(3) and (4)

SECTION C
PERMIT CHANGES

C1. **Operational flexibility changes.** The source may make operational flexibility changes that are not addressed or prohibited by the permit without a permit revision subject to the following requirements:

(a) The change cannot be subject to a requirement of the Title IV of the Federal Act or Chapter 1200-03-30.

(b) The change cannot be a modification under any provision of Title I of the federal Act or Division 1200-03.

(c) Each change shall meet all applicable requirements and shall not violate any existing permit term or condition.

(d) The source must provide contemporaneous written notice to the Technical Secretary and EPA of each such change, except for changes that are below the threshold of insignificant activities and emission levels that are specified in Rule 1200-03-09-.04.

(e) Each change shall be described in the notice including the date, any change in emissions, pollutants emitted, and any applicable requirements that would apply as a result of the changee.

(f) The change shall not qualify for a permit shield under the provisions of part 1200-03-09-.02(11)(e)6.

(g) The permittee shall keep a record describing the changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those changes. The records shall be retained until the changes are incorporated into subsequently issued permits.

TAPCR 1200-03-09-.02(11)(a)4 (ii)

C2. **Section 502(b)(10) changes.**

(a) The permittee can make certain changes without requiring a permit revision, if the changes are not modifications under Title I of the Federal Act or Division 1200-03 and the changes do not exceed the emissions allowable under the permit. The permittee must, however, provide the Administrator and Technical Secretary with written notification within a minimum of 7 days in advance of the proposed changes. The Technical Secretary may waive the 7 day advance notice in instances where the source demonstrates in writing that an emergency necessitates the change. Emergency shall be demonstrated by the criteria of TAPCR 1200-03-09-.02(11)(e)7 and in no way shall it include changes solely to take advantages of an unforeseen business opportunity. The Technical Secretary and EPA shall attach each such notice to their copy of the relevant permit.

(b) The written notification must be signed by the facility Title V responsible official and include the following:

1. brief description of the change within the permitted facility;

2. specifies the date on which the change will occur;

3. declares and quantifies where possible any change in emissions; and

4. declares any permit term or condition that is no longer applicable as a result of the change.

5. declares the requested change is not a Title I modification and will not exceed allowable emissions under the permit.

(c) The permit shield provisions of TAPCR 1200-03-09-.02(11)(e)6 shall not apply to Section 502(b)(10) changes.

TAPCR 1200-03-09-.02(11)(a)4 (i)

C3. **Administrative amendment.**

(a) Administrative permit amendments to this permit shall be in accordance with 1200-03-09-.02(11)(f)4. The source may implement the changes addressed in the request for an administrative amendment immediately upon submittal of the request.

(b) The permit shield shall be extended as part of an administrative permit amendment revision consistent with the provisions of TAPCR 1200-03-09-.02(11)(e)6 for such revisions made pursuant to item (c) of this condition which meet the relevant requirements of TAPCR 1200-03-09-.02(11)(e), TAPCR 1200-03-09-.02(11)(f) and TAPCR 1200-03-09-.02(11)(g) for significant permit modifications.

(c) Proceedings to review and grant administrative permit amendments shall be limited to only those parts of the permit for which cause to amend exists, and not the entire permit.

TAPCR 1200-03-09-.02(11)(f)4

C4. **Minor permit modifications.**

(a) The permittee may submit an application for a minor permit modification in accordance with TAPCR 1200-03-09-.02(11)(f)5.(ii).

(b) The permittee may make the change proposed in its minor permit modification immediately after an application is filed with the Technical Secretary.

(c) Proceedings to review and modify permits shall be limited to only those parts of the permit for which cause to modify exists, and not the entire permit.

(d) Minor permit modifications do not qualify for a permit shield.

TAPCR 1200-03-09-.02(11)(f)5.(ii)

C5. **Significant permit modifications.**

(a) The permittee may submit an application for a significant modification in accordance with TAPCR 1200-03-09-.02(11)(f)5.(iv.).

(b) Proceedings to review and modify permits shall be limited to only those parts of the permit for which cause to modify exists, and not the entire permit.

TAPCR 1200-03-09-.02(11)(f)5.(iv)

C6. **New construction or modifications.**

(a) The permittee shall designate in their construction permit application the route that they desire to follow for the purposes of incorporating the newly constructed or modified sources into their existing operating permit. The Technical Secretary shall use that information to prepare the operating permit application submittal deadlines in their construction permit.

(b) Sources desiring the permit shield shall choose the administrative amendment route of TAPCR 1200-03-09-.02(11)(f)(4) or the significant modification route of TAPCR 1200-03-09-.02(11)(f)5(iv).

(c) Sources desiring expediency instead of the permit shield shall choose the minor permit modification procedure route of TAPCR 1200-03-09-.02(f)5(ii) or group processing of minor modifications under the provisions of TAPCR 1200-03-09-.02(11)(5)(iii) as applicable to the magnitude of their construction.

SECTION D

GENERAL APPLICABLE REQUIREMENTS

D1. **Visible emissions.** IN ABSENCE OF A SET SPECIFIC VISIBLE EMISSION STANDARD, the permittee shall not cause, suffer, allow or permit discharge of a visible emission from any air contaminant source with an opacity in excess of twenty (20) percent for an aggregate of more than five (5) minutes in any one (1)hour or more than twenty (20) minutes in any twenty-four (24) hour period; provided, however, that, for fuel burning installations with fuel burning equipment of input capacity greater than 600 million Btu per hour, the permittee shall not cause, suffer, allow, or permit discharge of a visible emission from any fuel burning installation with an opacity in excess of twenty (20) percent (6-minute average) except for one six minute period per one (1) hour of not more than forty (40) percent opacity. Sources constructed or modified after July 7, 1992 shall utilize 6-minute averaging.

Due allowance may be made for visible emissions in excess of that permitted under TAPCR 1200-03-05 which are necessary or unavoidable due to routine startup and shutdown conditions. The facility shall maintain a continuous, current log of all excess visible emissions showing the time at which such conditions began and ended and that such record shall be available to the Technical Secretary or his/her authorized representative upon his request.

The permittee will be issued a certificate of validation upon satisfactory completion of the requirements of TAPCR 1200-03-05-.05. The certificate will be effective upon issuance and will supercede any subsequent specific conditions specified herein.

TAPCR 1200-03-05-.01(1), TAPCR 1200-03-05-.03(6), TAPCR 1200-03-05-.05 and TAPCR 1200-03-05-.02(1)

D2. **General provisions and applicability for non-process gaseous emissions.** Any person constructing or otherwise establishing a non-portable air contaminant source emitting gaseous air contaminants after April 3, 1972, or relocating an air contaminant source more than 1.0 km from the previous position after November 6, 1988, shall install and utilize the best equipment and technology currently available for controlling such gaseous emissions.

TAPCR 1200-03-06-.03(2)

D3. **Non-process emission standards.** The permittee shall not cause, suffer, allow, or permit particulate emissions from non-process sources in excess of the standards in TAPCR 1200-03-06. These standards shall be calculated using the equations found at TAPCR 1200-03-06-.02.

D4. **General provisions and applicability for process gaseous emissions.** Any person constructing or otherwise establishing an air contaminant source emitting gaseous air contaminants after April 3, 1972, or relocating an air contaminant source more than 1.0 km from the previous position after November 6, 1988, shall install and utilize equipment and technology which is deemed reasonable and proper by the Technical Secretary.

TAPCR 1200-03-07-.07(2)

D5. **Particulate emissions from process emission sources.** The permittee shall not cause, suffer, allow, or permit particulate emissions from process sources in excess of the standards in TAPCR 1200-03-07.

D6. **Sulfur dioxide emission standards.** The permittee shall not cause, suffer, allow, or permit Sulfur dioxide emissions from process and non-process sources in excess of the standards in TAPCR 1200-03-14. Regardless of the specific emission standard, new process sources shall utilize the best available control technology as deemed appropriate by the Technical Secretary of the Tennessee Air Pollution Control Board.

D7. **Fugitive dust.**

(a) The permittee shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to, the following:

1. Use, where possible, of water or chemicals for control of dust in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land;

2. Application of asphalt, oil, water, or suitable chemicals on dirt roads, material stock piles, 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. Adequate containment methods shall be employed during sandblasting or other similar operations.

(b) The permittee shall not cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates.

TAPCR 1200-03-08

D8. **Open burning.** The permittee shall comply with the TAPCR 1200-03-04-.04 for all open burning activities at the facility.
TAPCR 1200-03-04

D9. **Asbestos.** Where applicable, the permittee shall comply with the requirements of 1200-03-11-.02(d) when conducting any renovation or demolition activities at the facility.

TAPCR 1200-03-11-.02(d) and 40 CFR Part 61

D10. **Annual certification of compliance.** The generally applicable requirements set forth in Section D of this permit are intended to apply to activities and sources that are not subject to source-specific applicable requirements contained in State of Tennessee and U.S. EPA regulations. By annual certification of compliance, the permittee shall be considered to meet the monitoring and related record keeping and reporting requirements of TAPCR 1200-03-09-.02(11)(e)1.(iii) and 1200-03-10-.04(2)(b)1 and compliance requirements of TAPCR 1200-03-09-.02(11)(e)3.(i). The permittee shall submit compliance certification for these conditions annually.

SECTION E

SOURCE SPECIFIC EMISSION STANDARDS, OPERATING LIMITATIONS, and MONITORING, RECORDKEEPING and REPORTING REQUIREMENTS

01-0009	**Facility Description:**	TVA Bull Run is a steam electric generating facility with one main steam producing boiler, auxiliary boilers, coal handling operations, and ash handling operations.

Conditions E1 & E2 apply to all sources in Section E of this permit unless otherwise noted.

E1. Fee payment: actual emissions basis.

FEE EMISSIONS SUMMARY TABLE FOR MAJOR SOURCE 01-0009

REGULATED POLLUTANTS	ACTUAL EMISSIONS (tons per AAP)	ACTUAL EMISSIONS (tons per AAP)	COMMENTS
PARTICULATE MATTER (PM)	N/A	AEAR	Includes all fee emissions. See Notes for calculation methods for AEAR
PM_{10}	N/A	AEAR	
SO_2	NA	AEAR	
VOC	NA	AEAR	Includes all fee emissions. Maximum actual emissions.
NO_X	NA	AEAR	Maximum actual emissions.
CATEGORY OF MISCELLANEOUS HAZARDOUS AIR POLLUTANTS (HAP WITHOUT A STANDARD)*			
VOC FAMILY GROUP	NA	AEAR	Fee emissions are included in VOC above. Maximum actual HAP emissions
NON-VOC GASEOUS GROUP	NA	AEAR	Fee emissions are not included above. Maximum actual HAP emissions.
PM FAMILY GROUP	N/A	AEAR	Fee emissions are included in PM above..
CATEGORY OF SPECIFIC HAZARDOUS AIR POLLUTANTS (HAP WITH A STANDARD)**			
VOC FAMILY GROUP	N/A	N/A	
NON-VOC GASEOUS GROUP	N/A	N/A	
PM FAMILY GROUP	N/A	N/A	
CATEGORY OF NSPS POLLUTANTS NOT LISTED ABOVE***			
EACH NSPS POLLUTANT NOT LISTED ABOVE	N/A	N/A	

NOTES

AAP The **Annual Accounting Period** (**AAP**) is a twelve (12) consecutive month period that **begins each July 1st and ends June 30th of the following year**. The **present Annual Accounting Period began July 1, 2014 and ends June 30, 2015.** The **next Annual Accounting Period begins July 1, 2015 and ends June 30, 2016.**

ACTUAL EMISSIONS This actual emission is established solely for the purpose of fee computation and shall not be considered a binding emission limitation.

N/A **N/A** indicates that no emissions are specified for fee computation.

AEAR **AEAR** indicates that an **A**ctual **E**missions **A**nalysis is **R**equired to determine the actual emissions of:

(1) **each regulated pollutant** (Particulate matter, SO_2, VOC, NO_X and so forth. See TAPCR 1200-03-26-.02(2)(i) for the definition of a regulated pollutant.),

(2) **each pollutant group** (VOC Family, Non-VOC Gaseous, and Particulate Family), and

(3) the **Miscellaneous HAP Category**

under consideration during the **Annual Accounting Period**.

***** **Category Of Miscellaneous HAP (HAP Without A Standard):** This category is made-up of hazardous air pollutants that do not have a federal or state standard. Each HAP is classified into one of three groups, the **VOC Family** group**, the Non-VOC Gaseous** group**,** or the **Particulate (PM) Family** group**. For fee computation**, the **Miscellaneous HAP Category** is subject to the 4,000 ton cap provisions of subparagraph 1200-03-26-.02(2)(i).

****** **Category Of Specific HAP (HAP With A Standard):** This category is made-up of hazardous air pollutants (HAP) that are subject to Federally promulgated Hazardous Air Pollutant Standards that can be imposed under Chapter 1200-03-11 or Chapter 1200-03-31. Each individual hazardous air pollutant is classified into one of three groups, the **VOC Family** group**, the Non-VOC Gaseous** group**,** or the **Particulate (PM) Family** group**. For fee computation**, each individual hazardous air pollutant of the **Specific HAP Category** is subject to the 4,000 ton cap provisions of subparagraph 1200-03-26-.02(2)(i).

******* **Category Of NSPS Pollutants Not Listed Above:** This category is made-up of each **N**ew **S**ource **P**erformance **S**tandard (**NSPS**) pollutant whose emissions are not included in the **PM**, **SO_2, VOC** or **NO_X** emissions from each source in this permit. **For fee computation**, each **NSPS pollutant not listed above** is subject to the 4,000 ton cap provisions of subparagraph 1200-03-26-.02(2)(I).

Actual Emissions Analyses Required for source 01-0009 are the following:

(1) for particulate - all sources

(2) for HAP, particulate - fuel burning installations 01-0009-01, and 02, 03, and 04

Actual particulate emissions for fuel burning installation 01-0009-01 shall be calculated as follows:

TPY per boiler = (btu/yr) (lb particulate/ 10^{12} btu) (ton/ 2000 lb)

where: btu/yr = actual annual heat input to the boiler for the previous calendar year.

lb particulate / 10^{12} btu = average concentration of particulate in the stack gas from the most recent stack test.

Actual emissions for all pollutants emitted from fuel burning installation 01-0009-01 shall be calculated as described in attachment 3 of this permit.

Actual particulate emissions for fuel burning installation 01-0009-02, 03, 04 shall be calculated as follows:

TPY per boiler = (btu/yr) (lb particulate/ 10^{12} btu) (ton/ 2000 lb)

where: btu/yr = actual annual heat input to the boiler for the previous calendar year.

lb particulate / 10^{12} btu = emission factor of 14,599 lb per 10^{12} Btu derived from AP-42, Table 1.3-2, emission factors for no. 2 fuel oil combustion (Attachment 2 of this permit)

Actual emissions for all pollutants emitted from source 01-0009-02, 03, 04 shall be calculated as described in attachment 4 of this permit.

Actual emissions for all pollutants emitted source 01-0009-06 shall be calculated as described in attachment 6 of this permit.

Actual emissions for all pollutants emitted source 01-0009-07 shall be calculated as described in attachment 5 of this permit.

Actual emissions for all pollutants emitted from source 01-0009-10 shall be calculated as described in attachment 7 of this permit.

Actual emissions for all pollutants emitted from source 01-0009-13 shall be calculated as described in attachment 8 of this permit.

Actual emissions for all pollutants emitted from source 01-0009-15 shall be calculated as described in attachment 9 of this permit.

END NOTES

The permittee shall:

(1) Pay major source annual **actual based emission fees**, as requested by the responsible official for each annual accounting period (AAP) by July 1 of each year.

(2) Prepare an **actual emissions analysis** July 1, **of each year** in accordance with the above **Fee Emissions Summary Table for each AAP (July 1of each year through June 30 of the following year).** The **actual emissions analysis** shall include:

(a) the completed **Fee Emissions Summary Table**, **and**

(b) each **AEAR** required by the above **Fee Emissions Summary Table**

The **actual emissions analysis** shall be submitted at the time the fees are paid in full.

(3) Submit the **actual emissions analysis** at the time the fees are paid in full.

(4) Calculate the fee due based upon the **actual analysis**, and submit the payment on July 1st following the end of the **annual accounting period**. If any part of any fee imposed under TAPCR 1200-03-26-.02 is not paid within fifteen (15) days of the due date, penalties shall at once accrue as specified in TAPCR 1200-03-26-.02(8). Major sources may request an extension of time to file their emissions analysis with the Technical Secretary as specified in Condition A8(c)5 of this permit. Emissions for regulated pollutants shall not be double counted as specified in Condition A8(d) of this permit.

The actual emissions analysis shall be submitted to the Technical Secretary at the following address:

Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

or

electronic pdf copy to: Air Pollution Control@TN.gov

Payment of the fee due shall be submitted to The Technical Secretary at following address:

TN Department of Environment & Conservation
Division of Fiscal Services
Consolidated Fee Section– APC (01-0009)
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 10th Floor
Nashville, TN 37243

TAPCR 1200-03-26-.02 (3) and (9), and 1200-03-09-.02(11)(e)1 (iii) and (vii)

E2. General Facility Requirements

E2-1. Reporting requirements.

(a) Quarterly Reports. Reporting periods shall be January 1 to March 31, April 1 to June 30, July 1 to September 30, and October 1 to December 31 of each calendar year. The quarterly reports shall be submitted within 30 days after the end of each March 31, June 30, September 30 and December 31 of each year. These reports are not required to be certified by a responsible official.

Quarterly reports of this facility (*01-0009*) shall include:

Any monitoring and recordkeeping required by Condition E3-12 of this permit. However, a summary report of this data is acceptable provided there is sufficient information to enable the Technical Secretary to evaluate compliance.

These reports shall be submitted to The Technical Secretary at the following address:

The Technical Secretary
Division of Air Pollution Control
ATTN: East Tennessee Permit Program or PDF copy to Air Pollution Control@TN.gov
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

(b) Semiannual reports. Reporting periods shall be January 1 to June 30 and July 1 to December 31 of each calendar year. The Semiannual reports shall be submitted within 60 days after the end of each June 30 and December 31 of each year.

Semiannual reports of this facility (*01-0009*) shall include:

(1) A summary of any recordkeeping and monitoring required by Conditions *E3-13, E3-17, E5-2, E6-1, and E10-4* of this permit.
However, a summary report of this data is acceptable provided there is sufficient information to enable the Technical Secretary to evaluate compliance.

(2) The visible emission evaluation readings from Conditions *E3-6, E4-3, E5-3, E6-2, E7-1, and E10-5* of this permit if required.
However, a summary report of this data is acceptable provided there is sufficient information to enable the Technical Secretary to evaluate compliance.

(3) Identification of all instances of deviations from **ALL PERMIT REQUIREMENTS**

These reports must be certified by a responsible official consistent with condition B4 of this permit and shall be submitted to The Technical Secretary at the address in Condition E2(c) of this permit.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

(c) Annual compliance certification. The permittee shall submit annually compliance certifications with terms and conditions contained in Sections A, B, D and E of this permit, including emission limitations, standards, or work practices. This compliance certification shall include all of the following (provided

that the identification of applicable information may cross-reference the permit or previous reports, as applicable):

(1) The identification of each term or condition of the permit that is the basis of the certification;

(2) The identification of the method(s) or other means used by the owner or operator for determining the compliance status with each term and condition during the certification period;

(3) Whether such method(s) or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the methods and means required by this permit. If necessary, the owner or operator also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Federal Act, which prohibits knowingly making a false certification or omitting material information;

(4) The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means designated in E2(c)2 above. The certification shall identify each deviation and take it into account in the compliance certification; and

(5) Such other facts as the Technical Secretary may require to determine the compliance status of the source.

*"Excursion" shall mean a departure from an indicator range established for monitoring under this paragraph, consistent with any averaging period specified for averaging the results of the monitoring.
**"Exceedance" shall mean a condition that is detected by monitoring that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) are greater than the applicable emission limitation or standard (or les than the applicable standard in the case of a percent reduction requirement) consistent with any averaging period specified for averaging the results of the monitoring.

These certifications shall be submitted within 60 days after the end of each calendar year to: TN APCD and EPA

The Technical Secretary
Division of Air Pollution Control
c/o Air Pollution Control Field Office Manager
Knoxville Environmental Field Office
3711 Middlebrook Pike
Knoxville, TN 37921

Air and EPCRA Enforcement Branch
US EPA Region IV
61 Forsyth Street, SW
Atlanta, Georgia 30303

In lieu of submitting a paper copy to the above address for the Knoxville Environmental Field Office (KEFO), an electronic copy in Portable Document Format (PDF) can be submitted to the following e-mail address for the KEFO.

APC.KnoxEFO@tn.gov

40 CFR Part 70.6(c)(5)(iii) as amended in the Federal Register Vol.62, No.204, October 22, 1997, pages 54946 and 54947

(d) Unless otherwise specified in this permit, the averaging time for an emission standard shall be the same time period as that of the compliance test method approved by the Technical Secretary.

E2-2. Identification of Responsible Official, Technical Contact, and Billing Contact

(a) The application that was utilized in the preparation of this permit is dated July 8, 2013, and is signed by Scott Sims, Plant Manager for the permitted facility. If this person terminates his employment or is

assigned different duties such that he is no longer a Responsible Official for this facility as defined in part 1200-03-09-.02(11)(b)21 of the Tennessee Air Pollution Control Regulations, the owner or operator operator of this air contaminant source shall notify the Technical Secretary of the change. Said notification must be in writing and must be submitted within thirty (30) days of the change. The notification shall include the name and title of the new Responsible Official and certification of truth and accuracy. All representations, agreement to terms and conditions, and covenants made by the former former Responsible Official that were used in the establishment of the permit terms and conditions will continue to be binding on the facility until such time that a revision to this permit is obtained that would change said representations, agreements, and/or covenants.

(b) The application that was utilized in the preparation of this permit is dated July 8, 2013, and identifies Steel Stagnolia, Environmental Scientist.as the Principal Technical Contact for the permitted facility. If this person terminates his employment or is assigned different duties such that he is no longer the Principal Technical Contact for this facility, the owner or operator of this air contaminant source shall notify the Technical Secretary of the change. Said notification must be in writing and must be submitted within thirty (30) days of the change. The notification shall include the name and title of the new Principal Technical Contact and certification of truth and accuracy.

(c) The applications that were utilized in the preparation of this permit are dated July 8, 2013, identify Gordon Park, as the Billing Contact for the permitted facility. If this person terminates his employment or is assigned different duties such that he is no longer the Billing Contact for this facility, the owner or operator of this air contaminant source shall notify the Technical Secretary of the change. Said notification must be in writing and must be submitted within thirty (30) days of the change. The notification shall include the name and title of the new Billing Contact and certification of truth and accuracy.

01-0009-01	**Source Description**: **<u>One (1) Coal Fired Boiler for Steam & Electricity Generation</u>**. 8,871 Million Btu/hour nominal heat input. 950 Megawatts (nameplate capacity). Electrostatic Precipitator Control. TVA designated emission unit #1

Conditions E3-1 through E3-18 apply to fuel burning installation 01-0009 -01

E3-1. The fuel burning equipment at this installation consists of one Combustion Engineering coal fired boiler installed in 1966. The unit is a pulverized-coal, tangentially-fired, dry bottom boiler without flyash reinjection. The Boiler exhausts through a stack of 800 foot height and 28 foot diameter.

The facility is permitted to burn the following:
Coal with No. 2 fuel oil or reprocessed oil used for startup;
Wood waste blended with the coal;
Either no. 2 fuel oil or reprocessed oil may also be burned under non-steady-state and low-load conditions to ensure flame stability.

TAPCR 1200-03-09-.02(6)

Acid Rain Program

The source is required to monitor / measure emissions of sulfur dioxide (SO_2) in pounds per hour, nitrogen oxides (NO_X) in pounds per million Btu, carbon dioxide (CO_2) in tons per day, heat input in million Btu per hour, and opacity according to the Part 75 requirements of the Acid Rain Program. The acid rain permit for the source is enclosed as Attachment 15 of this permit.

TAPCR 1200-03-30-.01(6)(b)

Clean Air Interstate Rules (CAIR)

The permittee shall comply with the applicable provisions of the CAIR SO2 Annual Trading Program (TAPCR 1200-03-14-.04 and 40 CFR §§96.201 -96.288), CAIR NOX Annual Trading Program (TAPCR 1200-03-27-.10 and 40 CFR §§96.101-96.188), and CAIR NOX Ozone Season Trading Program TAPCR (1200-03-27-.11 and 40 CFR §§96.301-96.388), and with the provisions of the CAIR permit for this facility (enclosed as Attachment 14 of this permit).

40 CFR §§96.101-96.188, §§96.201-96.288, §§96.301-96.388; TAPCR 1200-03-14-.04, 1200-03-27-.10 and 1200-03-27-.11

E3-2. The amount of on and off spec oil, as defined at 40 CFR 279, and nonhazardous solvents that can be burned in this fuel burning installation shall not exceed 100,000 gallons per year. In addition, oil contaminated media, and oil-contaminated soil and absorbent material used to clean up oil spills may be burned.

TAPCR 1200-03-09-.02(6)

Compliance Method: Compliance for this condition is assured by the recordkeeping required by condition E3-12 of this source.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E3-3. The permittee may conduct test burns of fuels other than those listed in conditions E3-1 and E3-2 for up to 30 operating days without a construction permit or a reopening of this permit provided that:

(A) Notification is provided to the Technical Secretary at least 30 days prior to initiation of the burning of such fuels. Notification at a minimum shall include a copy of the test plan; the fuels to be burned; an estimated start date and completion date; an estimate of the impact on control devices; and an estimate of the impact on emissions;

(B) The source complies with all applicable emission limitations; and

(C) The permittee agrees to perform additional testing as may be required by the Technical Secretary.

The permanent use of such fuels shall be allowed upon completion of testing unless the Technical Secretary determines that a permit revision is required. Such determination will examine triggering control requirements under the PSD, NESHAPS, NSPS or other programs. In any event, the Technical Secretary shall issue an approval or disapproval for the continuing use of the alternate fuel**.**

TAPCR 1200-03-09-.02(6)

Compliance Method: Included with requirements.

E3-4. The particulate emissions from this fuel burning installation shall not exceed 0.03 pounds per million Btu of heat input as specified in Paragraph 1200-03-06-.02(1) of the Tennessee Air Pollution Control Regulations (TAPCR).

Compliance Method: Monitoring of this fuel burning source for compliance with the applicable particulate emissions limitations shall be conducted by stack testing in accordance with 40 CFR 60, Appendix A, Method 17. This testing shall be performed on a biennial basis and a particulate source test report shall be filed with the Technical Secretary within 60 days after completion of the testing. The source test shall be conducted in accordance with specifications for source sampling given in Chapter 1200-03-12 of the Tennessee Air Pollution Control Regulations. The continuous in-stack opacity monitor(s) shall be fully operational prior to and during this compliance testing. The opacity data generated during this compliance testing shall be incorporated into the test

report. Ten (10) days prior to conducting the source test, the permittee shall provide notice of such test to the Technical Secretary to afford him the opportunity to have an observer present.

Compliance with condition E3-6 of the permit shall be used as an indicator to determine whether compliance with this condition should be confirmed with a Method 17 test.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E3-5. The sulfur dioxide emissions from this fuel burning installation shall not exceed 4.0 pounds per million Btu of heat input (TAPCR 1200-03-14-.02(1)(a)). A twenty-four (24) hour midnight to midnight averaging basis as specified in Subparagraph 1200-03-14-.02(1)(d) of the Tennessee Air Pollution Control Regulations shall be utilized.

Compliance Method: Compliance with this emission standard shall be determined through the use of continuous in-stack monitoring for sulfur dioxide.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

Consistent with the provisions of Rule 1200-03-20-.06 of the Tennessee Air Pollution Control Regulations, no notice of violation shall be automatically issued unless the specified de minimums level of one (1) 24-hour period per year of sulfur dioxide emissions in excess of the applicable sulfur dioxide emissions standard, as measured by the continuous in-stack sulfur dioxide emissions monitoring system, is exceeded. This exemption is applicable provided that good operational and maintenance practices are utilized for both the fuel burning equipment and the associated air pollution control equipment, and the 90 percent operational availability of the sulfur dioxide monitoring system is maintained.

TAPCR 1200-03-20-.06

E3-6. The visible emissions from each stack of this fuel burning installation shall not exceed twenty (20) percent opacity except for one - six (6) minute period per one (1) hour of not more than forty (40) percent opacity as specified in Paragraph 1200-03-05-.01(1) of the Tennessee Air Pollution Control Regulations. Opacity data reduction shall be accomplished by EPA Method 9 utilizing the procedures outlined in the current 40 CFR 60, Appendix A (6 minute average opacity).

Compliance Method: Consistent with the provisions of Paragraph 1200-03-05-.03(1) of the Regulations, compliance with the applicable visible emissions standards shall be determined by a certified reader using Method 9. Each stack shall be evaluated biannually unless a valid reading cannot be made due to merging plumes or other reasons. In the event that a valid reading cannot be taken within 6 months and provided that at least one reading was attempted during the six month period, an additional 30 days shall be allowed in which to attempt another reading. If a valid reading cannot again be made, the permittee shall within 60 days of the end of the six-month period submit a report describing its efforts to obtain valid readings, and the reasons it could not.

Monitoring Method: Opacity shall be recorded by a continuous opacity monitoring (COM) system. COM data shall provide an indication of good operational and maintenance practices.

CAM protocol for COM system is enclosed as an attachment 2 of this permit.

TAPCR 1200-03-09-.02(11)(e)1.(iii) and TAPCR 1200-03-10-.02(1)

E3-7. Consistent with the requirements of Chapter 1200-03-20 and Rule 1200-03-05-.02, due allowance shall be made for visible emissions in excess of that allowed in this permit which are necessary or unavoidable due to routine startup and shutdown conditions.

Routine startups as used above shall only cover startups which have less than 6.0 hours of visible emission levels in excess of the standard in paragraph 1200-03-05-.01(1), and shall not include any periods of time in which visible emissions exceed eighty (80) percent opacity for more than 18 minutes based on six (6) minute average intervals. Routine shutdowns as used above shall only cover shutdowns which have less than 6.0 hours of visible emission levels in excess of the standard in paragraph 1200-03-05-.01(1), and shall not include any periods of time in which visible emissions exceed eighty (80) percent opacity for more than 30 minutes

based upon six (6) minute averaging intervals. A log of all malfunctions and nonroutine startups and shutdowns shall be maintained in accordance with Rule 1200-03-20-.04. Irrespective of the start-up and shutdown exemptions set forth on this operating permit for any source, no emission shall be allowed which can be proved by the Technical Secretary to cause or contribute to any violations of the Ambient Air Quality Standards contained in Chapter 1200-03-03 .

TAPCR 1200-03-20-.07(6)

Compliance Method: Included with requirements.

E3-8. Operational Availability Condition for the Opacity Monitoring System

The in-stack opacity monitoring system for this fuel burning installation shall be fully operational for at least ninety-five (95) percent of the operational time of the monitored unit during each month of the calendar quarter. An operational availability level of less than this amount may be considered the basis for declaring the fuel burning installation in noncompliance with the applicable monitoring requirement, unless the reasons for the failure to maintain this level of operational availability are accepted by the Division as being legitimate malfunctions of the instruments or due to limited operation of the monitored units.

TAPCR 1200-03-10-.02(1)(a)

Compliance Method: Included with requirements.

E3-9. Operational Availability Condition for the Sulfur Dioxide Monitoring System

The use of continuous in-stack monitoring for sulfur dioxide is the method by which this fuel burning installation proves continual compliance with the applicable sulfur dioxide emission limitation. Therefore, for this fuel burning installation to demonstrate continual compliance with the applicable sulfur dioxide emission limitation, the sulfur dioxide monitoring system shall be fully operational for at least ninety (90) percent of the operational time of the monitored unit during each month of the calendar quarter. An operational availability level of less than this amount may be considered the basis for declaring the fuel burning installation in

noncompliance with the applicable monitoring requirements, unless the reasons for the failure to maintain these levels of operational availability are accepted by the Division as being legitimate malfunctions of the instruments or due to limited operation of the monitored units. Furthermore, should the sulfur dioxide monitoring system remain inoperative for more than seven (7) consecutive days, then the use of backup monitoring will be required.

TAPCR 1200-03-10-.02(1)(a)

Compliance Method: Included with requirements.

E3-10. Quality Assurance Condition for the Sulfur Dioxide Monitoring System

Quality assurance checks shall be performed on the sulfur dioxide monitoring system on an annual basis. The quality assurance checks shall consist of a repetition of the relative accuracy portion of the Performance Specification Test. Written reports of the quality assurance checks shall be submitted to the Technical Secretary.

Within ninety (90) days of each major modification or major repair of any sulfur dioxide emissions monitor, diluent monitor, or electronic signal combining system, a repeat of the performance specification test shall be conducted. A written report of the performance specification test shall be submitted to the Technical Secretary as proof of the continuous operation of the sulfur dioxide emissions monitoring system within acceptable limits.

TAPCR 1200-03-10-.02(1)(a)

Compliance Method: Included with requirements.

E3-11. Quality Assurance Condition for the Opacity Monitoring System

On-stack quality assurance audits shall be conducted on a semiannual basis. This on-stack quality assurance audit shall consist of a repetition of the calibration error portion of Performance Specification 1 (48 FR 13327) utilizing the on-stack audit device, and written reports of the audits shall be submitted to the Technical Secretary.

As an alternative to this, an off-stack quality assurance audit may be conducted on a biennial calendar basis. If elected, this quality assurance audit shall include, at a minimum, a repetition of the calibration portion of 40 CFR 60, Appendix B, Performance Specification 1. Both the monitor transceiver and retroreflector must be removed from the stack and set up to the stack pathlength prior to conducting the quality assurance. Written reports of the quality assurance checks shall be submitted to
the Technical Secretary. Prior to the commencing of the use of this option, the Technical Secretary shall be informed in writing of the election of this option. Utilization of this option shall not be cause for the reopening of this permit.

Within ninety (90) days of each major modification or major repair of any opacity monitor or the electronic signal combining system, a repeat of the performance specification test shall be conducted. A written report of the performance specification test shall be submitted to the Technical Secretary as proof of the continuous operation of the opacity monitoring system within acceptable limits.

TAPCR 1200-03-10-.02(1)(a)

Compliance Method: Included with requirements.

E3-12. From the emissions data generated by the continuous in-stack opacity and sulfur dioxide monitoring systems, quarterly reports of opacity emissions over 20 % and excess sulfur dioxide emissions shall be generated. The format of these quarterly reports shall meet the requirements of Paragraph 1200-03-10-.02(2) of the Tennessee Air Pollution Control Regulations. These reports shall be submitted to the Division no later than thirty (30) days after the end of each calendar quarter.

TAPCR 1200-03-10-.02(2) and TAPCR 1200-03-09-.02(11)(e)1(iii)

Compliance Method: Included with requirements.

E3-13. Daily fuel usage records shall be maintained of the amounts of used oil and nonhazardous solvents burned. If there is no daily usage of a fuel, then a record of the respective fuel usage on that day is not required. These records shall be maintained at the facility and shall be available for inspection by the Technical Secretary or his representative.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

Compliance Method: Included with requirements.

E3-14. For sulfur dioxide, eighteen (18) valid one-hour data averages are required in order to calculate a valid daily average (midnight to midnight). One-hour averages shall be calculated from four or more equally spaced data averages over each one-hour period, except during periods when calibration, quality assurance, or maintenance are being

performed. A valid one-hour average shall consist of at least two data points with each representing a fifteen minute time period. Hourly sulfur dioxide emission rates are not calculated if the affected facility is operated less than 30 minutes in a one-hour period.

Here a day is defined as the twenty-four hour time period from midnight to midnight and an hour is defined as any one of the twenty-four successive sixty minute time blocks beginning at midnight.

Average values for opacity may be obtained by integration over the 6-minute averaging period or by arithmetically averaging a minimum of 24 equally spaced, instantaneous opacity measurements per 6-minute period. Opacity data recorded during periods of monitoring system breakdown, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages.

TAPCR 1200-03-09-.02(11)(e)(1)(iii); 1200-03-10-.02(1)(a); and 1200-03-10-.02(2)

Compliance Method: Included with requirements.

E3-15. For sulfur dioxide monitoring, the reports referenced in condition E3-12 shall consist of:

(A) Emission averages, in the units of the applicable standard, for each averaging period during operation of the source.

(B) Identification of each averaging period in which the applicable standard was exceeded and the nature and cause of excess emissions, if known;

(C) The date and time identifying each period during which the system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments shall be reported. The Technical Secretary may require proof of system performance whenever system repairs or adjustments have been made; and

(D) When no excess emissions have occurred and the system has not been inoperative, repaired, or adjusted, such information shall be included in the report.

TAPCR 1200-03-10-.02(2) and 1200-03-09-.02(11)(e)1(iii)

Compliance Method: Included with requirements.

E3-16. For opacity monitoring, the reports referenced in condition E3-12 shall consist of:

(A) The magnitude in actual percent opacity of all 6-minute averages of opacity greater than 20% for each hour of operation of the source minus one 6-minute exempt period of no more than 40 percent opacity;

(B) The date and time identifying each period during which the system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments shall be reported. The Technical Secretary may require proof of system performance whenever system repairs or adjustments have been made;

(C) When no emissions over 20% opacity have occurred and the system has not been inoperative, repaired, or adjusted, such information shall be included in the report; and

(D) The nature and cause of emissions over 20%, if known.

TAPCR 1200-03-10-.02(2) and 1200-03-09-.02(11)(e)1.(iii)

Compliance Method: Included with requirements.

E3-17. The permittee shall comply with the CAM (Compliance Assurance Monitoring) plan submitted in accordance with 40 CFR Part 64 and enclosed as Attachment 3 of this permit.

Compliance Method: Included with requirements.

E3-18. On and after April 16, 2015 (unless a compliance extension is requested and granted), the permittee shall comply with the emissions standards of 40 CFR 63, Subpart UUUUU.

TAPCR 1200-03-09-.03(8)

Compliance Method: Included with requirements.

01-0009-02, 03, & 04	**Source Description**:	**Auxiliary Boilers 1A, 1B, & 1H** (Fuel Burning Installation): Auxiliary startup boilers 1A & 1B provide steam to the coal fired boiler source 01-0009-01 during startup. Auxiliary heating boiler 1H provides steam to the boiler building heating system. All boilers are no. 2 fuel oil or reprocessed oil fired. Boilers 1A & 1B exhaust through a common stack of approximately 190 foot height and 6 foot diameter. Boiler 1H exhausts through a stack of approximately 190 foot height and 1.94 foot diameter. Boilers 1A & 1B are rated at a nominal heat input capacity of 126 Million Btu/hour each & Boiler 1H is rated at a nominal heat input capacity of 16.75 Million Btu/hour. TVA designated emission units #2 and #3.

Conditions E4-1 through E4-3 apply to fuel burning installation 01-0009-02, 03, & 04

E4-1. Particulate matter emitted from this fuel burning installation shall not exceed 0.255 pounds per million Btu of heat input.

TAPCR 1200-03-06-.02(1)

Compliance Method: Compliance assurance for the particulate standard stated in this condition is based upon the following EPA AP-42 emission factor for combustion of No. 2 fuel oil.

Pollutant	Emission Factor (pounds per thousand gallons fuel oil)
Particulate matter	2

Data from AP-42, Table 1.3-1 (enclosed as Attachment 2)

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E4-2. Sulfur dioxide emitted from this source shall not exceed 4.0 pounds per million Btu/hour of heat input.

TAPCR 1200-03-14-.02(1)(a)

Compliance Method: Compliance assurance for the sulfur dioxide emission standard stated in this condition is based upon the following EPA AP-42 emission factor for combustion of No. 2 fuel oil.

Pollutant	Emission Factor (pounds per thousand gallons fuel oil)
Sulfur dioxide	71 [142S, where S = weight % sulfur in oil]
	(0.5 % maximum for no. 2 fuel oil)

Data from AP-42, Table 1.3-1 (enclosed as Attachment 2)

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E4-3. Visible emissions shall not exceed 20% opacity as specified in Rule 1200-03-05-.01 of the Tennessee Air Pollution Control Regulations (aggregate count). Visible emissions from stacks will be determined by Tennessee Visible Emission Evaluation Method 2 as adopted by the Tennessee Air Pollution Control Board on August 24, 1984.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

01-0009-06	**Source Description**	The dry fly ash handling system will consists of a fly ash vacuum system with four (4) operating pumps and one (1) standby vacuum pump and corresponding filter separators (TVA designated emission points 22-26). The collected ash will then drop into a vacuum pressure transfer system and blown into one of two (2) three-day collection fly ash storage silos using a vacuum pressure system that consist of compressors & bin vents (TVA designated emission points 6 and 21). Fly ash loadout to hopper trucks or pan scrapers through dry spouts with pen mixer ash unloaders or load out to pneumatic trucks. or rail cars. Fugitive dust is generated during the transport of the dry fly ash on haul roads. (TVA designated emission point 44).

Conditions E5-1 through E5-5 apply to source 01-0009-06

E5-1. The stated design throughput capacity of fly ash is 160,000 pounds per hour. The Technical Secretary may require the permittee to assure compliance with this rate. This emission limitation is established pursuant to TAPCR 1200-03-07-.01(5).

E5-2. Particulate matter, PM_{10}, and $PM_{2.5}$ emitted from the following emissions points on the dry fly ash handling system shall not exceed the following limits:

(a) 0.126 pounds per hour (0.005 gr/dscf) and 0.55 tons per year total from 4 operating (1 standby) vacuum pumps with filter separators that will remove fly ash from the precipitators, SCRs, and economizers to one of (2) three-day storage silos. TVA designated emission points 22-26.

(b) 0.28 pounds per hour (0.005gr/dscf) and 1.23 tons per year from the two (2) storage silos' bin vents. . TVA designated emission points 6 and 21.

(c) 0.12 pounds per hour and 0.02 tons per year total from fly ash unloaded into dump trucks or tanker trucks.

(d) The handling of dry fly ash at this facility shall not exceed 449,000 tons in any 12-month period.

Compliance Method: The dry fly ash handling system shall be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years. Monthly records shall be maintained of the amount of fly ash handled by the facility. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required. The log must be maintained at

the source location and kept available for inspection by the Technical Secretary or his representative. This log must be retained for a period of not less than five (5) years.
The above limits are based on an agreement letter dated March 25, 2010. TAPCR 1200-03-07-.01(5)
The above limits represent Best Available Control Technology (BACT) for emissions of $PM_{2.5}$.
TAPCR 1200-03-09-.01(5)(b)2.(ii)

E5-3. Visible emissions from this source shall not exhibit greater than ten percent (10%) opacity, except for one (1) six-minute period in any one (1) hour period, and for no more than four (4) six-minute periods in any twenty-four (24) hour period. Visible emissions from this source shall be determined by EPA Permit Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average). This emission limitation is established pursuant to TAPCR 1200-03-05-.03(6) and TAPCR 1200-03-05-.01(3).

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E5-4. Fugitive emissions from this source shall be controlled as specified in Rule 1200-3-8-.01. Specifically, no person shall cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in Chapter 1200-03-20. Fugitive emissions from this source shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E5-5. Visible emissions from roads and parking areas shall not exhibit greater than ten percent (10%) opacity as determined by Tennessee Visible Emission Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982 and August 24, 1984. This emission limitation is established pursuant to TAPCR 1200-03-08-.03

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

01-0009-07	**Source Description:**	**Coal Handling Facility**: Coal Breaker Building and Coal S Four (4) Bradford Breakers (coal breaker building) and coal reclaiming activities. Wet suppression control (water spray truck). TVA designated emission units #4 and #5.

Conditions E6-1 through E6-2 apply to source 01-0009-07

E6-1. Particulate matter emitted from this source shall not exceed 89.5 pounds per hour and 0.25 grains per dry standard cubic foot of effluent gas.

TAPCR 1200-03-07-.04(2)

Compliance Method: Compliance assurance for the particulate standard stated in this condition is based upon the following:

a) The wet suppression (water spray) system shall be maintained and used as needed (except during freezing conditions) at the discharge of the breakers onto conveyors BC-5 and BC-6 to control fugitive emissions. The wet suppression system shall be inspected semiannually and the results of the inspections shall be recorded in a log.

b) During stockout and reclaim operations at the coal storage yard, wet suppression (a watering truck) shall be used as needed to control fugitive emissions.

c) Compliance assurance for this source is also based upon the calculated emissions in Table 5-2 of the permit application of July 8, 2013 [pages 5-19 & 5-20]. This table is enclosed as attachment 5 and incorporated by reference into this permit.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E6-2. Visible emissions shall not exceed 20% opacity as specified in Rule 1200-03-05-.01 of the Tennessee Air Pollution Control Regulations (aggregate count). Visible emissions from stacks will be determined by Tennessee Visible Emission Evaluation Method 2 as adopted by the Tennessee Air Pollution Control Board on August 24, 1984.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

01-0009-10	**Source Description:**	**Limestone Handling Process**: Pre-Ground Limestone delivered by trucks over paved and unpaved roads and pneumatically conveyed to one of two 1730 ton storage silos. Each storage silo uses a bin vent filter to control fugitive dust during the load-in operation. Wet suppression control will be used to reduce fugitive dust emissions on paved and unpaved roads.

Conditions E7-1 through E7-6 apply to source 01-0009-10

E7-1. The amount of pre-ground limestone handled by this source shall not exceed 300,000 tons in any 12 month period.

TAPCR 1200-03-07-.01(5) agreement for PSD avoidance stated in application dated 10/30/2006.

Compliance Method: Monthly records indicating the amount of material handled shall be maintained. This log shall be maintained at the facility and kept available for inspection by the Technical Secretary or his representative for a period of not less than five (5) years. All data must be entered into the log within 30 days of the end of the month for which the data is required.

E7-2. Particulate matter emitted from the two pre-ground limestone storage silos shall not exceed 1.17 pounds per hour combined:

TAPCR 1200-03-07-.01(5) agreement for PSD avoidance stated in application dated 10/30/2006.

Compliance Method: Each bin vent filter will be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years.

E7-3. Visible emissions from the silos shall not exhibit greater than ten percent (10%) opacity, except for one (1) six-minute period in any one (1) hour period, and for no more than four (4) six-minute periods in any twenty-four (24) hour period. Visible emissions from this source shall be determined by EPA Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average). This emission limitation is established pursuant to TAPCR 1200-03-05-.03(6), TAPCR 1200-03-05-.01(1) and 1200-03-05-.01(3) agreement to ten percent (10%) opacity stated in application dated 10/30/2006.

Compliance Method: Compliance assurance for the opacity standard stated in this condition is based upon visible emission evaluations using Method 9 in accordance with the requirements of the opacity matrix dated June 18, 1996, amended September 12, 2005, amended August 16, 2013, and amended September 11, 2013 that is enclosed as Attachment 1.

E7-4. Fugitive emissions from this source shall be controlled as specified in Rule 1200-03-08-.01. Specifically, no person shall cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in Chapter 1200-03-20. Fugitive emissions from this source shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, amended September 12, 2005, amended August 16, 2013, and amended September 11, 2013 that is enclosed as Attachment 1.

E7-5. Visible emissions from roads and parking areas shall not exhibit greater than ten percent (10%) opacity as determined by Tennessee Visible Emission Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982 and August 24, 1984. This emission limitation is established pursuant to TAPCR 1200-03-08-.03.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, amended September 12, 2005, amended August 16, 2013, and amended September 11, 2013 that is enclosed as Attachment 1..

E7-6. Wet suppression shall be used as required to maintain compliance with conditions of this permit. This emission limitation is established pursuant to TAPCR 1200-03-09-.02(6)

01-0009-99	**Source Description**: **General Facility:** ambient monitoring for sulfur dioxide and fugitive particulate emissions

Conditions E8-1 & E8-2 apply to source 01-0009-99

E8-1. Fugitive emissions from this facility shall be controlled as specified in Chapter 1200-03-08 of the Tennessee Air Pollution Control Regulations. Specifically, fugitive emissions shall be controlled such that there are no visible

emissions beyond the property line of the property on which the emission originates, excluding legitimate malfunctions of the equipment, for more than five (5) minutes per hour or twenty (20) minutes per day.

TAPCR 1200-03-08-.01

Compliance Method: Compliance with this standard shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986. These evaluations shall be made semiannually.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E8-2. Consistent with the provisions of Part 1200-03-14-.01(6)(a),(b), and (c) of the Tennessee Air Pollution Control Regulations, the source owner or operator shall conduct post-construction sulfur dioxide monitoring necessary to determine the effect that emissions from the stationary source or modification may have, or are having on the applicable ambient sulfur dioxide air quality standards.

The sulfur dioxide monitoring network will be operated and maintained as directed by the Technical Secretary of the Air Pollution Control Board to insure that complete, precise, and accurate data are generated and reported. The data submitted shall be judged complete if at least 75% of the samples for SO_2 are provided. The requirement for accurate and precise data shall be judged as acceptable if a written quality assurance plan for the monitoring network is provided and accepted by the Division. This written Quality Assurance Plan should be provided within 90 days of receipt of this permit. If the Quality Assurance Plan was previously submitted, the most recently updated version of the plan should be provided. The plan once accepted must be utilized and employed for all future ambient monitoring. Any deviation from this Quality Assurance Plan would be considered as evidence of non-compliance with this permit condition.

Air quality data reporting must meet all the requirements set forth in Division Rule 1200-03-12-.02. Data are to be reported in the proper AIRS format and must be accompanied by a statement of validation attesting data accuracy. Data are to be reported in standard time only and in units of measurement particular to the pollutant being observed. Failure to meet the requirements of this policy will be regarded as non-compliance. Data should be submitted in magnetic form within one month after the end of the month in which it was collected. All data submitted must be accompanied by the precision data for the parameter being monitored. The precision data must be reported in the proper AIRS formatted transactions. Any recorded ambient air quality standard exceedance shall be reported to the Tennessee Division of Air Pollution Control within 24 hours of its discovery.

State personnel from the Department of Health, Laboratory Services Division, shall be allowed to enter the air monitoring site(s) and conduct performance audits on the air monitoring instrumentation. Any deficiencies in the air monitoring program identified during performance audits shall be corrected immediately by TVA Bull Run Fossil Plant. The Technical Secretary directs the TVA Bull Run Fossil Plant to participate in the National Performance Audit Program for industrial monitoring sites specifically for the SO_2 monitor identified above.

The present monitoring site location is identified as follows:

Site #	AIRS Site #	Location	UTM Northing	UTM Easting
1	47-001-0028	0.5 mi. NE of TVA Bull Run Plant	3990.580	756.690

A change of location of this monitoring site or a change in the number of monitoring site(s) shall not be cause for the reopening of this permit provided that the following criteria are met:

A. Any proposed change(s) in the location or number of monitoring site(s) must be approved in advance in writing by the Technical Secretary. All proposed changes must be submitted as a written modification to

the existing QA/QC plan for ambient monitoring 60 days in advance of the proposed modifications and should be presented as a proposed update to the QA/QC plan for ambient monitoring.

B. If the proposed change to the number or location of the monitoring sites is approved by the Technical Secretary, the approved revisions to the QA/QC plan are automatically incorporated by reference into the current Title V operating permit which shall not be required to be reopened since the originally approved QA/QC plan is an existing part of the current Title V operating permit in effect.

C. When the current Title V operating permit is renewed, any approved changes to the network site(s) or location(s) shall be updated to the permit in the same format as the previous site information is presented as shown above.

TAPCR 1200-03-14-.01(6)(a), (b), & (c) and 1200-03-12-.02

01-0009-13	**Source Description**	Hydrated Lime Injection System for Control of SO3 The entire hydrated lime system consists of four (4) silos. Each silo has one dust collector utilized during pneumatic filling and two dust filters utilized during feed hopper filling. Ancillary equipment includes pneumatic conveying lines and blowers. Fugitive dust is generated during the delivery of the hydrated lime. TVA designated emission points 12 through 20.

Conditions E9-1 through E9-7 apply to source 01-0009-13

E9-1. The stated design throughput capacity of each silo is 1,500 pounds per hour (input rate for silo loading from bulk delivery truck may be higher). The Technical Secretary may require the permittee to assure compliance with this rate.

TAPCR 1200-03-07-.01(5)

Compliance Method: Included with requirement.

E9-2. Particulate matter emitted from the following emissions points on the Hydrated Lime Silos shall not exceed the following limits:

(a) 0.064 pounds per hour for each dust collector located at top of each silo (consisting of 25 filter cartridges). This dust collector controls the emissions from pneumatic conveying of hydrated lime from delivery trucks to silos, and is equipped with reverse pulse cleaning system.

(b) 0.0026 pounds per hour for each dust collector (each unit consisting of two-dust filter cartridges) located at the top of each loss-in-weight feed hopper. This feed hopper is located below the silo and provides vents into enclosed area. This dust collector controls the emissions from replenishing of the feed hopper. This hopper facilitates continuous flow of hydrated lime to the pneumatic injection system.

(c) 0.27 pounds per hour total from the four silos and four feed hoppers listed above.

Compliance Method: Each Cartridge Filter Dust Collector will be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required.

The above limits are based on an agreement letter dated November 9, 2009.

E9-3. Hydrated lime delivered to this source shall not exceed 26, 280 tons in any 12-month period.

The above limits are based on an agreement letter dated November 9, 2009.

TAPCR 1200-03-07-.01(5)

Compliance Method: Included with requirement.

E9-4. A log of the hydrated lime delivered, in a form that readily shows compliance with Condition **E9-3**, must be maintained at the source location and kept available for inspection by the Technical Secretary or his representative. This log must be retained for a period of not less than five (5) years. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required.

TAPCR 1200-03-07-.01(5)

Compliance Method: Included with requirement.

E9-5. Visible emissions from this source shall not exhibit greater than ten percent (10%) opacity, except for one (1) six-minute period in any one (1) hour period, and for no more than four (4) six-minute periods in any twenty-four (24) hour period. Visible emissions from this source shall be determined by EPA Permit Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average). This emission limitation is established pursuant to TAPCR 1200-03-05-.03(6) and TAPCR 1200-03-05-.01(1).

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E9-6. Fugitive emissions from this source shall be controlled as specified in Rule 1200-03-08-.01. Specifically, no person shall cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in Chapter 1200-03-20. Fugitive emissions from this source shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on September 11, 2013.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

E9-7. Visible emissions from roads and parking areas shall not exhibit greater than ten percent (10%) opacity as determined by Tennessee Visible Emission Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982 and August 24, 1984.

Compliance Method: The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, and amended September 11, 2013, that is enclosed as Attachment 1.

TAPCR 1200-03-09-.02(11)(e)1.(iii)

01-0009-15	**Source Description**	Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump

Conditions E10-1 through E10-7 apply to source 01-0009-15 Emergency Diesel Engine Fire Pumps 1 and 2 .
NSPS, Subpart IIII

E10-1. Hours of operation for each emergency fire pump engine shall not exceed 500 hours during any period of twelve (12) consecutive months. TAPCR 1200-03-09-.01(1)(d)

Compliance Method: Compliance with this limit shall be demonstrated with records required by **Condition E10-4**

E10-2. Only #2 or distillate fuel oil, with a sulfur content not to exceed 0.05 percent by weight, shall be used as fuel for each emergency fire pump engine. This operational restriction shall represent BACT for each emergency fire pump engine for emissions of particulate matter (PM/PM_{10}), carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x) and sulfuric acid mist (H_2SO_4). TAPCR 1200-03-09-.01(4)(j)

Compliance Method: The permittee must use ultra-low sulfur diesel per **Condition E10-3(b)**, which is more stringent than this condition.

E10-3. The new (manufactured after July 1, 2006) NFPA certified fire pump engine is subject to regulations under 40 CFR Part 60, Subpart IIII, **STANDARDS OF PERFORMANCE FOR STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES** including <u>any and/or all applicable</u> emission limitations, notifications, compliance options, records, reports, etc. as referenced below in this condition. The permittee's engine identified below shall be in compliance with the following requirements **(a) through (g)** below:

Engine Make/Model	Engine Model YR	Engine Power (br-hp)
John Deere Industrial Engine Model 6068HFC28	2011	180

(a) Pursuant to 40 CFR §60.4205(c) and §60.4206, the fire pump engine with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to subpart IIII as shown below. The permittee must operate and maintain the engine to achieve these emission standards over the entire life of the engine.

Maximum engine power	**Model year**	**NMHC + NO_X** g/KW-hr (g/HP-hr)	**CO** g/KW-hr (g/HP-hr)	**PM** g/KW-hr (g/HP-hr)

130≤KW<225 (175≤HP<300)	2011+	4.0 (3.0)	3.5 (2.6)	0.20 (0.15)

(b) Pursuant to 40 CFR §60.4207, the permittee must use diesel fuel that meets the requirements of 40 CFR §80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. The diesel fuel used for this source is subject to the following per-gallon standards:

(1) Sulfur content of 15 ppm maximum.
(2) Cetane index or aromatic content, as follows:

(i) A minimum cetane index of 40; or
(ii) A maximum aromatic content of 35 volume percent.

The permittee shall maintain purchase receipts, vendor certifications, material safety data sheets, or other records to demonstrate that all fuel purchased for this source meets the requirements of this condition (any fuel labeled as ultra-low sulfur non-highway diesel fuel or ultra-low sulfur highway diesel fuel meets these requirements). These records shall be made available to the Technical Secretary for inspection upon request. These records must be maintained for a period of at least (5) years from the purchase date. As an alternative to maintaining records, the permittee may instead ensure that the engine's fuel inlet/fill cap indicates that ultra-low sulfur diesel (ULSD) fuel is required for the engine.

(c) Monitoring for the emergency engine shall meet all applicable monitoring requirements specified in 40 CFR §60.4209, including the installation of a non-resettable hour meter and/or backpressure monitor, if required.

(d) Pursuant to 40 CFR §60.4211(a), the permittee shall:

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; and
(2) Change only those emission-related settings that are permitted by the manufacturer.

(e) Pursuant to 40 CFR §60.4211(c), the permittee has complied by purchasing an engine certified to the emission standards in **Condition E10-3(a)**. The engine must be installed and configured according to the manufacturer's emission-related specifications.

(f) Pursuant to 40 CFR §60.4211(f), emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Any combination of maintenance checks and readiness testing by such units is limited to 100 hours per calendar year. The provisions for unlimited use of the emergency stationary ICE in emergency situation as well as petitioning for additional hours for maintenance checks and readiness testing has been superseded by **Condition E10-1**. Emergency stationary ICE may be operated up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted as part of the 100 hours per calendar year provided for maintenance and testing. In order for the engine to be considered an emergency stationary ICE, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as required in this condition, is prohibited. If the engine is not operated according to these requirements, it will not be considered an emergency engine and must meet all the requirements for non-emergency engines.

(g) Pursuant to 40 CFR §60.4218, the permittee must comply with the applicable General Provisions according to Table 8 to Subpart IIII of Part 60 to Title 40 of the Code of Federal Regulations.

E10-4. The permittee shall keep a log of the number of operating hours for each month and each twelve (12) consecutive month interval at this source, in a form that readily shows compliance with **Conditions E10-1 and**

E10-3(f) (see example below). All data, including all required calculations, must be entered in the log no later than thirty (30) days from the end of the month for which the data is required. These logs must be maintained at the source location and kept available for inspection by the Technical Secretary or his representative. These logs must also be reported in accordance with **Condition E2** of this permit and be retained for a period of not less than five (5) years. TAPCR 1200-03-09

MONTHLY/YEARLY LOG: Source 01-0009-15

Operation#	Dates	Classification of operation	Start time	End time	Operation time (Start - End)	Yearly total for non-emergency time	Yearly total for emergency time
#1							
#2							
#3							
Example: #1	4/20/2014	Maintenance	10:45 AM	11:15 AM	0.50 hours	16.25 hours	50.25 hours
Example: #2	5/15/2014	Readiness Testing	1:45 PM	3:00 PM	1.25 hours	17.50 hours	50.25 hours

(*) The "Hours per 12 consecutive months" values are the sum of the hours in the 11 months preceding the month just completed + the hours in the month just completed. If data is not available for the 11 months preceding the initial use of this table, this value will be equal to the hours per month. For the second month it will be the sum of the first month and the second month. Indicate in parentheses the number of months summed [i.e., 3 (2) represents 3 hours operated in 2 months].

E10-5. The emergency engine driving the fire pump is subject to regulations under 40 CFR Part 63, Subpart ZZZZ, **NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES.** Pursuant to 40 CFR §63.6590(c)(7), the permittee shall meet the requirements of 40 CFR Part 63, Subpart ZZZZ, by meeting the requirements of 40 CFR Part 60, Subpart IIII. No further requirements apply for these emergency engines under 40 CFR Part 63, Subpart ZZZZ.

E10-6. The permittee has designated this source as an emergency engine. According to a memorandum dated September 6, 1995 from John Seitz, Director, Office of Air Quality Planning and Standards, "EPA believes that 500 hours is an appropriate default assumption for estimating the number of hours that an emergency generator could be expected to operate under worst-case conditions." This value (500 hours) will be assumed to be the maximum operating hours per calendar year for this source for the purpose of establishing a "potential to emit" for the facility for the pollutants of concern for the engine specified in **Condition E10-3** and 40 CFR §60.4211(f). The 500-hour value includes the 100 hours per year for maintenance checks and readiness testing as specified in **Condition E10-3(f)** and 40 CFR §60.4211(f). In the event the unit operates more than 500 hours during a period of a calendar year, the total annual hours of operation shall be reported to the Technical Secretary within 30 days of the end of the calendar year, along with the amount of fuel used, and actual emissions from this unit.

E10-7. For fee purposes, the permittee shall calculate its actual nitrogen oxides (NO_x) emissions, particulate matter (PM) emissions, sulfur dioxide (SO_2) emissions, and volatile organic compound (VOC) emissions for each fiscal year from this fuel-burning source using manufacturer supplied emissions data and hours of operation of the engine. The results of these calculations shall be recorded and maintained in tabular form and shall be reported in accordance with **Condition E1** of this permit.

TAPCR 1200-03-26-.02 (3) and (9), and 1200-03-09-.02(11)(e)1 (iii) and (vii)

Conditions E10-8 through E10-9 ZZZZ	apply to source 01-0009-15	Snake Pit Emergency Sump Pump	MACT Subpart

E10-8. The permittee has designated the engine that serves the sump pump as an emergency engine. According to a memorandum dated September 6, 1995 from John Seitz, Director, Office of Air Quality Planning and Standards, "EPA believes that 500 hours is an appropriate default assumption for estimating the number of hours that an emergency [fire pump] could be expected to operate under worst-case conditions." This value (500 hours) will be assumed to be the maximum operating hours per calendar year for this source for the purpose of establishing a "potential to emit" for the facility for the pollutants of concern for the engine. The 500-hour value includes the 100 hours per year for maintenance checks and readiness testing as specified in **Condition E10-9(e)** and 40 CFR §63.6640(f). In the event the unit operates more than 500 hours during a period of a calendar year, the total annual hours of operation shall be reported to the Technical Secretary within 30 days of the end of the calendar year, along with the amount of fuel used, and actual emissions from this unit.

E10-9. This source's existing (built prior to June 12, 2006) emergency stationary CI RICE is subject to 40 CFR Part 63, Subpart ZZZZ, **NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES**, including any and/or all applicable emission limitations, notifications, compliance options, records, reports, etc. as referenced below in this condition.

(a) Pursuant to 40 CFR §63.6602, for the emergency stationary compression ignition RICE, the permittee shall:

(1) Change oil and filter every 500 hours of operation or annually, whichever comes first; however, the permittee has the option to utilize an oil analysis program as described in §63.6625(i) in order to extend the specified oil change requirement.
(2) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and
(3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

If the emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the management practice requirements as described in (1), (2), and (3) above, or if performing the management practice on the required schedule would otherwise pose an unacceptable risk under Federal, State, or local law, the management practice can be delayed until the emergency is over or the unacceptable risk under Federal, State, or local law has abated. The management practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under Federal, State, or local law has abated. The permittee must report any failure to perform the management practice on the schedule required and the Federal, State or local law under which the risk was deemed unacceptable.

(b) Pursuant to 40 CFR §63.6605, the permittee must be in compliance with the applicable emission limitations, operating limitations, and other requirements in subpart ZZZZ at all times. At all times the permittee must 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 Technical Secretary 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.

(c) Pursuant to 40 CFR §63.6625(e)(2), the permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions, or

develop a 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.

(d) Pursuant to 40 CFR §63.6625(f), the permittee must install a non-resettable hour meter to the emergency engine if one is not already installed.

(e) Pursuant to 40 CFR §63.6640(f), any operation of the engine other than emergency operation, maintenance and testing, emergency demand response, and operation in nonemergency situations, as described in (1) through (3) below, is prohibited. If the engine is not operated according to the following requirements, the engine will not be considered an emergency engine and must meet all requirements for non-emergency engines under subpart ZZZZ.
   (1) There is no time limit on the use of emergency stationary RICE in emergency situations.
   (2) Operation for any combination of maintenance checks, readiness testing, and for emergency demand response under §§63.6640(f)(2)(ii) is limited to 100 hours per calendar year. The permittee may operate the emergency stationary RICE for the purpose of 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 Technical Secretary 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 RICE beyond 100 hours per calendar year.
   (3) The permittee may operate the emergency stationary RICE up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance checks and readiness testing and emergency demand response under §§63.6640(f)(2)(ii). Except as provided in §§63.6640(f)(4), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(f) Pursuant to 40 CFR §63.6650(f), each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 71 must report all deviations as defined in subpart ZZZZ in the semiannual monitoring report required by 40 CFR 70.6 (a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a Compliance report pursuant to Table 7 of this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the Compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the Compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a Compliance report shall not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.

(g) Pursuant to 40 CFR §63.6655(f), the permittee must keep records of the hours of operation of the emergency engine that is recorded through the non-resettable hour meter. 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. These logs must be maintained at the facility and kept available for inspection by the Technical Secretary or his representative. These logs must also retained for a period of not less than five (5) years.

END OF PERMIT NUMBER: 567519

ATTACHMENT 1

Opacity Matrix Decision Tree for Visible Emission Evaluation by TVEE Method 1, Date June 18, 1996. Amended August 16, 2013, Method 2, Dated June 18, 1996, amended August 16, 2013,and EPA Method 9, amended August 16, 2013

Decision Tree PM for Opacity from Nontraditional Sources (Roads and Parking Areas)
Utilizing TVEE Method 1

Notes:

The use of Tennessee Visible Emission Evaluation (TVEE) Method 1 is only applicable where the use of the method is specified as a permit condition.

PM = Periodic Monitoring required by 1200-03-09-.02(11)(e)(1)(iii).

This Decision Tree outlines the criteria by which major sources can meet the PM requirements of Title V for demonstrating compliance with the visible emissions standard for nontraditional sources (roads and parking areas). It is not intended to determine compliance requirements for EPA's Compliance Assurance Monitoring (CAM) Rule (formerly referred to as Enhanced Monitoring – Proposed 40 CFR 64).

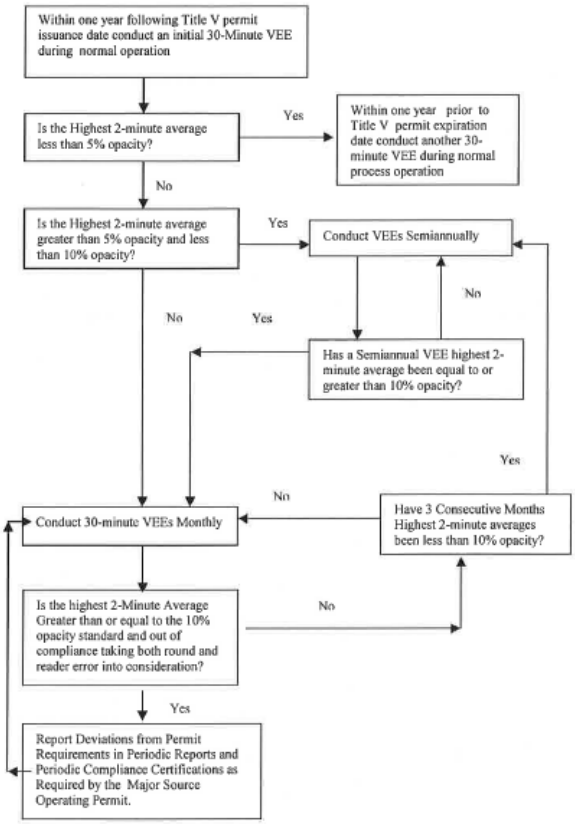
Visible Emissions Evaluations (VEEs) are to be conducted utilizing TVEE Method 1. The observer must be properly certified according to criteria specified in TVEE Method 1 to conduct Method 1 evaluations.

Initial observations are to be repeated within 90 days of startup of a modified source if a new construction permit is issued for modification of the source.

A VEE conducted by TDAPC personnel after the Title V permit is issued will also constitute an initial reading.

Reader Error
For TVEE Method 1, the TDAPC declares non-compliance when the highest two-minute average exceeds the standard plus 10% opacity for sources having this standard applied prior to August 24, 1984 or 8.8% for sources having this standard applied on or after August 24, 1984.

Dated June 18, 1996
Amended September 11, 2013



Decision Tree PM for Opacity for
Sources Subject to Rule 1200-03-05-.01
Utilizing TVEE Method 2

Notes:

PM = Periodic Monitoring required by 1200-03-09-.02(11)(e)(iii).

This Decision Tree outlines the criteria by which major sources can meet the periodic monitoring and testing requirements of Title V for demonstrating compliance with the visible emission standard in Rule 1200-03-05-.01. It is not intended to determine compliance requirements for EPA's Compliance Assurance Monitoring (CAM) Rule (formerly referred to as Enhanced Monitoring – Proposed 40 CFR 64).

Examine each emission unit using this Decision Tree to determine the PMT required.

Use of continuous emission monitoring systems eliminates the need to do any additional periodic monitoring.

Visible Emission Evaluations (VEEs) are to be conducted utilizing Tennessee Visible Emission Evaluation Method 2. The observer must be properly certified according to the criteria specified in EPA Method 9 to conduct TVEE Method 2 evaluations.

Typical Pollutants
Particulates, VOC, CO, SO_2, NO_x, HCl, HF, HBr, Ammonia, and Methane.

Initial observations are to be repeated within 90 days of startup of a modified source, if a new construction permit is issued for modification of the source.

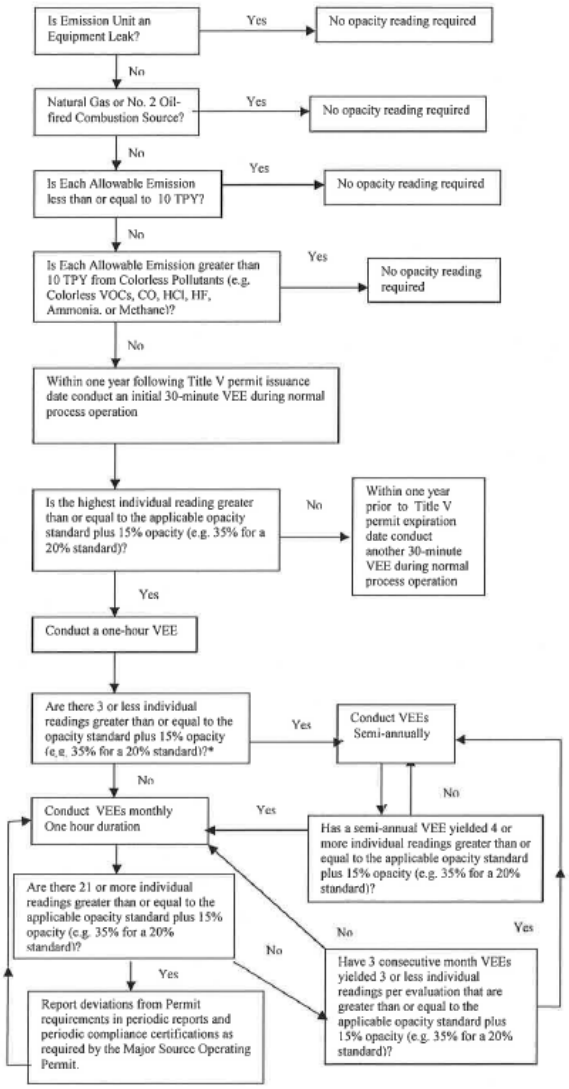
A VEE conducted by TAPCD personnel after the Title V permit is issued will also constitute an initial reading.

Reader Error
TVEE Method 2: The TAPCD declares non-compliance when 21 observations are read at the standard plus 15% opacity (e.g. 35% for a 20% standard).

*The rationale for this is the fact that Rule 1200-03-05-.01 allows for an exemption of 5 minutes (20 readings) per hour and up to 20 minutes (80 readings) per day. With 4 or more excessive individual readings per hour the possibility of a daily exceedance exists.

Note: A company could mutually agree to have all of its sources regulated by EPA Method 9. Caution: Agreement to use Method 9 could potentially place some sources in non-compliance with visible emission standards. Please be sure before you agree.

Dated June 18, 1996
Amended September 11, 2013



Decision Tree PM for Opacity for Sources Utilizing EPA Method 9*

Notes:

PM = Periodic Monitoring required by 1200-03-09-.02(11)(e)(iii).

This Decision Tree outlines the criteria by which major sources can meet the periodic monitoring and testing requirements of Title V for demonstrating compliance with the visible emission standards set forth in the permit. It is not intended to determine compliance requirements for EPA's Compliance Assurance Monitoring (CAM) Rule (formerly referred to as Enhanced Monitoring – Proposed 40 CFR 64).

Examine each emission unit using this Decision Tree to determine the PM required.*

Use of continuous emission monitoring systems eliminates the need to do any additional periodic monitoring.

Visible Emission Evaluations (VEEs) are to be conducted utilizing EPA Method 9. The observer must be properly certified to conduct valid evaluations.

Typical Pollutants
Particulates, VOC, CO, SO_2, NO_x, HCl, HF, HBr, Ammonia, and Methane.

Initial observations are to be repeated within 90 days of startup of a modified source, if a new construction permit is issued for modification of the source.

A VEE conducted by TAPCD personnel after the Title V permit is issued will also constitute an initial reading.

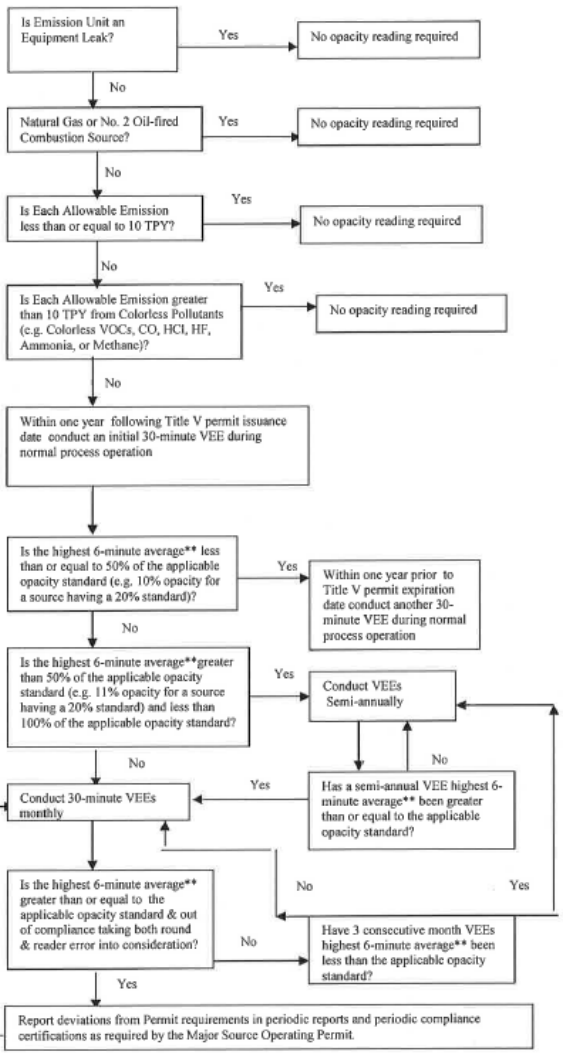
Reader Error
EPA Method 9, Non-NSPS or NESHAPS stipulated opacity standards:
The TAPCD guidance is to declares non-compliance when the highest six-minute average** exceeds the standard plus 6.8% opacity (e.g. 26.8% for a 20% standard).

EPA Method 9, NSPS or NESHAPS stipulate opacity standards:
EPA guidance is to allow only engineering round. No allowance for reader error is given.

*Not applicable to Asbestos manufacturing subject to 40 CFR 61.142

**Or second highest six-minute average, if the source has an exemption period stipulated in either the regulations or in the permit.

Dated June 18, 1996
Amended September 11, 2013



ATTACHMENT 2

AP-42 Fifth Edition Tables for Fuel Oil Combustion Emission Factors
Revised July 1998

Table 1.3-1. CRITERIA POLLUTANT EMISSION FACTORS FOR FUEL OIL COMBUSTION[a]

Firing Configuration (SCC)[a]	SO_2[b]		SO_3[c]		NO_x[d]		CO[e]		Filterable PM[f]	
	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING
Boilers > 100 Million Btu/hr										
No. 6 oil fired, normal firing (1-01-004-01), (1-02-004-01), (1-03-004-01)	157S	A	5.7S	C	47	A	5	A	9.19(S)+3.22	A
No. 6 oil fired, normal firing, low NO_x burner (1-01-004-01), (1-02-004-01)	157S	A	5.7S	C	40	B	5	A	9.19(S)+3.22	A
No. 6 oil fired, tangential firing, (1-01-004-04)	157S	A	5.7S	C	32	A	5	A	9.19(S)+3.22	A
No. 6 oil fired, tangential firing, low NO_x burner (1-01-004-04)	157S	A	5.7S	C	26	E	5	A	9.19(S)+3.22	A
No. 5 oil fired, normal firing (1-01-004-05), (1-02-004-04)	157S	A	5.7S	C	47	B	5	A	10	B
No. 5 oil fired, tangential firing (1-01-004-06)	157S	A	5.7S	C	32	B	5	A	10	B
No. 4 oil fired, normal firing (1-01-005-04), (1-02-005-04)	150S	A	5.7S	C	47	B	5	A	7	B
No. 4 oil fired, tangential firing (1-01-005-05)	150S	A	5.7S	C	32	B	5	A	7	B
No. 2 oil fired (1-01-005-01), (1-02-005-01), (1-03-005-01)	157S	A	5.7S	C	24	D	5	A	2	A
No.2 oil fired, LNB/FGR, (1-01-005-01), (1-02-005-01), (1-03-005-01)	157S	A	5.7S	A	10	D	5	A	2	A

Table 1.3-1. (cont.)

Firing Configuration (SCC)[a]	SO_2[b]		SO_3[c]		NO_x[d]		CO[e]		Filterable PM[f]	
	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING	Emission Factor ($lb/10^3$ gal)	EMISSION FACTOR RATING
Boilers < 100 Million Btu/hr										
No. 6 oil fired (1-02-004-02/03) (1-03-004-02/03)	157S	A	2S	A	55	A	5	A	10	B
No. 5 oil fired (1-03-004-04)	157S	A	2S	A	55	A	5	A	9.19(S)+3.22	A
No. 4 oil fired (1-03-005-04)	150S	A	2S	A	20	A	5	A	7	B
Distillate oil fired (1-02-005-02/03) (1-03-005-02/03)	142S	A	2S	A	20	A	5	A	2	A
Residential furnace (A2104004/A2104011)	142S	A	2S	A	18	A	5	A	0.4[g]	B

[a] To convert from $lb/10^3$ gal to $kg/10^3$ L, multiply by 0.120. SCC = Source Classification Code.

[b] References 1-2,6-9,14,56-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.

[c] References 1-2,6-8,16,57-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.

[d] References 6-7,15,19,22,56-62. Expressed as NO_2. Test results indicate that at least 95% by weight of NO_x is NO for all boiler types except residential furnaces, where about 75% is NO. For utility vertical fired boilers use 105 $lb/10^3$ gal at full load and normal (>15%) excess air. Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are related to fuel nitrogen content, estimated by the following empirical relationship: lb NO_2 /10^3 gal = 20.54 + 104.39(N), where N is the weight % of nitrogen in the oil. For example, if the fuel is 1% nitrogen, then N = 1.

[e] References 6-8,14,17-19,56-61. CO emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.

[f] References 6-8,10,13-15,56-60,62-63. Filterable PM is that particulate collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. Particulate emission factors for residual oil combustion are, on average, a function of fuel oil sulfur content where S is the weight % of sulfur in oil. For example, if fuel oil is 1% sulfur, then S = 1.

[g] Based on data from new burner designs. Pre-1970's burner designs may emit filterable PM as high as 3.0 $1b/10^3$ gal.

ATTACHMENT 3

Coal – Fired Boiler Process Description
OPERATIONAL AND CALCULATION METHODOLOGY
COMPLIANCE ASSURANCE MONITORING PROTOCOL
ELECTROSTATIC PRECIPITATOR (ESP) FOR PM CONTROL
DATA AND SAMPLE EMISSION CALCULATIONS

COAL-FIRED BOILER PROCESS DESCRIPTION
BULL RUN FOSSIL PLANT

Bull Run Fossil Plant (BRF) has one pulverized-coal, tangentially-fired dry-bottom boiler unit with a maximum heat input capacity of 8,871 x 10^6 Btu/hr and a nameplate generating capacity of 950 megawatts (MW).

Coal is the primary fuel burned in the two furnaces of the unit, with No. 2 fuel oil (or alternate fuel oils which meet all applicable standards) used for startup. Fuel oil may also be burned under non-steady-state and low-load conditions to ensure flame stability, as well as to supplement furnace heat input when coal heat input is insufficient. In addition, up to 100,000 gallons per year of used oil and nonhazardous solvents may be burned at this installation, along with nonhazardous oil-contaminated soil, absorbent material, filters, and rags containing oil or other nonhazardous materials.

TVA currently burns Eastern bituminous coal and some Western low-sulfur coal in the BRF main boiler. TVA also may begin cofiring wood residue with coal during this permit cycle.

The flow diagram in Figure 3-1 depicts the boiler unit process. Coal is conveyed by the solid-fuel handling system from railcars to a set of coal bunkers in the powerhouse. Exhaust fans and cyclone dust collectors can be used to ventilate any combustible gases from the coal bunkers. These cyclones are considered to be insignificant emission sources. The coal is then fed by gravity to the coal feeders (10 total).

The coal is then fed to the pulverizers (10 total) where it is crushed into fine particles. A stream of air from one of the forced draft fans conveys the pulverized coal into the furnaces for firing. Bottom ash flows from the furnace sections of the boiler into the wet ash handling system described in the Ash Handling Process Description. Because the bottom ash handling system up to the point of disposal is wet and totally enclosed, it is not considered an air emissions source.

An electrostatic precipitator (ESP) removes fly ash particulates from the flue gas exiting each of the furnaces. Fly ash removed by the ESP is handled by the dry-ash system as detailed in the Ash Handling Process Description. Reduced particulate collection efficiencies are obtained during boiler startups, shutdowns, and equipment malfunctions. These conditions occur infrequently and are limited in duration.

A selective catalytic reduction (SCR) reactor is installed in the flue-gas path downstream of each BRF furnace. Designed to reduce NO_x emissions up to 90 percent, the SCR system became operational in May 2004. Because the SCR uses anhydrous ammonia (NH_3) as the reducing agent, a risk management plan (RMP) was conducted to comply with requirements for prevention of accidental release of hazardous air pollutants (HAP). A flue gas desulfurization (FGD) scrubber became operational in December 2008 to reduce SO_2 emissions up to 98 percent and also reduce emissions of acid gases (HCl, HF, H_2SO_4), mercury, and selenium. Flue gas exiting the ESP can either flow through the FGD scrubber and be emitted into the

atmosphere through the 500-foot new stack (Stack 1) or bypass the scrubber and be emitted into the atmosphere through the 800-foot old stack (Stack 1A). At present, the old stack is blanked off and operation bypassing the scrubber is not planned.

The gypsum created in the FGD scrubber is wet-sluiced to the gypsum disposal area. Any emissions from the handling of the gypsum are considered negligible at this time. Hydrated lime, system installed in 2012, can be injected prior to the ESP for sulfuric acid mitigation. The only significant air emission from the boiler unit is the flue gas discharged from either of the two stacks.

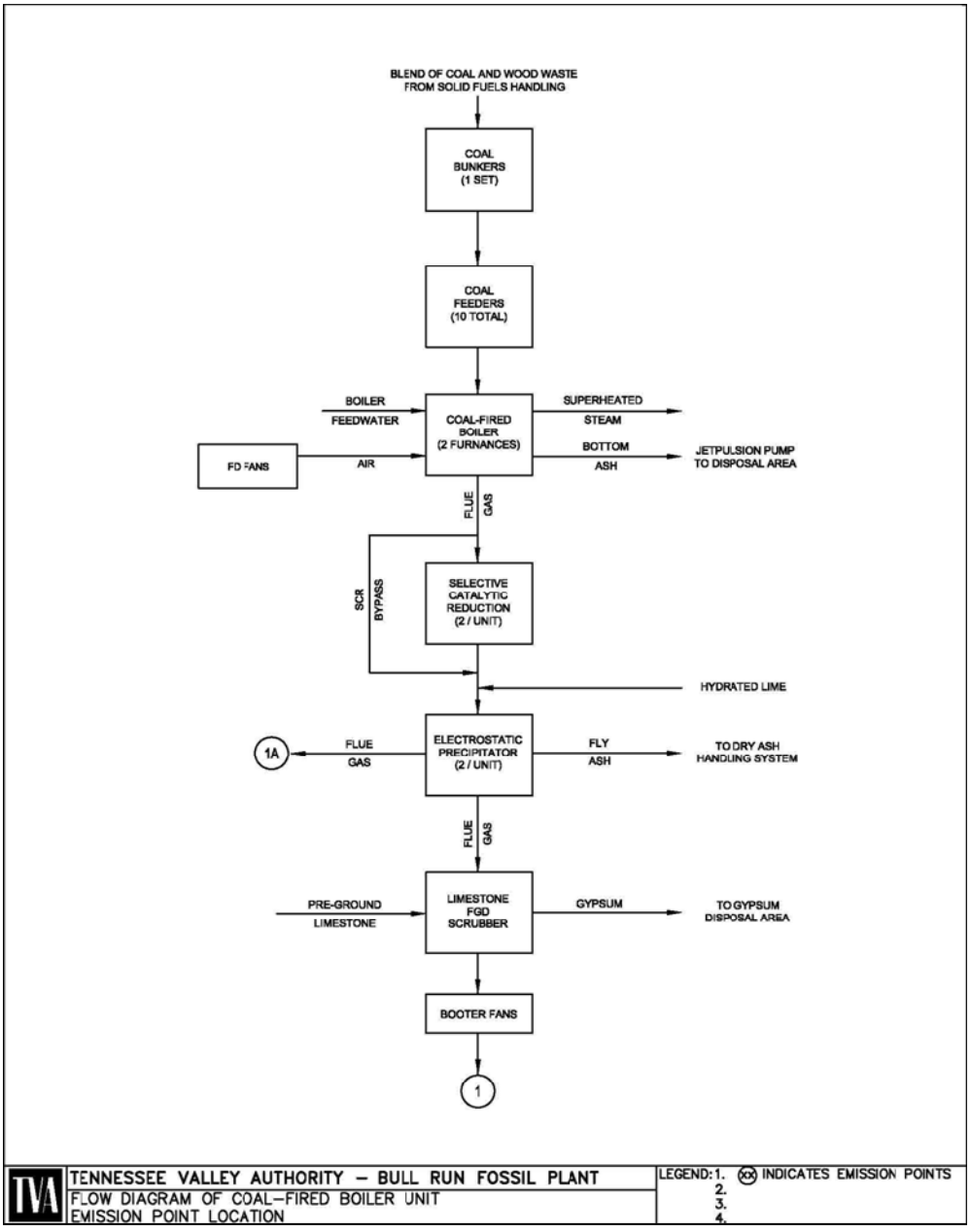

BLEND OF COAL AND WOOD WASTE FROM SOLID FUELS HANDLING
COAL BUNKERS (1 SET)
COAL FEEDERS (10 TOTAL)
BOILER FEEDWATER
FD FANS
AIR
COAL-FIRED BOILER (2 FURNANCES)
SUPERHEATED STEAM
BOTTOM ASH
JETPULSION PUMP TO DISPOSAL AREA
FLUE GAS
SCR BYPASS
SELECTIVE CATALYTIC REDUCTION (2 / UNIT)
HYDRATED LIME
1A
FLUE GAS
ELECTROSTATIC PRECIPITATOR (2 / UNIT)
FLY ASH
TO DRY ASH HANDLING SYSTEM
FLUE GAS
PRE-GROUND LIMESTONE
LIMESTONE FGD SCRUBBER
GYPSUM
TO GYPSUM DISPOSAL AREA
BOOTER FANS
1
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
FLOW DIAGRAM OF COAL–FIRED BOILER UNIT
EMISSION POINT LOCATION
LEGEND: 1. (XX) INDICATES EMISSION POINTS
2.
3.
4.

FIGURE 3-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
BOILERS

Emission estimates are based on steady-state operation of the boiler and its air pollution control systems. Reduced particulate collection efficiencies are obtained during boiler startups, shutdowns, and equipment malfunctions. These conditions occur infrequently and are limited in duration.

Coal is the primary solid fuel burned at BRF, with No. 2 fuel oil (or alternate fuel oils, which meet all applicable standards) for startup. Fuel oil may also be burned under non-steady-state and low-load conditions to ensure flame stability and to supplement furnace heat input when the heat input from coal is insufficient. These fuels are accounted for in the emission estimates. In addition, up to 100,000 gallons per year of used oil and nonhazardous solvents may be burned at this installation, along with nonhazardous oil-contaminated soil, absorbent material, filters, and rags containing oil or other nonhazardous materials.

TVA is permitted to cofire wood waste with coal in the BRF boiler at a maximum expected rate of 3 percent of the boilers' heat input (approximately 8 percent by weight). No wood waste was burned during administrative year (AY) July 2011 – June 2012.

Actual annual emissions were estimated using AY 2012 coal and light-off oil. Appalachian Basin Bituminous, Illinois Basin Bituminous, and Uinta Basin Rocky Mountain Bituminous coal were burned in AY 2012. Maximum actual hourly emission rates were estimated using boiler maximum heat input capacities and appropriate emission factors.

Emissions from Coal

Filterable particulate matter (PM) emissions were estimated based on the July 2011 compliance stack test data. Electrostatic precipitator (ESP) control efficiencies for PM were also derived from the stack-test data, AY 2012 average coal quality (ash and heating value) data and material-balance estimates for the fly ash versus bottom ash split in the boilers. Condensable particulate matter was calculated adding the organic fraction of the total condensable particulate matter plus the sulfuric acid emissions. From AP-42, the organic fraction is 20% of the total condensable particulate matter. Sulfuric acid emission estimates were calculated based on the EPRI document, "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants".

The sulfur dioxide and nitrogen oxide emissions were based on the annual emissions as determined by continuous emission monitors (CEMs). Carbon monoxide and volatile organic compounds were based on AP-42 coal emission factors. Carbon dioxide emissions were estimated from 40 CFR Part 98.

Unit-specific controlled PM trace element hazardous air pollutant (HAP) emission factors were determined using a regression equation for median emissions for each element from the Electric Power Research Institute (EPRI) PISCES stack test program. Inputs to the emission factor calculations were the median elemental concentrations in the coals as measured in the

PISCES/DOE test program, and coal ash contents and compliance stack-test PM emission rates. For hydrogen chloride (HCl), the average chlorine concentration from the as-received coal was used. For other gaseous HAP, (hydrogen fluoride (HF), mercury and selenium) the median elemental concentrations (from PISCES) were used. Control efficiency factors were applied to the gaseous HAP coal concentrations to reflect removal in the FGD. Organic HAP emission estimates were based on the geometric mean PISCES coal-fired emission factors. Radionuclide emissions were also estimated using geometric mean PISCES coal-fired emission factors.

Emissions from Light-Off Oil

The emissions from light-off oil were determined from the quantities of light-off oil burned in the boiler and AP-42 uncontrolled emission factors. A control efficiency of 60% was used for PM species and acid gas HAPs (HCl, Hg, and Se) due to less than optimal conditions that occur during startup and shutdown. Control efficiencies for sulfur dioxide (96.77%) and condensable particulate (81.92%) are assumed to be the same as they were for coal.

Data used to estimate the boiler emissions for AY 2012 are summarized in Table 3-1.

TABLE 3-1
INPUT DATA FOR BOILER EMISSION ESTIMATES
BULL RUN FOSSIL PLANT
AY 2012

		Boiler Unit				
Parameter	Units	1				
Coal Burn Rate (Appalachian Basin Bituminous)	ton/yr	495,779				
Coal Burn Rate (Illinois Basin Bituminous)	ton/yr	34,171				
Coal Burn Rate (Uinta Basin Rocky Mtn Bituminous)	ton/yr	69,541				
Coal Analysis (as received):		Appalachian	Illinois	Uinta		
Moisture	%	6.31	14.19	10.17		
Ash	%	9.98	7.15	7.58		
Sulfur	%	0.92	1.25	0.62		
Heating Value	Btu/lb	12,513	11,514	11,683		
Chlorine Content	ppm	814	1,630	70		
Light-Off Oil Fired	gal/yr	555,193				
Light- Off Oil Analysis:		Light-Off Oil				
Sulfur	%	0.0148				
Heating Value	Btu/gal	138,589				
Test Particulate Emissions (July 2011)	lb/10^6 Btu	0.004				0.011
Annual CEMs Sulfur Dioxide Emissions	ton/yr	332				
Annual CEMs Nitrogen Oxide Emissions	ton/yr	535				
Actual SO_2 Emissions	lb/10^6 Btu	0.045				
Actual NO_x Emissions	lb/10^6 Btu	0.071				
Operating time	hour/yr	2,066			7,760	6,402
Ash Split: Fly Ash/Bottom Ash	%	90/10				
Gas Temperature						
ESP Inlet	°F	296				
FGD Stack	°F	126				
FGD Bypass Stack	°F	290				
Maximum Heat Input Capacity	10^6 Btu/hr	8,871				
Particulate Emission Limit	lb/10^6 Btu	0.03				
SO_2 Emission Limit	lb/10^6 Btu	4.0				
Maximum Expected Wood Waste Burn Rate	Heat Input % (Weight %)	3(8)				

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.4

MAJOR SOURCE OPERATING PERMIT APPLICATION
FUEL BURNING NON-PROCESS EQUIPMENT

1. FACILITY NAME:

Tennessee Valley Authority – Bull Run Fossil Plant

2. LIST ALL FUEL - BURNING EQUIPMENT THAT IS AT THIS FUEL BURNING INSTALLATION (PLEASE COMPLETE AN APC V.4 FORM FOR EACH PIECE OF FUEL BURNING EQUIPMENT).

Unit 1 Boiler

3. FUEL BURNING EQUIPMENT IDENTIFICATION NUMBER:	4. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Boiler 1	Stack 1 (FGD) or Stack 1A (FGD Bypass)

5. FUEL BURNING EQUIPMENT DESCRIPTION:

The fuel burning equipment at this installation consists of one pulverized-coal, tangentially-fired, dry-bottom boiler without fly ash reinjection. The maximum heat input capacity for Boiler 1 is 8,871 million Btu/hr, and nameplate generating capacity is 950 megawatts. The normal fuel is coal, with distillate (No. 2) fuel oil, or alternate fuel oils which meet all applicable standards, for startup. In addition, up to 100,000 gallons per year of used oil and nonhazardous solvents may be burned at this installation, along with nonhazardous oil-contaminated soil, absorbent material, filters, and rags containing oil or other nonhazardous materials. TVA may cofire wood waste with coal during this permit cycle.

6. YEAR OF INSTALLATION OR LAST MODIFICATION OF FUEL BURNING EQUIPMENT:

Installation: 1966, SCR added 2004, FGD added 2008, Hydrated Lime added 2012

7. FURNACE TYPE:	8. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
Pulverized-coal, tangentially-fired, dry-bottom boiler without fly ash reinjection	Combustion Engineering

9. MAXIMUM RATED HEAT INPUT CAPACITY (IN MILLION BTU/HOUR):	10. IF WOOD IS USED AS FUEL, SPECIFY THE AMOUNT OF WOOD USED AS A FRACTION OF TOTAL HEAT INPUT.
8,871 x 10^6 Btu/hr	Maximum expected rate = 3 percent (8 percent by weight)

11. FUELS:	PRIMARY FUEL	BACKUP FUEL 1	BACKUP FUEL 2	BACKUP FUEL 3
FUEL NAME	Coal	No. 2 Fuel Oil (start-up)	Wood Waste	Used oil/solvents
ACTUAL YEARLY CONSUMPTION	599,491 tons (AY 2012)	555,193 gal. (AY 2012)	0.0 tons (AY 2012)	0.0 tons (AY 2012)

12. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE CONTROLLED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF CONTROL:
High-Efficiency Electrostatic Precipitator (ESP), Selective Catalytic Reduction (SCR), Flue Gas Desulfurization, Hydrated Lime

13. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE MONITORED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF MONITORING:
CEMS for sulfur dioxide, opacity, nitrogen oxides, carbon dioxide, and flow

14. LOCATION OF THIS FUEL BURNING INSTALLATION IN UTM COORDINATES:
UTM VERTICAL: 3,989.76 km UTM HORIZONTAL: 756.37 km

15. NORMAL OPERATING SCHEDULE:
24 HRS/DAY 7 DAYS/WK 365 DAYS/YR

16. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY).
Fugitive emissions are discussed in the solid-fuel handling, pre-ground limestone handling, ash handling, and hydrated lime handling sections.

17. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.16

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - ELECTROSTATIC PRECIPITATOR

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority – Bull Run Fossil Plant	Boiler 1

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Stack 1 (FGD) or Stack 1A (FGD Bypass)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

The cold-side electrostatic precipitator (ESP) for each of the two furnaces in the unit 1 boiler at BRF was designed to remove 99.7% of the particulate matter (PM) from flue gases generated by burning coal containing 22% ash and 0.6% sulfur. The design parameters were gas flow of 2,600,000 actual cubic feet per minute (acfm) at 270$^{\forall}$ F for the two ESPs combined, with inlet PM loading of 5.5 grains per actual cubic foot (gr/ft^3). Each furnace's ESP consists of two chambers containing 5 fields each, with a total plate area of 1,472,700 square feet (ft^2) for the two ESPs combined. Thus, the design specific collector area is approximately 566 ft^2/10^3 acfm.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):	6. YEAR OF INSTALLATION
Carborundum Environmental Systems, Inc.	1977

7. LIST OF POLLUTANT (S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulates	99.7	Design
	99.94	Outlet: stack test data Inlet: material balance calculations

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

The fly ash collected by the ESP is sent dry to the two fly ash storage silos. Some fly ash is recovered and sold for use offsite, but most of the fly ash is conditioned with water and landfilled either offsite or onsite. The silo's bin vent filter controls ash emissions from the pneumatic transfer of dry fly ash from the telescoping chute to tanker trucks.

9. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

10. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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APC V.11

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
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MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - MISCELLANEOUS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority – Bull Run Fossil Plant	Boiler 1

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Stack 1 (FGD) or Stack 1A (FGD Bypass)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE (e.g., PRESSURE DROP, GAS FLOW RATE, TEMPERATURE):

Selective Catalytic Reduction (SCR) Process: Each of the twin boiler furnaces has a SCR reactor containing 3 catalyst modules (layers). A fourth layer may be added later.

Operating Parameters:
Flue Gas Velocity through SCR Reactors: 14 to 17 feet per second (ft/sec) operating range
Flue Gas Flow Rate through SCR Reactors: 2,100,000 actual cubic feet per minute (acfm) per reactor
Operating Temperature: 690°F
Active Catalyst Length: 1325 mm/module (layer)
Residence Time: 0.25 sec per catalyst layer
Nitrogen Oxides (NOx) design SCR inlet rate: 0.6 pound per million Btu ($lb/10^6$ Btu)
Ammonia (NH_3) design SCR Feed Rate: 839 lb/hr per reactor
Stoichiometric Ratio (moles NH_3/mole NOx removed) = 1.025, assuming 95% NO and 5% NO_2 for coal-fired flue gas NOx
Ammonia Slip: 5 parts per million by volume (ppmv) maximum

Note that SCR inlet and outlet NOx emissions will be measured by continuous emission monitoring system (CEMs) for purposes of process control.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):

Cormetech (catalyst) and Alstom Power (reactors)

6. YEAR OF INSTALLATION:

2004

7. LIST OF POLLUTANT (S) TO BE CONTROLLED BY THIS EQUIPMENT AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Nitrogen Oxides (NOx)	up to 90	Design NOx removal efficiency per 9-15-2003 e-mail from L.A. Budlong, Alstom Power, to D.W. Stewart, TVA

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.
SCR reaction products are molecular nitrogen (N_2) and water, which exit in the stack flue gases. NH_3 slip escaping the SCR reactor is neutralized by acidic components of the flue gas to form ammonium salts, which are incorporated in the fly ash stream.

9. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.
N/A

10. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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Expiration Date: To Be Determined

APC V.17

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - WET COLLECTION SYSTEMS

1. FACILITY NAME:
Tennessee Valley Authority – Bull Run Fossil Plant

2. EMISSION SOURCE (IDENTIFY):
Boiler 1

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Stack 1 (FGD)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

The SO_2 Scrubbing System consists of one absorber module which scrubs the flue gas with limestone slurry. The absorber is designed to achieve up to 98 percent SO_2 removal efficiency by contacting the flue gas with limestone slurry which reacts with the SO_2. Air is sparged into the slurry to oxidize the reaction products to gypsum ($CaSO_4 \cdot H_2O$).

Mist eliminators are installed to remove slurry droplets from the flue gas. The scrubber is designed to emit particulate matter (PM) at a concentration no greater than that contained in the flue gas entering the scrubber from the electrostatic precipitator (ESP).

Key operating parameters for regulating optimal scrubber performance (and their normal operating range) are: absorber recycle slurry density (about 30 percent solids) and pH (5.2 to 5.8); number of recycle pumps in service (which varies between 5 and 8 according to unit load and inlet SO_2 concentration to regulate the liquid-to-gas ratio); and inlet/outlet SO_2 concentrations.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
Advatech

6. YEAR OF INSTALLATION:
2008

7. LIST OF POLLUTANT (S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
SO_2	up to 98%	Design Spec.

8. DISCUSS HOW COLLECTED MATERIAL AND EFFLUENT IS HANDLED FOR REUSE OR DISPOSAL.

Waste gypsum slurry is collected in effluent slurry tanks. The slurry is pumped to gypsum settling ponds.

9. SCRUBBING MEDIUM (WATER, SODIUM HYDROXIDE SLURRY, etc.):
Limestone slurry (calcium carbonate/water slurry)

10. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

The limestone scrubbing system follows the ESPs. Therefore, particulate matter (PM) is essentially removed from the flue gas before entering the scrubber. The mist eliminators following the scrubber are installed to remove slurry droplets from the flue gas. The overall removal efficiencies are 99+% for PM and up to 98% for SO_2.

11. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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DIVISION OF AIR POLLUTION CONTROL 9TH
FLOOR, L&C ANNEX 401
CHURCH STREET NASHVILLE,
TN 37243-1531

APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant	FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Stack 1 (FGD)		LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):

Boiler 1

4. STACK HEIGHT ABOVE GRADE IN FEET:

500 ft. FGD stack

5. VELOCITY (DATA AT EXIT CONDITIONS): 50.0 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 33.5 ft.
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 2.643 x 10^6 (maximum heat input capacity)	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 2,024 x 10^6 (maximum heat input capacity)
9. EXHAUST TEMPERATURE: 126 DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 13.6 PERCENT 52 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2, NO_X, etc.)?

Opacity, sulfur dioxide, nitrogen oxides, carbon dioxide, flow

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

X YES _____ NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

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NASHVILLE, TN 37243-1531

APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant	FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Stack 1A (FGD Bypass)		LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):

Boiler 1

4. STACK HEIGHT ABOVE GRADE IN FEET:

800 ft. FGD Bypass Stack

5. VELOCITY (DATA AT EXIT CONDITIONS): 77.3 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 28 ft.
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 2.858 x 10^6 (maximum heat input capacity)	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 1.793 x 10^6 (maximum heat input capacity)
9. EXHAUST TEMPERATURE: 290 DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 7.80 PERCENT 27.7 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2, NO_X, etc.)?

Opacity, sulfur dioxide, nitrogen oxides, carbon dioxide, flow

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

X YES _____ NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.28

MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE/FUEL BURNING INSTALLATION/INCINERATOR

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S): Stack 1 (FGD)

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY): Boiler Unit 1

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. See Data and Sample Emission Calculations.

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR*	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
PARTICULATES (TSP) FILTERABLE	1,166		29.9	
PARTICULATES CONDENSABLE	N/A		52.0	
(FUGITIVE EMISSIONS)	N/A		N/A	
SULFUR DIOXIDE	155,420		332	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		18.0	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		151	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		9.31E-03	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		535	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		8.48E-03	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

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* Calculated from the emission limit and maximum operation. These are not considered to be enforceable permit conditions.

APC V.28

(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR*	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		3.19E-04	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES (see entry below)	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		2.63	
(FUGITIVE EMISSIONS)	N/A		N/A	
SULFURIC ACID	N/A		22.3	
CARBON DIOXIDE EQUIVALENT	N/A		1,540,456	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
HYDROGEN CHLORIDE (HCl) (CAS 7647010)	N/A		14.3	
HYDROGEN FLUORIDE (HF) (CAS 7664392)**	N/A		2.63	
MERCURY (Hg) (CAS 7439-97-6)**	N/A		8.48E-03	
SELENIUM (Se) (CAS 7782-49-2)	N/A		0.182	
LEAD (Pb) (CAS 7439921)**	N/A		9.31E-03	
PARTICULATE HAP TOTAL***	N/A		8.89E-02	
VOC HAP TOTAL	N/A		0.484	
RADIONUCLIDES****	N/A		0.00143 (Ci/yr)	

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*Calculated from emission limits and maximum operation. These are not to be considered to be enforceable permit conditions.
**This pollutant is also listed in item 4.
***Particulate HAP total includes antimony (Sb), arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), lead (Pb), manganese (Mn), and nickel (Ni).
****Radionuclide emissions are expressed in terms of activity (curies [Ci]) rather than mass.

Permit number 567519
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

Expiration Date: To Be Determined

MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME:	2. EMISSION SOURCE NUMBER
Tennessee Valley Authority – Bull Run Fossil Plant	Stack 1 (FGD) or Stack 1A (FGD Bypass)

3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR.

One tangentially-fired, dry bottom, pulverized-coal-fired boiler used for the production of steam for generating electricity.

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulates	Federal Facilities Compliance Agreement 104/ Consent Decree 100 : Particulate Emission Limit	0.03 $lb/10^6$ Btu	0.004 $lb/10^6$ Btu Based on July 2011 source test	IN
	Particulates	TAPCR 1200-3-10-.01(3)(a); Permit #556854 - Condition E3-4; 40 CFR 51.212 : Particulate source test report filed with the Department on a biennial basis. Source test conducted according to specifications in Chapter 1200-3-12. Ten days prior to source test, give notice of test to the Department.			IN
	Opacity	TAPCR 1200-3-5-.01(1); Permit # 556854 - Condition E3-6; 40 CFR 51.110(a) : Opacity standard.	20 percent opacity - 6 minute average - except for one 6-minute period per hour of not more than 40 percent opacity.	$\leq$ 20 percent opacity, except for allowed exclusions.	IN
	Opacity	TAPCR 1200-3-5-.02(1); Permit #556854 - Condition E3-7; 40 CFR 51.211 : Exceptions - Due allowance for emissions in excess of the opacity limit during startup and shutdown. Maintain log containing specified information and provide copy upon request.	Routine startup – opacity exceeds 20 percent for 6 hours and exceeds 80 percent for 18 minutes. Routine shutdown – opacity exceeds 20 percent for less than 6 hours and exceeds 80 percent for 30 minutes.	$\leq$ 20 percent opacity, except for allowed exclusions.	IN

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	Opacity	40 CFR 75.10(a)(4); TAPCR 1200-3-30-.01(6)(b)1: Install, certify, operate, and maintain continuous opacity monitor with automated data acquisition and handling system.			IN
	Opacity	TAPCR 1200-3-10-.02(2)(b); Permit #556584 - Condition E3-12; 40 CFR 51.214(d) : Recording and Reporting - Quarterly reports of excess emissions; periods of monitor nonoperation, zero and span checks, and maintenance; maintain records for two years. Submit report within 30 days after end of quarter.			IN
	Opacity	TAPCR 1200-3-10-.02(1)(a) and 1200-3-5-.03(5); Permit #556584 - Condition E3-8; 40 CFR 51.214 : Monitoring - Continuous opacity monitor, fully operating 95% of unit operational time each month. Less than 95% availability may be considered noncompliance with monitoring requirements. Disparity between monitor readings and visible emission evaluator may require testing or investigation. Backup monitoring required if opacity monitor is inoperative for more than 7 days.			IN
	Opacity	TAPCR 1200-3-10-.02(1)(a) and 1200-3-10-.02(1)(c)1; Permit #556584 - Condition E3-11; 40 CFR 51.214 : Quality Assurance - Checks performed semiannual and within 90 days of major modification or repair of opacity monitor. Reports of quality assurance checks submitted to Department as prescribed.			IN
	Opacity	40 CFR 75.21(b); 40 CFR 60 App. B - Performance Specification 1; TAPCR 1200-3-30-.01(6)(b)1 : Specifications and test procedures for opacity continuous emission monitoring systems.			IN
	Opacity	40 CFR 75.65; TAPCR 1200-3-30-.01(6)(b)1 : Report excess emissions of opacity to state/local air pollution control agency in specified format.			IN

11. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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	Particulates	TAPCR 1200-3-8-.01; 40 CFR 51.110(a): Fugitive Dust - Take reasonable precautions to prevent particulate matter from becoming airborne.	No visible emissions across the property line for more than 5 minutes per hour or 20 minutes per day.	No visible fugitive dust at property line.	IN
	Sulfur Dioxide	TAPCR 1200-3-14-.02(1)(a) ; Permit # 556584 - Condition E3-5; 40 CFR 51.110(a) : Sulfur Dioxide Emission Limit	4.0 $lb/10^6$ Btu - 24 hr. avg.	0.045 $lb/10^6$ Btu AY 2012 average CEMs data	IN
	Sulfur Dioxide	TAPCR 1200-3-10-.02(2)(b); Permit # 556584 – Condition E3-12; 40 CFR 51.214(d) : Recording and Reporting - Quarterly reports of excess emissions; periods of monitor nonoperation, zero and span checks, and maintenance; maintain records for two years. Submit reports within 30 days after end of each quarter.			IN
	Sulfur Dioxide	TAPCR 1200-3-10-.02(1)(a); Permit #556584 - Condition E3-9; 40 CFR 51.214 : Monitoring - Continuous SO_2 monitor, fully operating 90% of unit operational time each month. Less than 90% availability may be considered noncompliance with monitoring requirements. Backup monitoring required if sulfur dioxide monitor is inoperative for more than 7 days.			IN
	Sulfur Dioxide	40 CFR 75.10(a)(1); TAPCR 1200-3-30-.01(6)(b)1: - Install, certify, operate, and maintain continuous SO_2 monitor with automated data acquisition and handling system.			IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Sulfur Dioxide	TAPCR 1200-3-10-.02(1)(a) and 1200-3-10-.02(1)(c)1; Permit #556584 - Condition E3-10; 40 CFR 51.214 : Quality Assurance - QA checks with repetitions of the relative accuracy test audit in accordance with the requirements of 40 CFR Part 75 and within 90 days of major modification or repair of monitor, diluent monitor, or electronic signal combining system. Written report of QA checks submitted to Technical Secretary.			IN
	Nitrogen Oxides	40 CFR 75.10(a)(2); TAPCR 1200-3-30-.01(6)(b)1 : Install, certify, operate, and maintain in accordance with all requirements a NO_x continuous emission monitoring system with automated data acquisition and handling system.			IN
	Carbon Dioxide	40 CFR 75.10(a)(3)(i); TAPCR 1200-3-30-.01(6)(b)1 : Install, certify, operate, and maintain in accordance with all requirements a CO_2 continuous emission monitoring system with automated data acquisition and handling system for measuring and recording CO_2 concentration, volumetric gas flow, and CO_2 mass emissions.			IN
	Opacity, Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Flow, and Diluent Gas Monitor	40 CFR 75.20(c); 40 CFR 75 App. A; TAPCR 1200-3-30-.01(6)(b)1 : Certification Procedures and Specification and Testing Procedures			IN
	Opacity, Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Flow, and Diluent Gas Monitor	40 CFR 75.21(a); 40 CFR 75 App. B; TAPCR 1200-3-30-.01(6)(b)1 : Quality assurance and quality control requirements and procedures.			IN
	Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Flow, and Diluent Gas Monitor	40 CFR 75.56(a); TAPCR 1200-3-30-.01(6)(b)1 : Certification, quality assurance and quality control record provisions : Record the applicable information for each certified monitor or monitoring system.			IN

11. PAGE NUMBER	REVISION NUMBER:	DATE OF REVISION:

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Opacity, Flow, and Diluent Gas Monitor	40 CFR 75.61; TAPCR 1200-3-30-.01(6)(b)1 : Notification of certification and recertification test dates - Notification not later than 45 days prior to initial certification testing and not later than 7 days prior to recertification testing.			IN
	Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Opacity, Flow, and Diluent Gas Monitor	40 CFR 75.62; TAPCR 1200-3-30-.01(6)(b)1 : Monitoring Plan - Submit monitoring plan containing information specified in 40 CFR 75.53 45 days prior to the certification test.			IN
	Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Opacity, Flow, and Diluent Gas Monitor	40 CFR 75.63; TAPCR 1200-3-30-.01(6)(b)1 : Certification or recertification application - Submit request containing specified information within 45 days after completing the certification test in the format specified.			IN
	Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Opacity, Flow, and Diluent Gas Monitor	40 CFR 75.64; TAPCR 1200-3-30-.01(6)(b)1 : Quarterly reports - Electronically report specified data and information quarterly including required compliance certification.			IN
	Opacity, Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, Operating Parameters, Flow, and Diluent Gas Monitor	40 CFR 75.54; TAPCR 1200-3-30-.01(6)(b)1 and 1200-3-30-.01(6)(f) : General Recordkeeping Provisions - Record all specified data and information and maintain a file of all measurements, data, reports, and other required information for 5 years from the date of each record.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(6); Permit #556584 - Condition E3-2 and E3-13; 40 CFR 51.110(a) : Burning used oil and solvents in boilers.	Maximum amounts shall not exceed 100,000 gallons per year of used oil/non-hazardous solvents burned at this facility. Daily used oil/non-hazardous solvents usage records in gallons and the gravimetric analysis of the oil shall be maintained and made available.		IN

11. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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	All Regulated Pollutants	Permit # 556584 - Condition E3-3; Permittee may conduct test burns of fuels up to 30 days without a construction permit or reopening of operating permit.	Notify Technical Secretary at least 30 days prior to test with copy of test plan.		IN
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211 : Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211 : Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1); 40 CFR 51.211 : Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211 : Report Required Upon The Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after receipt of the notice of violation.			IN
	Sulfur Dioxide, Nitrogen Oxides	40 CFR 72.90; TAPCR 1200-3-30-.08(1) : Annual Compliance Certification Report - Within 30 days after the end of the calendar year, submit an annual certification report to the Administrator and the Department containing all the information specified in part 72.90.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04 : Sampling, Recording, and Reporting Required for Major Stationary Sources - Department may require periodic or enhanced monitoring, recording, and reporting deemed necessary for the verification of a source=s compliance with applicable requirements.			IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

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	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3) : Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Department, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.	Take all reasonable steps to minimize levels of emissions that exceed an emission standard or other permit requirements.		IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii) and 1200-3-30-.01(6)(f); 40 CFR 70.6(a)(3) : Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
	Hazardous Air Pollutants	TAPCR 1200-3-31-.04; 40 CFR 63: National emission standards for hazardous air pollutants established pursuant to Section 112 (d) or (h) of the Clean Air Amendments of 1990.			IN
	Nitrogen Oxides (NOx)	40 CFR 96: NOx Budget Trading Program for State Implementation Plans (40 CFR 96) – Specifies requirements for establishing NOx emission allowances and allocating the allowances to NOx Budget units and permits banking and transfer of allowances.			IN
	Particulates	FFCA 19, 102/CD 98. Beginning August 12, 2011 and continuing thereafter TVA shall to the extent reasonably practicable and consistent with manufacturer's specifications, the operation design of the Unit and good engineering practices (a) fully energize each section of the ESP for Unit 1; (b) operate automatic control systems on the ESP to maximize PM collection efficiency; and (c) maintain power levels delivered to the ESP.			IN
	Particulates	FFCA 105/CD 101. PM stack test shall be conducted for filterable PM at each Unit or Units served by a common stack that combust fossil fuels at any time during that calendar year.			IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulates	FFCA 106/CD 102. Beginning in calendar year 2011, and continuing for three consecutive calendar years thereafter, PM stack test for condensable PM at each Unit or Units served by a common stack that combust fossil fuels at any time during that calendar year.			IN
	Nitrogen Oxides	Federal Facilities Compliance Agreement (FFCA) and Consent Decree (CD) Requirements • VA shall Continuously Operate the SCR system consistent with the requirements in FFCA 73/CD 69. • TVA shall meet the Systemwide annual tonnage limitations for NOx during Calendar Year 2011 and each year thereafter as set forth in the FFCA 71-72/CD 67-68. • TVA shall use and surrender NOx allowances consistent with the requirements in the FFCA 78-81/CD 74-77. • TVA may sell, bank, use, trade, or transfer NOx allowances consistent with the requirements in the FFCA 82/CD 78. • Allowances of NOx surrendered by TVA shall adhere to the method prescribed in the FFCA 83-84/CD 79-80.			IN
	Sulfur Dioxide	Federal Facilities Compliance Agreement (FFCA) and Consent Decree (CD) Requirements • VA shall Continuously Operatethe FGD system consistent with the requirements in FFCA 89/CD 85. • TVA shall meet the Systemwide annual tonnage limitations for SO2 during Calendar Year 2011 and each year thereafter as set forth in the FFCA 86-88/CD 82-84. • TVA shall use and surrender SO2 allowances consistent with the requirements in the FFCA 94-97/CD 90-93. • TVA may sell, bank, use, trade, or transfer SO2 allowances consistent with the requirements in the FFCA 98/CD 94. • Allowances of SO2 surrendered by TVA shall adhere to the method prescribed in FFCA 99-100/CD 95-96.			IN

11. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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	Particulates	Federal Facilities Compliance Agreement (FFCA) and Consent Decree (CD) Requirements • TVA shall implement the recommendations of the PM optimization study conducted by TVA under FFCA 103/CD 99 for the ESP on Bull Run Unit 1, and which the study was approved by EPA on February 4, 2013. • PM control devices should be Continuously Operated at each unit so that each unit or units served by a common stack achieve and maintain a PM Emission Rate of no greater than 0.030 lb/MM BTU as determined by stack testing. FFCA 104/CD 100. • Reference methods and procedures for performing stack test for filterable PM and for determining compliance with the PM Emission Rate shall be consistent with those specified in the relevant Title V Operating Permit. TVA shall calculate the PM emission rate from the stack test results in accordance with 40 C.F.R § 60.8(f). Test results must be submitted to the regulatory authority within the time period the regulatory authority specifies. FFCA 108/CD 104. • Reference methods and procedures for performing stack test for condensable PM shall be those specified in 40 C.F.R. Part 51, Appendix M, Method 202. TVA shall calculate the PM emission rate from the stack test results in accordance with 40 C.F.R § 60.8(f). Test results must be submitted to EPA, the States, and the Citizen Plaintiffs pursuant to Section X of the Compliance Agreement and Section VIII of the Consent Decree within 45 days of the completion of each test. FFCA 109/CD 105. • No later than twelve (12) months after the date that EPA approves the plan for installation and correlation of the PM CEMS and the QA/QC protocol, TVA shall install, correlate, maintain and operate the PM CEMS at Bull Run Fossil Plant. No later than ninety (90) days after TVA begins operation of the PM CEMS, TVA shall conduct tests of each PM CEMS to demonstrate compliance with the PM CEMS installation and correlation plan(s) and QA/QC protocol(s). Within forty-five (45) days of each such test, TVA shall submit the results to EPA, the States, and the Citizens Plaintiffs. FFCA 111-115, 118/CD 107-111,114			IN
10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)					

11. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

Permit number 567519 Expiration Date: To Be Determined

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.19

COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
   Tennessee Valley Authority – Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):
   Boiler Unit 1

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
   Stack 1 (FGD) or Stack 1A (FGD Bypass)

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

   __X__ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
   POLLUTANT(S):
   Nitrogen Oxides, Sulfur Dioxide, Opacity

   _____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
   POLLUTANT(S):

   __X__ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
   POLLUTANT(S):
   Particulates

   _____ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
   POLLUTANT(S):

   __X__ STACK TESTING - APC FORM V.24
   POLLUTANT(S):
   Particulates

   _____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
   POLLUTANT(S):

   __X__ RECORDKEEPING - APC FORM V.26
   POLLUTANT(S):
   Daily consumption of amounts of used oil and nonhazardous solvents burned .

   _____ OTHER (PLEASE DESCRIBE) - APC FORM V.27
   POLLUTANT(S):

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.
   START DATE: Within 60 days after June 30 and December 31 of each year.
   AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:
   START DATE: Within 60 days after the end of each calendar year quarter.
   AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

Permit number 567519 Expiration Date: To Be Determined

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.20

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY CONTINUOUS EMISSIONS MONITORING

1. FACILITY NAME:

Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Stack 1

3. PROCESS EMISSION SOURCE OR FUEL BURNING INSTALLATION OR INCINERATOR:

Boiler Unit 1

4. DESCRIPTION OF EQUIPMENT MONITORING POLLUTANT:

POLLUTANT BEING MONITORED:

Nitrogen Oxides, Sulfur Dioxide

4A. NAME OF MANUFACTURER:

Thermo

4B. MODEL NUMBER:

Nitrogen Oxides 42I, Sulfur Dioxide 43I

4C. INSTALLATION YEAR:

2008

4D. TYPE:

_____IN SITU _____EXTRACTIVE ___X___DILUTION _____OTHER (SPECIFY): _____

4E. DESCRIBE HOW THE MONITOR WORKS:

See attached description.

5. DESCRIPTION OF EQUIPMENT MONITORING DILUENT:

DILUENT BEING MONITORED:

Carbon Dioxide

5A. NAME OF MANUFACTURER:

Thermo

5B. MODEL NUMBER:

410I

5C. INSTALLATION YEAR:

2008

5D. TYPE:

_____IN SITU ___X___EXTRACTIVE _____O_2 _____CO_2 _____OTHER (SPECIFY): _____

5E. DESCRIBE HOW THE MONITOR WORKS:

See attached description.

6. DESCRIPTION OF EQUIPMENT MONITORING FLOW:

AMOUNT OF FLOW (DSCFM):

2.024×10^6 dscfm (at maximum heat input capacity)

6A. NAME OF MANUFACTURER:

EMRC

6B. MODEL NUMBER:

DP675 Mark 2

6C. INSTALLATION YEAR:

2008

6D. TYPE:

___X___ DIFFERENTIAL PRESSURE _____ THERMAL _____OTHER (SPECIFY): _____

7. OPACITY (OR USE OF VISIBLE EMISSION EVALUATIONS IN LIEU OF OPACITY MONITORING):

7A. INDICATE WHICH IS USED.

___X___MONITOR _____ VISIBLE EMISSION EVALUATIONS*

* FOR "VISIBLE EMISSION EVALUATIONS" CHOICE, PROCEDURES WILL BE SPECIFIED AS A CONDITION IN THE SOURCE'S OPERATING PERMIT.
In the event of an extended opacity monitor outage for more than seven days, visible emission readings will be used as a backup method.

7B. OPACITY MONITOR (STATE THE NAME OF MANUFACTURER, MODEL NUMBER, AND YEAR OF INSTALLATION):

Teledyne, Lighthawk 560, 2008

8. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

MONITOR DESCRIPTIONS FOR V. 20 PARTS 4E AND 5E
BULL RUN FOSSIL PLANT

The continuous emissions monitoring system (CEMS) automatically and continuously monitors concentrations of oxides of nitrogen, sulfur dioxide, and stack/duct flow. The CEMS sampling probe and flow monitor are installed according to 40 CFR Part 75, Appendix A, Section 1. The CEMS measures a diluted sample which uses carbon dioxide as the diluent. Zero and span checks and Relative Accuracy Test Audits (RATAs) are performed on the CEMS in accordance with EPA regulations.

The nitrogen oxide monitor operates on the principle that nitric oxide (NO) and ozone (O_3) react to produce a characteristic luminescence with an intensity linearly proportional to the NO concentration. NO_2 is converted to NO by molybdenum. The sulfur dioxide monitor operates on the principle that SO_2 molecules absorb ultraviolet (UV) light and become excited at one wavelength, then decay to a lower energy state emitting UV light at a different wavelength. The carbon dioxide monitor operates on the principle that CO_2 absorbs infrared radiation at a wavelength of 4.26 microns.

Data acquisition and reporting are controlled by a data acquisition handling (DAHS) system. The DAHS polls the system to generate 15-minute averages. Measurements are transmitted to the DAHS via a communications link. Four valid 15-minute averages must be available to calculate a 1-hour average except during periods when calibration, quality assurance, or maintenance are being performed. During these periods, a valid one-hour average shall consist of at least two valid 15-minute averages. In addition to the above criteria regarding availability of monitor data, operation of the boiler for at least 45 minutes during the hour is required for the data to be valid. Eighteen hourly averages (midnight to midnight) are needed to calculate the daily averages. The software generates reports; calibrates the analyzers; performs EPA-specific algorithms; stores data on the hard drive; and provides operator interface.

In response to Condition E3-10 of permit number 556854, request removal of annual quality assurance checks.

Quality assurance checks shall be performed on the sulfur dioxide monitoring system. The quality assurance checks shall consist of a repetition of the relative accuracy test audit in accordance with the requirements of 40 CFR Part 75. Written reports of the quality assurance checks shall be submitted to the Technical Secretary.

Permit number 567519 Expiration Date: To Be Determined

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
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APC V.22

MAJOR SOURCE OPERATING PERMIT APPLICATION - COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS

THE MONITORING OF A CONTROL SYSTEM PARAMETER OR A PROCESS PARAMETER SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT IS ESTABLISHED.

1. FACILITY NAME:

Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S)

Stack 1 (FGD) or Stack 1A (FGD Bypass) – Duct 1A and 1B

3. EMISSION SOURCE:

Boiler Unit 1

4. POLLUTANT (S) BEING MONITORED:

Particulate Matter

5. DESCRIPTION OF THE METHOD OF MONITORING AND ESTABLISHMENT OF CORRELATION BETWEEN THE PARAMETER VALUE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT:

Per attached Compliance Assurance Monitoring (CAM) Protocol, measurements by the continuous opacity monitoring system (COMS) in the ductwork for each of the BRF boiler's twin furnaces will constitute the compliance indicator for the particulate-matter (PM) emission limit. While opacity is not a direct measurement of PM mass emissions, it can be used as a surrogate. For a coal-fired boiler burning a consistently similar coal, particle-size distribution and specific surface area of the particles will remain relatively similar under normal load conditions and electrostatic precipitator (ESP) performance. Any change in opacity, therefore, will – as a first order approximation – be directly proportional to the mass concentration.

Using a test-and-cap approach, TVA has evaluated the relationship of stack opacity to PM concentration under normal full-load operations at and below the opacity limit (20%). TVA selected two opacity trigger points, one for corrective action (one-hour-average opacity exceeding 20%) and the second (three-hour-average opacity exceeding 20%) defining an excursion that will be documented and reported.

6. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance with the particulate-matter standard as determined by continuous opacity measurements will be demonstrated semiannually and submitted as part of the annual certification report.

7. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN-1007 RDA 1298

COMPLIANCE ASSURANCE MONITORING PROTOCOL
ELECTROSTATIC PRECIPITATOR (ESP) FOR PM CONTROL
BULL RUN FOSSIL PLANT

I. Background

A. Emissions Unit

Description:	8,871 MM Btu/hr coal-fired boiler
Identification:	01-0009-01
Facility:	Bull Run Fossil Plant Clinton, TN

B. Applicable Regulation, Emissions Limit, and Monitoring Requirements

Regulations:	**TAPCR, Paragraph 1200-3-6-.02(1)**
Emissions Limits: Particulate Matter (PM):	0.03 lb/MM Btu
Current Monitoring Requirements:	None
C. Control Technology	Electrostatic precipitator

II. Monitoring Approach

The key elements of the monitoring approach, including the indicators to be monitored, indicator ranges, and performance criteria are presented in Table 3-2. The selected performance indicator is the measured opacity from the continuous opacity monitoring system (COMS) on each duct.

III. Corrective Action

The key elements of the corrective action procedures are presented in Table 3-3. Corrective action is designed to discover and correct the problem that is creating the opacity increase. Corrective action is initiated before an excursion has occurred and continues until the potential excursion condition has been rectified. The trigger point that initiates corrective action is greater than 20% opacity for a one-hour block average excluding those events defined as startup/shutdown and malfunctions. Initiation of corrective action does not create a reporting requirement.

TABLE 3-2
MONITORING APPROACH

	Compliance Indicator
I. Indicator	Opacity
Measurement Approach	The opacity is measured using a Continuous Opacity Monitoring System (COMS) on each duct.
II. Indicator Ranges	(1) An excursion is defined as a measured opacity greater than 20% for a period of three consecutive hours, excluding those events defined as startup/shutdown and malfunctions. An excursion triggers a reporting requirement. (2) Corrective action must be initiated when measured opacity is greater than 20% for a one-hour block average excluding those events defined as startup/shutdown and malfunctions. Corrective action does not trigger a reporting requirement.
III. Performance Criteria A. Data Representativeness	Under normal boiler operation, as the mass emissions increase it can be reasonably expected that the opacity will also increase. The opacity monitors are located in the ductwork with no bypass capabilities. The opacity monitors meet the installation and minimum acceptable accuracy requirements of 40 CFR Part 60, Performance Specification 1.
B. Verification of Operational Status	Not applicable. Monitoring approach uses existing equipment.
C. QA/QC Practices and Criteria	Daily zero and calibration drift check, periodic cleaning of optical surfaces and other periodic QA/QC checks as specified in the applicable version of Performance Specification 1.
D. Monitoring Frequency	Continuous.
Data Collection Procedures	The COMS collects a data point every 10 seconds and reduces the data to one-hour and three-hour block averages.
Averaging Period	Three-hour block average for an excursion. One-hour block average for corrective action.

TABLE 3-3
CORRECTIVE ACTION PROCEDURES SUMMARY

		Description
I.	Initiation of Corrective Action Procedures	Corrective action shall be initiated when a one-hour opacity average exceeds 20%. The plant staff that made the discovery shall immediately notify the shift supervisor or plant environmental coordinator.
II.	Time of Completion of Corrective Action Procedures	As soon as practically possible.
III.	Corrective Action Description	Corrective action will include ESP inspection, returning tripped ESP sections to service (if possible), evaluation of the ash removal and rapper system, and, if absolutely necessary, load reduction.

MONITORING APPROACH JUSTIFICATION

I. Background

An 8,871 MM Btu/hr tangentially-fired boiler is operated at this facility. The boiler burns eastern bituminous coal as the primary fuel and No. 2 fuel oil as the start-up fuel. Exhaust gases from the unit are discharged through a single 500 foot stack (FGD stack) or an 800 foot bypass stack. The boiler was constructed in 1966 and is subject to Tennessee Air Pollution Control Regulations (TAPCR), Paragraph 1200-3-6-.02(1) for particulate matter.

Particulate emissions from the boiler are controlled by two ESPs, arranged in a parallel configuration downstream of the air heater. Each box is five fields deep in the direction of gas flow and four fields across with a total of 20 independent electrical fields. The total specific collection area is approximately 566 ft^2/1000 acfm.

The unit is equipped with an existing Continuous Opacity Monitoring System (COMS), with opacity monitors located on each ESP discharge duct. An opacity converter is used to calculate the equivalent stack exit opacity. Currently, there are no monitoring requirements for particulate matter.

II. Rationale for Selection of Performance Indicators

The purpose of this section is to provide technical justification in support of a compliance assurance protocol based on opacity known as 'test and cap'. Under a standard test and cap approach, the relationship of stack opacity to particulate mass concentration is determined at or very near the opacity limit. If the mass concentration is below the permit limit, then two opacity trigger points are set at this level. The first trigger point is the threshold at which corrective action is to be performed. This trigger point indicates that the control device may not be operating properly and action should be taken to restore normal operation. The second trigger point defines an excursion. This trigger point is also set at the opacity limit but has a longer averaging period and causes a reportable event under CAM.

Opacity Monitor Theory of Operation

Opacity monitors operate under a physics principle known as optical extinction. In a basic configuration, a beam of light of a specific wavelength is transmitted across a particulate-laden fluid flow. A receiver at some distance from the transmitter measures the amount of light that is received. Due to reflection and refraction of the light beam by the particles within the fluid, the amount of light reaching the receiver will be less than the beam's initial intensity. This property is referred to as transmittance and is represented by the following equation:

$$T = \frac{I}{I_o}$$

Opacity is related to transmittance by the following equation:

$$O = 1 - T$$

The physics of the opacity meter are based on Lambert's Law, which can be expressed mathematically by the following equation:

$$O = 1 - e^{\frac{-S_{avg} m_{avg} x}{4}}$$

Where: O = opacity of flue gas
S_{avg} = specific surface area of the particles (m^2/g)
m_{avg} = particulate mass concentration (g/Nm^3)
x = optical path length (m)

This equation indicates that as the concentration of particles increases, the opacity will increase because the transmittance of the light beam across the stack is reduced by the additional reflection of the light caused by the greater number of particles. This equation also demonstrates the effect of particle size distribution on opacity. For a given mass concentration, flue gas containing a large number of fine particles will tend to produce higher opacities because the increased amount of fine particles has a larger specific surface area and causes greater reflection of the light beam.

The particle size distribution and specific surface area of the particles will remain relatively similar for a coal-fired boiler operating under normal load that is equipped with an ESP. This is particularly true of units that consistently burn similar coal, such as Bull Run. This means that any change in opacity, as a first-order approximation, will be directly proportional to the mass concentration.1 Therefore, while opacity is not a direct measurement of particulate mass, it can be used as a surrogate. If opacity is increasing, it can be reasonably expected that the particulate mass concentration is also increasing.

Developing an accurate correlation between opacity and particulate mass emissions over the entire spectrum of operating conditions is difficult, if not impossible, because of the variability in the process factors that affect the particle properties and size distribution. For CAM, however, it is sufficient that the indicator and emission rate are related so as to provide a reasonable assurance of compliance at normal operating conditions. The test and cap approach meets this requirement. Furthermore, the use of opacity as a CAM indicator for particulate mass is considered presumptively acceptable under §64.3(d). The existing COMS at Bull Run meets the requirements of §64.3(d)(2)(ii) under 40 CFR 60, Appendix B, Performance Specification 1.

III. Rationale for Selection of Indicator Ranges

The selected indicator range for the unit is 20 percent opacity. An excursion, for the purposes of CAM compliance, is defined as a three-hour opacity average of 20% or higher, excluding startup/shutdown and malfunction events. While the existing permit limit does not define an averaging period for CAM compliance, the three-hour averaging

1 Parker, K.R., Applied Electrostatic Precipitation

period was selected based on the time interval required to conduct a compliance test using EPA Reference Method 17. Corrective action will be initiated on a one-hour average basis as described in Table 2, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All three-hour average excursions will be documented and reported. One-hour averages that initiate corrective action do not have to be reported.

Verification of Opacity/Mass Relationships

In order to validate these assumptions, particulate mass emissions were measured in the ESP outlet ductwork under several operating scenarios. The objective of the testing was to derive the stack opacity/mass relationship the unit. Additional details on the results of the particulate testing can be found in the final test report2. The test program was designed to simulate boiler and ESP operation under the normal or "baseline" operating condition and under a condition that represents the most likely scenario for control device failure.

Each test consisted of three runs using EPA Reference Method 17. One test was conducted at the baseline condition and two tests were conducted to simulate varying degrees of control device failure. The most common types of ESP failure (or cause of reduced performance) are either grounded fields or close clearances. In order to simulate these conditions, the ESP was "de-tuned" by reducing and/or eliminating power to selected portions of the precipitator. This effectively increases the particulate mass loading and opacity at the exit of the precipitator. These "de-tuned" tests included a "high-level" test, where the stack opacity was close to the 20% limit, and a "mid-level" test where the stack opacity is approximately halfway between the high-level test and the normal operating opacity.

For each test, the boiler was operated at normal, full load. This represents the highest level of particulate mass emissions and will produce conservative indicator ranges under the proposed CAM monitoring approach. Boiler and ESP operating data were also taken to demonstrate stable, normal load operation during each test.

2 *TVA Bull Run Power Plant Compliance Assurance Monitoring Electrostatic Precipitator Performance Testing, Summary of Findings*, RMB Consulting & Research, 7/7/03.

Unit 1 Results

Table 3-4 shows a summary of the test results for Bull Run Unit 1. For the baseline condition, the data show stack opacity of 5% and a particulate emissions rate of 0.011 lb/MM Btu. This suggests that Unit 1 normally operates at less than 15% of its particulate mass emissions during normal operation.

TABLE 3-4
BULL RUN UNIT 1 CAM TEST RESULTS

Test Condition	Stack Opacity [%]	Particulate Mass Emissions [lb/MM Btu]
Baseline	5	0.011
ESP "De-tuned" (Mid)	13	0.023
ESP "De-tuned" (High)	18	0.036

For the "de-tuned" tests, the boiler was operating under steady, normal load and the ESP power levels where reduced to simulate control device failure. For the "mid-level" condition, the data show stack opacity of 13% and a particulate mass emissions rate of 0.023 lb/MM Btu. For the "high-level" condition, the data show stack opacity of 18% and a particulate mass emissions rate of 0.036 lb/MM Btu. The data suggest that under a "worst-case" scenario, where the opacity is very near the opacity limit, that the particulate mass emissions are only 40% of the mass emissions limit.

Unit 1 Stack Opacity/Mass Correlation

Figure 3-2 shows a graph of the stack opacity/mass relationship for Unit 1 including the baseline and de-tuned operating conditions. Based on a four-point linear regression, the predicted mass emissions rate at 20% opacity is 0.039 lb/MM Btu.

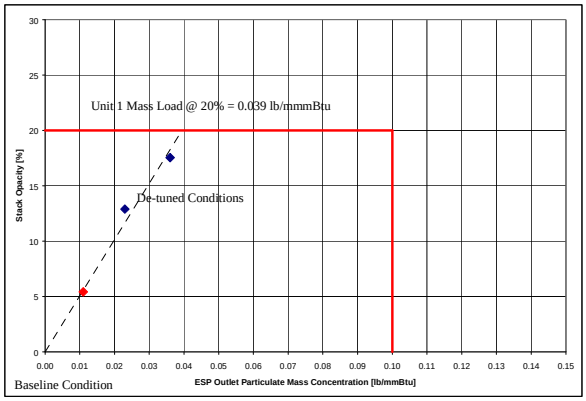

FIGURE 3-2
BULL RUN UNIT 1 OPACITY/MASS CORRELATION

Monitoring Approach Validity

Under §64.3(d)(3)(ii), the existing opacity limit may be used as the appropriate indicator range provided it meets the general design criteria outlined in §64.3(a). The test data show that the opacity/mass correlation supports the proposed test and cap approach using the stack opacity as the primary indicator with a trigger level of 20 percent for both corrective action and excursions. The opacity/mass correlation predicted mass emissions that were below the mass limit of the unit at 20 percent opacity. This suggests that the selected indicator and indicator range meet the general design criteria outlined in §64.3(a) of the CAM Rule and will be sufficient to demonstrate a reasonable assurance of compliance with the particulate mass emissions limit.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY STACK TESTING

THE PERFORMANCE OF AN APPROPRIATE EPA STACK TEST METHOD FOR DEMONSTRATING COMPLIANCE WITH AN EMISSION LIMITATION HAS ALWAYS BEEN ACCEPTABLE. EPA TEST METHODS CONTAIN QUALITY ASSURANCE PROCEDURES THAT SHALL BE STRICTLY ADHERED TO BY THE SOURCE.

1. FACILITY NAME:

Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Stack 1 (FGD) or Stack 1A (FGD Bypass) – Duct 1A and 1B

3. EMISSION SOURCE (IDENTIFY):

Boiler Unit 1

4. POLLUTANT(S) BEING MONITORED:

Particulates

5. TEST METHOD:
Particulate testing will be performed in accordance with specifications for source sampling given in TAPCR Chapter 1200-3-12 on an annual basis for filterable particulate beginning in 2011 (for condensable particulate beginning in 2011 and for 3 consecutive years thereafter). The continuous in-stack opacity monitor will be fully operational prior to and during the compliance test.

6. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Testing will be performed on an annual basis (testing in 2011). The results will be reported no more than 45 days after stack testing is completed.

7. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority – Bull Run Fossil Plant	Stack 1 (FGD) or Stack 1A (FGD Bypass)

3. EMISSION SOURCE (IDENTIFY):

Boiler Unit 1

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Daily consumption of amounts of used oil and nonhazardous solvents burned

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:

Daily consumption of amounts of used oil and nonhazardous solvents burned

6. METHOD OF MONITORING AND RECORDING:

Daily consumption of the amounts of used oil and nonhazardous solvents, oil contaminated media, oil contaminated soil, and absorbent material used to clean up oil spills burned in the boiler.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Daily consumption records for amounts of used oil and nonhazardous solvents burned in the boiler shall be maintained at the facility and shall be available for inspection by the Technical Secretary or his representative.

8. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 3-5. TOTAL CONDENSABLE PM EMISSION FACTORS*

Equipment Type	Emission Factor (lb/10^6 Btu) vs. coal sulfur (S) content (%)	
	Coal S <= 0.4% by weight	Coal S > 0.4% by weight
PC Blr w/o FGD	0.01	=0.1*S-0.03
PC Blr w/ FGD	0.02	0.02
Cyclone Blr w/o FGD	0.01	=0.1*S-0.03
Cyclone Blr w/ FGD	0.02	0.02
AFBC Blr	0.02	0.02

TABLE 3-6. CONDENSABLE PARTICULATE MATTER CHEMICAL SPECIATION*

Equipment Type	Inorganic CPM (CPM-IOR), % of CPM-TOT	Organic CPM (CPM-ORG), % of CPM-TOT
PC Blr w/o FGD	80	20
PC Blr w/ FGD	ND, assume same as above	ND, assume same as above
Cyclone Blr w/o FGD	80	20
Cyclone Blr w/ FGD	ND, assume same as above	ND, assume same as above

*Reference: US EPA, Compilation of Air Pollutant Emission Factors (AP-42),
Vol. I, 5th Edition, Supplement E, Section 1.1, Table 1.1-5, Sept. 98.

TABLE 3-7. UNCONTROLLED DRY-BOTTOM TANGENTIAL PC BOILER EMISSION FACTORS (AS-FIRED BASIS)*

Coal Type	Nitrogen Oxides (NOx) as NO2, lb/(ton coal)	Sulfur Oxides (SOx) as SO2, lb/(ton coal*%S)	Carbon Monoxide (CO), lb/(ton coal)	VOC, lb/ton
Bituminous	15	38	0.5	0.06
Subbituminous	8.4	35	0.5	0.06

*Reference: US EPA, Compilation of Air Pollutant Emission Factors (AP-42), Vol. I, 5th Edition, Supplement E, Section 1.1, "Bituminous and Subbituminous Coal Combustion," Tables 1.1-3 and 1.1-19, Sept. 98. Volatile-organic-compound (VOC) emission factor given above is the nominal total non-methane organic compounds (TNMOC) emission factor in Table 1.1-19 for dry-bottom tangentially-fired pulverized-coal (PC)-fired boilers.

TABLE 3-8. PARTICULATE-MATTER (PM) PARTICLE-SIZE DISTRIBUTION FOR DRY-BOTTOM PULVERIZED-COAL (PC) BOILERS BURNING BITUM/SUBBIT COAL*

Particle Size (Aerodynamic Equiv. Diameter), Micrometers	PM Cumulative Size Distribution, Cumulative Mass % < Stated Size		
	Uncontrolled	Electrostatic Precipitator (ESP)	Scrubber
10	23	67	71
6	17	50	62
2.5	6	29	51
1.25	2	17	35
1	2	14	31
0.625	1	12	20

*Reference: US EPA, Compilation of Air Pollutant Emission Factors (AP-42), Vol. I, 5th Edition, Supplement E, Section 1.1, Table 1.1-6, Sept. 98.

TABLE 3-9
PARAMETERS FOR ESTIMATING PARTICULATE TRACE ELEMENT HAP EMISSION FACTORS FOR COAL-FIRED BOILERS

Element	Regression Equation for Median Emissions, lb/10^{12}Btu
Antimony (Sb)	$(0.92)\ x^{0.63}$
Arsenic (As)	$(3.1)\ x^{0.85}$
Beryllium (Be)	$(1.2)\ x^{1.1}$
Cadmium (Cd)	$(3.3)\ x^{0.5}$
Chromium (Cr)	$(3.7)\ x^{0.58}$
Cobalt (Co)	$(1.7)\ x^{0.69}$
Lead (Pb)	$(3.4)\ x^{0.80}$
Manganese (Mn)	$(3.8)\ x^{0.60}$
Nickel (Ni)	$(4.4)\ x^{0.48}$

x = Coal ppm/ash fraction × PM.

PM = Total particulate matter emission (lb PM/10^6 Btu).

Reference: Emission Factors Handbook: Guidelines for Estimating Trace Substance Emissions from Fossil Fuel Steam Electric Plants, EPRI Report No. TR-105611, November 1995, updated April 2002.

TABLE 3-10. PISCES DATABASE ELEMENTAL ANALYSES FOR APPALACHIAN BASIN BITUMINOUS COAL*

		Summary Statistics, mg/kg (dry basis)						Number of	
Chemical Substance	CAS Number	Median	Average (x)	Std. Dev. (s)	Maximum Detected	Minimum Detected	x+3s	Data Points	Non-Detects
Antimony (Sb)	7440360	0.9	1.1	1.4	12	0.05	5.3	99	31
Arsenic (As)	7440382	8.2	12	11	66	0.7	45	171	4
Barium (Ba)	7440393	76	89	63	294	5.7	278	112	0
Beryllium (Be)	7440417	1.1	4.7	40	462	0.07	124.7	134	6
Cadmium (Cd)	7440439	0.2	0.87	1.7	10	0.02	5.97	139	39
Chlorine (Cl)	16887006	946	945	534	11000	9	2547	18648	75
Chromium (Cr)	7440473	14	15	8.6	60	0.47	40.8	161	0
Cobalt (Co)	7440484	5.9	5.8	3.4	19	0.99	16	78	10
Copper (Cu)	7440508	18	20	15	160	1.2	65	142	10
Fluorine (F)	39339850	73	77	48	330	36	221	54	9
Lead (Pb)	7439921	7.5	17	61	590	0.04	200	169	7
Manganese (Mn)	7439965	19	25	26	248	0.55	103	142	0
Mercury (Hg)	7439976	0.1	0.13	0.094	1.3	0.005	0.412	18652	41
Molybdenum (Mo)	7439987	3.6	4.7	4.4	18	0.6	17.9	54	19
Nickel (Ni)	7440020	12	15	9	46	1	42	143	6
Selenium (Se)	7782492	3	3.6	3.6	29	0.01	14.4	166	8
Silver (Ag)	7440224	0.21	0.28	0.33	2	0.01	1.27	66	34
Sulfur (S)	7704349	17500	20524	10064	62500	5000	50716	167	0
Thallium (Tl)	7440280	0.55	0.84	0.84	3.1	0.84	3.36	41	34
Vanadium (V)	7440622	27	30	18	155	1.4	84	128	0
Zinc (Zn)	7440666	18	27	34	280	1.7	129	138	3

Source: EPRI PISCES Database (version 2005a), except mercury and chlorine (EPA ICR Part II coal database, May 2000)

Notes: The concentrations presented in the tables were calculated using one half of the detection limits for all nondetected values.
Nondetected values (represented by one half the detection limit) greater than two times the highest detected concentration were removed from the data set before statistics were calculated.

All data that are designated as "poor" or "unacceptable" quality in the PISCES Database were excluded from all calculations.
All "unknown" quality data were included in the calculations.

Chlorine and fluorine concentrations measured in the coal and fuel oil analyses are normally reported as chloride and fluoride.
However, because the forms of these elements present in the fuels are not known, the elemental designations of fluorine and chlorine have been used in reporting the concentrations in the tables.

Coal analyses are for "as-fired" or "as-received" coals and are presented on a dry weight basis.

Table was updated in 2005 to exclude coal/pet coke blends.

*Reference: EPRI TRI for Power Plants (TRIPP) Emission Model, RY2011 Version 1.0, 4-2012 (EPRI 1023789).

TABLE 3-11. PISCES DATABASE ELEMENTAL ANALYSES FOR ILLINOIS BASIN BITUMINOUS COAL*

		Summary Statistics, mg/kg (dry basis)						Number of	
Chemical	CAS		Average	Std. Dev.	Maximum	Minimum		Data	Non-
Substance	Number	Median	(x)	(s)	Detected	Detected	x+3s	Points	Detects
Antimony (Sb)	7440360	2	4.3	9.6	49	0.5	33.1	50	4
Arsenic (As)	7440382	11	12	9.7	45	1.6	41.1	67	2
Barium (Ba)	7440393	48	115	429	3400	16	1402	61	0
Beryllium (Be)	7440417	2	2.1	1	4.9	0.3	5.1	58	3
Cadmium (Cd)	7440439	0.5	8.8	23	114	0.14	77.8	66	13
Chlorine (Cl)	16887006	922	1238	1208	9767	40	4862	4922	84
Chromium (Cr)	7440473	16	21	18	150	5.8	75	67	0
Cobalt (Co)	7440484	3.7	5.9	6.7	36	1.4	26	50	5
Copper (Cu)	7440508	13	18	17	100	5.2	69	50	0
Fluorine (F)	39339850	92	75	45	163	10	210	53	7
Lead (Pb)	7439921	14	15	10	46	1.3	45	67	5
Manganese (Mn)	7439965	29	32	12	55	14	68	62	0
Mercury (Hg)	7439976	0.08	0.084	0.041	1.1	0.007	0.207	4922	47
Molybdenum (Mo)	7439987	5.9	9.4	9	47	1.4	36.4	37	0
Nickel (Ni)	7440020	19	26	21	150	4.2	89	62	2
Selenium (Se)	7782492	1.7	2.1	1.5	5.5	0.31	6.6	67	15
Silver (Ag)	7440224	0.06	0.088	0.061	0.15	0.02	0.271	20	10
Sulfur (S)	7704349	31200	28064	9694	51000	5100	57146	93	0
Thallium (Tl)	7440280	5.6	4.7	1.9	6.4	4.2	10.4	19	3
Vanadium (V)	7440622	36	42	16	78	20	90	56	0
Zinc (Zn)	7440666	51	68	53	250	18	227	43	1

Source: EPRI PISCES Database (version 2005a), except mercury and chlorine (EPA ICR Part II coal database, May 2000)

Notes: The concentrations presented in the tables were calculated using one half of the detection limits for all nondetected values.
Nondetected values (represented by one half the detection limit) greater than two times the highest detected concentration were removed from the data set before statistics were calculated.

All data that are designated as "poor" or "unacceptable" quality in the PISCES Database were excluded from all calculations.
All "unknown" quality data were included in the calculations.

Chlorine and fluorine concentrations measured in the coal and fuel oil analyses are normally reported as chloride and fluoride.
However, because the forms of these elements present in the fuels are not known, the elemental designations of fluorine and chlorine have been used in reporting the concentrations in the tables.

Coal analyses are for "as-fired" or "as-received" coals and are presented on a dry weight basis.

Table was updated in 2005 with new coal data.

*Reference: EPRI TRI for Power Plants (TRIPP) Emission Model, RY2011 Version 1.0, 4-2012 (EPRI 1023789).

TABLE 3-12. PISCES DATABASE ELEMENTAL ANALYSES FOR UINTA BASIN (ROCKY MTN) BITUMINOUS COAL*

		Summary Statistics, mg/kg (dry basis)						Number of	
Chemical Substance	CAS Number	Median	Average (x)	Std. Dev. (s)	Maximum Detected	Minimum Detected	x+3s	Data Points	Non-Detects
Antimony (Sb)	7440360	0.16	0.26	0.19	0.57	0.027	0.83	13	5
Arsenic (As)	7440382	0.83	0.95	0.67	3.1	0.21	2.96	22	0
Barium (Ba)	7440393	308	244	142	525	62	670	24	0
Beryllium (Be)	7440417	0.44	0.47	0.34	1.4	0.12	1.49	21	3
Cadmium (Cd)	7440439	0.20	0.32	0.31	1.1	0.06	1.25	21	6
Chlorine (Cl)	16887006	60	183	227	2066	7	864	1736	704
Chromium (Cr)	7440473	5.3	7.7	7.9	26	0.8	31.4	24	0
Cobalt (Co)	7440484	1.0	1.2	0.48	2.1	0.73	2.64	19	1
Copper (Cu)	7440508	4.5	5.5	2.6	9.7	2.7	13.3	21	1
Fluorine (F)	39339850	80	71	52	149	0.038	227	17	0
Lead (Pb)	7439921	2.8	4.9	5.8	30	1.1	22.3	24	1
Manganese (Mn)	7439965	13	11	5.9	21	3.4	28.7	21	0
Mercury (Hg)	7439976	0.040	0.046	0.032	0.8	0.0034	0.142	1736	20
Molybdenum (Mo)	7439987	0.70	0.99	1.1	5	0.2	4.29	18	3
Nickel (Ni)	7440020	2.7	3.3	2.4	7.5	0.4	10.5	21	2
Selenium (Se)	7782492	1.2	2	2.5	12	0.75	9.5	22	0
Silver (Ag)	7440224	0.049	0.16	0.21	0.25	0.0067	0.79	13	5
Sulfur (S)	7704349	5000	5450	1610	9100	2900	10280	35	0
Thallium (Tl)	7440280	0.50	0.61	0.3	1.3	0.19	1.51	12	3
Vanadium (V)	7440622	7.7	11	7.9	27	2.6	34.7	21	0
Zinc (Zn)	7440666	9.2	9	5.7	19	2	26.1	15	0

Source: EPRI PISCES Database (February, 2003), except mercury and chlorine (EPA ICR Part II coal database, May 2000)

Notes: The concentrations presented in the tables were calculated using one half of the detection limits for all nondetected values.
Nondetected values (represented by one half the detection limit) greater than two times the highest detected concentration were removed from the data set before statistics were calculated.

All data that are designated as "poor" or "unacceptable" quality in the PISCES Database were excluded from all calculations.
All "unknown" quality data were included in the calculations.

Chlorine and fluorine concentrations measured in the coal and fuel oil analyses are normally reported as chloride and fluoride.
However, because the forms of these elements present in the fuels are not known, the elemental designations of fluorine and chlorine have been used in reporting the concentrations in the tables.

Coal analyses are for "as-fired" or "as-received" coals and are presented on a dry weight basis.

*Reference: EPRI TRI for Power Plants (TRIPP) Emission Model, RY2011 Version 1.0, 4-2012 (EPRI 1023789).

TABLE 3-13. EPRI EFH RECOMMENDED EMISSION FACTORS* (AS % OF COAL INPUT)					
Coal Type/Contrl Sys	Pollutant				Control
(Se, HCl, HF)	Se	HCl	HF	Hg	Device (Hg)
Bituminous/non-FGD	55	100	90	**	non-FGD
Lignite/non-FGD	55	100	90	**	FGD
Subbituminous	3	20	50		
Bitum or Lignite/FGD	12	3	6		

*Reference: Emission Factors Handbook (EFH) Guidelines for Estimating Trace Substance Emissions from Fossil Fuel Steam Electric Plants, Electric Power Research Institute (EPRI), EPRI TR-105611, 11-95, as updated in 9-98 & 2-01 EFH Addenda and in the Apr. 2002 EFH revision.

**Apr. 02 EFH Revision predicts Hg removal using correlation equations developed from 1999 ICR stack-test program results. Hg removal varies with chloride content of coal. Different correlation equations are listed for various types of air-pollution control equipment.

Note: FGD = flue-gas desulfurization, e.g., limestone scrubber.

TABLE 3-14. ORGANIC HAP EMISSION FACTORS FOR COAL-FIRED BOILERS

Organic HAP (CAS Number)	PISCES Coal-Fired Emission Factor (lb/ 10^12 Btu) Geometric Mean
1,1-Dichloroethane (75343)	8.90E-01
1,2-Dibromoethane (106934)	2.60E+00
1,2,4-Trichlorobenzene (120821)	1.50E+00
1,3-Dichloropropene (542756)	7.20E-01
1,4-Dichlorobenzene (106467)	1.10E+00
2,4-Dinitrotoluene (121142)	2.00E-01
3-Chloropropylene (107051)	9.10E+00
4-Methyl-2-pentanone (108101)	2.30E+00
4-Methylphenol (106445)	1.10E+00
Acetaldehyde (75070)	3.20E+00
Acetophenone (98862)	1.20E+00
Acrolein (107028)	1.90E+00
Benzene (71432)	3.90E+00
Benzyl chloride (100447)	2.80E-01
Biphenyl (92524)	1.60E-01
bis(2-Ethylhexyl)phthalate (117817)	3.60E+00
Bromomethane (74839)	8.90E-01
Carbon disulfide (75150)	1.10E+00
Chlorobenzene (108907)	1.60E-01
Chloroethane (75003)	5.30E-01
Chloroform (67663)	8.00E-01
Chloromethane (74873)	1.10E+00
Dibenzofuran (132649)	5.80E-01
Dibutylphthalate (84742)	1.10E-01
Dimethylphthalate (131113)	9.00E-02
Ethyl benzene (100414)	8.00E-01
Formaldehyde (50000)	2.60E+00
n-Hexane (110543)	4.90E-01
Hexachlorobenzene (118741)	4.10E-03
Iodomethane (74884)	2.00E+00
Isophorone (78591)	1.20E+00
Methyl chloroform (71556)	6.10E-01
Methyl methacrylate (80626)	1.10E+00
Methylene chloride (75092)	2.70E+00
Naphthalene (91203)	6.20E-01
Phenol (108952)	3.30E+00
Polychlorinated biphenyl [PCB] (1336363)	1.50E-02
Propionaldehyde (123386)	1.90E+00
Styrene (100425)	7.00E-01
Tetrachloroethylene (127184)	4.20E-01
Toluene (108883)	1.70E+00
Vinyl acetate (108054)	3.10E-01
Vinyl chloride (75014)	7.30E-01
Xylenes (1330207)	1.26E+00
Polycyclic organic matter (POM)	1.32E+00
2,3,7,8-Tetrachlorodibenzo-p-dioxin (1746-01-6)	3.90E-07
Organic HAP Total	6.29E+01

Source: Emission Factor Handbook: Guidelines for Estimating Trace Substance Emissions from Fossil Fuel Steam Electric Plants, EPRI Report # TR-195611, 11/95. updated 1998, 2001, 2002, 2005, and 2019

TABLE 3-15
RADIONUCLIDE EMISSION FACTORS FOR COAL-FIRED BOILERS

Isotope	Emission Factor, 10^{-12} Curie per gram of emitted fly ash	
	Geometric Mean	**95% - CI Emission Factor**
Pb^{210}	10	23
Po^{210}	15	20
Ra^{226}	1.0	3.4
Ra^{228}	<0.5	<0.5
Th^{228}	3.6	6
Th^{230}	6.2	13
Th^{232}	3.8	6.4
U^{234}	7	80
U^{235}	<0.3	<0.3
U^{238}	5.7	7.9
Total	53.1	160.5

Reference : Emission Factors Handbook: Guidelines for Estimating Trace Substance Emissions from Fossil Fuel Steam Electric Plants, Electric Power Research Institute (EPRI) Report No. TR-105611, November 1995, as updated on 9/98 and 2/01 EFH Addenda and in the April 2002 revision.

TABLE 3-16			
BRF BOILER LIGHTOFF-OIL EMISSION FACTORS*			
Criteria/Non-HAP Pollutants	lb/10^3 gal		
Filterable particulate matter (PM_fil)	2		
PM < 10-micrometer aero. diam. (PM10_fil)	1		
PM < 2.5-micrometer aero. diam. (PM2.5_fil)	0.25		
Condensable PM (PM_cond)	1.3		
Sulfur dioxide (SO2)	142 × %S		
Nitrogen oxides (NOx)	24		
Carbon monoxide (CO)	5		
Volatile organic compounds (VOC)	0.2		
Sulfur trioxide (SO3)	5.7 × %S		
%S = weight % sulfur in fuel oil			
Assume all SO3 is converted to H2SO4.			
	lb/10^6 Btu		
Carbon Dioxide Equivalent	163.6		
Trace Element	lb/10^12 Btu		
Antimony (Sb)	22		
Arsenic (As)	4		
Beryllium (Be)	3		
Cadmium (Cd)	3		
Chromium (Cr)	3		
Cobalt (Co)	9.1		
Lead (Pb)	9		
Manganese (Mn)	6		
Nickel (Ni)	3		
Hydrogen chloride (HCl)**	311		
Mercury (Hg)	3		
Selenium (Se)	15		
Organic HAP (CAS Number)	lb/10^3 gal		
Formaldehyde (50000)	0.061		
Polycyclic organic matter (POM)	0.0033		
*Reference: US EPA's Compilation of Air Pollutant Emission Factors (AP-42), Vol. I,			
5th Edition, Supplement E, 9-98 (Section 1.3, "Fuel Oil Combustion"); also,			
(for Sb, Ba, Co, Mo, and V) AP-42, Vol. I, 5th Edition, Supplement B, 10-96			
(Section 3.1, "Stationary Gas Turbines for Electricity Generation").			
** HCl based on maximum TVA fuel oil specifications.			

TABLE 3-17. JULY 2011 - JUNE 2012 BURNING COAL IN UNIT 1 EMISSION ESTIMATES

		Appalachian Basin			Illinois Basin			Uinta Basin			total				
		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF	control		
		lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	efficiency, %	tpy	lb/hr
Maximum Boiler Heat Input, 10^12 Btu/hr	0.008871														
Annual Heat Input from Appalachian Coal, 10^12 Btu/yr	12.41														
Annual Heat Input from Illinois Coal, 10^12 Btu/yr	0.79														
Annual Heat Input from Uinta Coal, 10^12 Btu/yr	1.62														
Average Ash, %	9.54														
Average Heat Content, Btu/lb	12,360														
Criteria/Non-HAP Pollutants															
Filterable particulate matter (PM_fil)			4,000	24.8		4,000	1.57		4,000	3.25	6,946,938	4,000	99.94	29.6	35.5
PM < 10-micrometer aero. diam. (PM10_fil)			2,680	16.6		2,680	1.05		2,680	2.18	1,597,796	2,680	99.83	19.9	23.8
PM < 2.5-micrometer aero. diam. (PM2.5_fil)			1,160	7.20		1,160	0.456		1,160	0.942	416,816	1,160	99.72	8.60	10.3
Condensable PM (PM_cond)			7,187	44.6		9,903	3.90		4,205	3.42	38,743	7,004	81.92	51.9	62.1
Sulfur dioxide (SO2)	CEMs	1,396,947	45,066	280	2,062,706	66,543	26.2	1,008,303	32,528	26.4	1,389,684	44,831	96.77	332	398
Nitrogen oxides (NOx)	CEMs	599,377	70,405	437	651,381	76,514	30.1	641,958	75,407	61.3	606,807	71,278	88.25	528	632
Carbon monoxide (CO)			19,979	124		21,713	8.54		21,399	17.4	20,227	20,227	0.00	150	179
Volatile organic compounds (VOC)			2,398	14.9		2,606	1.03		2,568	2.09	2,427	2,427	0.00	18.0	21.5
Sulfuric acid (SO3/H2SO4) as H2SO4			3187	19.8		5,903	2.32		205	0.166	34,742	3,004	91.35	22.3	26.6
Carbon Dioxide Equivalent			207,051,297	1,284,481		207,051,297	81,463		207,051,297	168,218	207,051,297	207,051,297	0.00	1,534,162	1,836,752
PM Trace-Element HAP															
Antimony (Sb)			1.09E-01	6.75E-04		2.10E-01	8.27E-05		4.25E-02	3.45E-05	65.7	0.107	99.84	7.93E-04	9.49E-04
Arsenic (As)			1.14E+00	7.07E-03		1.80E+00	7.09E-04		1.98E-01	1.61E-04	565	1.07	99.81	7.94E-03	9.50E-03
Beryllium (Be)			3.60E-02	2.24E-04		9.11E-02	3.59E-05		1.70E-02	1.38E-05	80.6	0.0369	99.95	2.73E-04	3.27E-04
Cadmium (Cd)			2.86E-01	1.77E-03		5.11E-01	2.01E-04		3.21E-01	2.61E-04	16.2	0.302	98.14	2.24E-03	2.68E-03
Chromium (Cr)			2.55E+00	1.58E-02		3.17E+00	1.25E-03		1.66E+00	1.35E-03	986	2.48	99.75	1.84E-02	2.20E-02
Cobalt (Co)			6.01E-01	3.73E-03		5.16E-01	2.03E-04		2.07E-01	1.68E-04	393	0.553	99.86	4.10E-03	4.91E-03
Lead (Pb)			1.23E+00	7.65E-03		2.47E+00	9.73E-04		6.76E-01	5.49E-04	549	1.24	99.77	9.18E-03	1.10E-02
Manganese (Mn)			3.10E+00	1.93E-02		4.63E+00	1.82E-03		2.84E+00	2.31E-03	1415	3.16	99.78	2.34E-02	2.80E-02
Nickel (Ni)			3.00E+00	1.86E-02		4.21E+00	1.66E-03		1.64E+00	1.33E-03	850	2.92	99.66	2.16E-02	2.59E-02
Particulate HAP Total			1.21E+01	7.48E-02		1.76E+01	6.93E-03		7.61E+00	6.18E-03	4,920	11.9		8.79E-02	1.05E-01
Gaseous Trace-Element HAP															
Hydrogen chloride (HCl)		66,902	2,007	12.5	145,591	4,368	1.72	6,162	185	0.150	64,420	1,933	97.00	14.3	17.1
Hydrogen fluoride (HF)		5,756	345	2.14	7,220	433	0.170	6,477	389	0.316	5,913	355	94.00	2.63	3.15
Mercury (Hg)		7.49	1.05	6.50E-03	5.96	0.835	3.28E-04	3.08	1.97	1.60E-03	6.92	1.14	83.57	8.43E-03	1.01E-02
Selenium (Se)		225	27.0	0.167	127	15.2	5.98E-03	92.3	11.1	9.00E-03	205	24.6	88.00	0.182	0.218
Non-VOC Gaseous HAP Total		72,890	2,380	14.8	152,944	4,817	1.90	12,735	587	0.477	70,545	2,313		17.1	20.5
Organic HAP (CAS Number)															
1,1-Dichloroethane (75343)			8.90E-01	5.52E-03		8.90E-01	3.50E-04		8.90E-01	7.23E-04		8.90E-01	0.00	6.59E-03	7.90E-03
1,2-Dibromoethane (106934)			2.60E+00	1.61E-02		2.60E+00	1.02E-03		2.60E+00	2.11E-03		2.60E+00	0.00	1.93E-02	2.31E-02
1,2,4-Trichlorobenzene (120821)			1.50E+00	9.31E-03		1.50E+00	5.90E-04		1.50E+00	1.22E-03		1.50E+00	0.00	1.11E-02	1.33E-02
1,3-Dichloropropene (542756)			7.20E-01	4.47E-03		7.20E-01	2.83E-04		7.20E-01	5.85E-04		7.20E-01	0.00	5.33E-03	6.39E-03
1,4-Dichlorobenzene (106467)			1.10E+00	6.82E-03		1.10E+00	4.33E-04		1.10E+00	8.94E-04		1.10E+00	0.00	8.15E-03	9.76E-03
2,4-Dinitrotoluene (121142)			2.00E-01	1.24E-03		2.00E-01	7.87E-05		2.00E-01	1.62E-04		2.00E-01	0.00	1.48E-03	1.77E-03
3-Chloropropylene (107051)			9.10E+00	5.65E-02		9.10E+00	3.58E-03		9.10E+00	7.39E-03		9.10E+00	0.00	6.74E-02	8.07E-02
4-Methyl-2-pentanone (108101)			2.30E+00	1.43E-02		2.30E+00	9.05E-04		2.30E+00	1.87E-03		2.30E+00	0.00	1.70E-02	2.04E-02
4-Methylphenol (106445)			1.10E+00	6.82E-03		1.10E+00	4.33E-04		1.10E+00	8.94E-04		1.10E+00	0.00	8.15E-03	9.76E-03

TABLE 3-17. JULY 2011 - JUNE 2012 BURNING COAL IN UNIT 1 EMISSION ESTIMATES

Maximum Boiler Heat Input, 10^12 Btu/hr	0.008871															
Annual Heat Input from Appalachian Coal, 10^12 Btu/yr	12.41															
Annual Heat Input from Illinois Coal, 10^12 Btu/yr	0.79															
Annual Heat Input from Uinta Coal, 10^12 Btu/yr	1.62															
Average Ash, %	9.54															
Average Heat Content, Btu/lb	12,360															
		Appalachian Basin			Illinois Basin			Uinta Basin			total					
		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF		uncontrolled EF	controlled EF	control			
		lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	tpy	lb/10^12 Btu	lb/10^12 Btu	efficiency, %	tpy	lb/hr	
Acetaldehyde (75070)			3.20E+00	1.99E-02		3.20E+00	1.26E-03		3.20E+00	2.60E-03		3.20E+00	0.00	2.37E-02	2.84E-02	
Acetophenone (98862)			1.20E+00	7.44E-03		1.20E+00	4.72E-04		1.20E+00	9.75E-04		1.20E+00	0.00	8.89E-03	1.06E-02	
Acrolein (107028)			1.90E+00	1.18E-02		1.90E+00	7.48E-04		1.90E+00	1.54E-03		1.90E+00	0.00	1.41E-02	1.69E-02	
Benzene (71432)			3.90E+00	2.42E-02		3.90E+00	1.53E-03		3.90E+00	3.17E-03		3.90E+00	0.00	2.89E-02	3.46E-02	
Benzyl chloride (100447)			2.80E-01	1.74E-03		2.80E-01	1.10E-04		2.80E-01	2.27E-04		2.80E-01	0.00	2.07E-03	2.48E-03	
Biphenyl (92524)			1.60E-01	9.93E-04		1.60E-01	6.30E-05		1.60E-01	1.30E-04		1.60E-01	0.00	1.19E-03	1.42E-03	
bis(2-Ethylhexyl)phthalate (117817)			3.60E+00	2.23E-02		3.60E+00	1.42E-03		3.60E+00	2.92E-03		3.60E+00	0.00	2.67E-02	3.19E-02	
Bromomethane (74839)			8.90E-01	5.52E-03		8.90E-01	3.50E-04		8.90E-01	7.23E-04		8.90E-01	0.00	6.59E-03	7.90E-03	
Carbon disulfide (75150)			1.10E+00	6.82E-03		1.10E+00	4.33E-04		1.10E+00	8.94E-04		1.10E+00	0.00	8.15E-03	9.76E-03	
Chlorobenzene (108907)			1.60E-01	9.93E-04		1.60E-01	6.30E-05		1.60E-01	1.30E-04		1.60E-01	0.00	1.19E-03	1.42E-03	
Chloroethane (75003)			5.30E-01	3.29E-03		5.30E-01	2.09E-04		5.30E-01	4.31E-04		5.30E-01	0.00	3.93E-03	4.70E-03	
Chloroform (67663)			8.00E-01	4.96E-03		8.00E-01	3.15E-04		8.00E-01	6.50E-04		8.00E-01	0.00	5.93E-03	7.10E-03	
Chloromethane (74873)			1.10E+00	6.82E-03		1.10E+00	4.33E-04		1.10E+00	8.94E-04		1.10E+00	0.00	8.15E-03	9.76E-03	
Dibenzofuran (132649)			5.80E-01	3.60E-03		5.80E-01	2.28E-04		5.80E-01	4.71E-04		5.80E-01	0.00	4.30E-03	5.15E-03	
Dibutylphthalate (84742)			1.10E-01	6.82E-04		1.10E-01	4.33E-05		1.10E-01	8.94E-05		1.10E-01	0.00	8.15E-04	9.76E-04	
Dimethylphthalate (131113)			9.00E-02	5.58E-04		9.00E-02	3.54E-05		9.00E-02	7.31E-05		9.00E-02	0.00	6.67E-04	7.98E-04	
Ethyl benzene (100414)			8.00E-01	4.96E-03		8.00E-01	3.15E-04		8.00E-01	6.50E-04		8.00E-01	0.00	5.93E-03	7.10E-03	
Formaldehyde (50000)			2.60E+00	1.61E-02		2.60E+00	1.02E-03		2.60E+00	2.11E-03		2.60E+00	0.00	1.93E-02	2.31E-02	
n-Hexane (110543)			4.90E-01	3.04E-03		4.90E-01	1.93E-04		4.90E-01	3.98E-04		4.90E-01	0.00	3.63E-03	4.35E-03	
Hexachlorobenzene (118741)			4.10E-03	2.54E-05		4.10E-03	1.61E-06		4.10E-03	3.33E-06		4.10E-03	0.00	3.04E-05	3.64E-05	
Iodomethane (74884)			2.00E+00	1.24E-02		2.00E+00	7.87E-04		2.00E+00	1.62E-03		2.00E+00	0.00	1.48E-02	1.77E-02	
Isophorone (78591)			1.20E+00	7.44E-03		1.20E+00	4.72E-04		1.20E+00	9.75E-04		1.20E+00	0.00	8.89E-03	1.06E-02	
Methyl chloroform (71556)			6.10E-01	3.78E-03		6.10E-01	2.40E-04		6.10E-01	4.96E-04		6.10E-01	0.00	4.52E-03	5.41E-03	
Methyl methacrylate (80626)			1.10E+00	6.82E-03		1.10E+00	4.33E-04		1.10E+00	8.94E-04		1.10E+00	0.00	8.15E-03	9.76E-03	
Methylene chloride (75092)			2.70E+00	1.67E-02		2.70E+00	1.06E-03		2.70E+00	2.19E-03		2.70E+00	0.00	2.00E-02	2.40E-02	
Naphthalene (91203)			6.20E-01	3.85E-03		6.20E-01	2.44E-04		6.20E-01	5.04E-04		6.20E-01	0.00	4.59E-03	5.50E-03	
Phenol (108952)			3.30E+00	2.05E-02		3.30E+00	1.30E-03		3.30E+00	2.68E-03		3.30E+00	0.00	2.45E-02	2.93E-02	
Polychlorinated biphenyl [PCB] (1336363)			1.50E-02	9.31E-05		1.50E-02	5.90E-06		1.50E-02	1.22E-05		1.50E-02	0.00	1.11E-04	1.33E-04	
Propionaldehyde (123386)			1.90E+00	1.18E-02		1.90E+00	7.48E-04		1.90E+00	1.54E-03		1.90E+00	0.00	1.41E-02	1.69E-02	
Styrene (100425)			7.00E-01	4.34E-03		7.00E-01	2.75E-04		7.00E-01	5.69E-04		7.00E-01	0.00	5.19E-03	6.21E-03	
Tetrachloroethylene (127184)			4.20E-01	2.61E-03		4.20E-01	1.65E-04		4.20E-01	3.41E-04		4.20E-01	0.00	3.11E-03	3.73E-03	
Toluene (108883)			1.70E+00	1.05E-02		1.70E+00	6.69E-04		1.70E+00	1.38E-03		1.70E+00	0.00	1.26E-02	1.51E-02	
Vinyl acetate (108054)			3.10E-01	1.92E-03		3.10E-01	1.22E-04		3.10E-01	2.52E-04		3.10E-01	0.00	2.30E-03	2.75E-03	
Vinyl chloride (75014)			7.30E-01	4.53E-03		7.30E-01	2.87E-04		7.30E-01	5.93E-04		7.30E-01	0.00	5.41E-03	6.48E-03	
Xylenes (1330207)			1.26E+00	7.82E-03		1.26E+00	4.96E-04		1.26E+00	1.02E-03		1.26E+00	0.00	9.34E-03	1.12E-02	
Polycyclic organic matter (POM)			1.32E+00	8.22E-03		1.32E+00	5.21E-04		1.32E+00	1.08E-03		1.32E+00	0.00	9.82E-03	1.18E-02	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (1746-01-6)			3.90E-07	2.42E-09		3.90E-07	1.53E-10		3.90E-07	3.17E-10		3.90E-07	0.00	2.89E-09	3.46E-09	
VOC HAP Total			6.29E+01	3.90E-01		6.29E+01	2.47E-02		6.29E+01	5.11E-02		3.86E+02	0.00	0.466	0.558	
			Ci/10^12 Btu	Ci/yr		Ci/10^12 Btu	Ci/yr		Ci/10^12 Btu	Ci/yr	Ci/10^12 Btu	Ci/10^12 Btu		Ci/yr	Ci/hr	
Radionuclides			9.63E-05	1.20E-03		9.63E-05	7.58E-05		9.63E-05	1.57E-04	1.67E-01	4.09E-04	99.76	1.43E-03	8.55E-07	

TABLE 3-18			
JULY 2011 - JUNE 2012 BRF BOILER LIGHTOFF-OIL EMISSION ESTIMATES, TON/YR			
		control	BRF1
		efficiency, %	ton/yr
Criteria/Non-HAP Pollutants			
Filterable particulate matter (PM_fil)		60	0.222
PM < 10-micrometer aero. diam. (PM10_fil)		60	0.111
PM < 2.5-micrometer aero. diam. (PM2.5_fil)		60	0.0278
Condensable PM (PM_cond)		81.92	0.0652
Sulfur dioxide (SO2)		96.77	0.0188
Nitrogen oxides (NOx)		0	6.66
Carbon monoxide (CO)		0	1.39
Volatile organic compounds (VOC)		0	0.0555
Sulfuric acid (SO3/H2SO4)		85.2	0.00255
Carbon Dioxide Equivalent		0	6,294
PM Trace-Element HAP			
Antimony (Sb)		60	3.39E-04
Arsenic (As)		60	6.16E-05
Beryllium (Be)		60	4.62E-05
Cadmium (Cd)		60	4.62E-05
Chromium (Cr)		60	4.62E-05
Cobalt (Co)		60	1.40E-04
Lead (Pb)		60	1.38E-04
Manganese (Mn)		60	9.23E-05
Nickel (Ni)		60	4.62E-05
Particulate HAP Total		60	9.56E-04
Hydrogen chloride (HCl)		60	4.78E-03
Mercury (Hg)		60	4.62E-05
Selenium (Se)		60	2.31E-04
Non-VOC Gaseous HAP Total		60	5.06E-03
Organic HAP (CAS Number)			
Formaldehyde (50000)		0	1.69E-02
Polycyclic organic matter (POM)		0	9.16E-04
VOC HAP Total		0	1.78E-02

TABLE 3-19. BOILER EMISSION SUMMARY FOR BULL RUN FOSSIL PLANT			
		light-off	
	coal	oil	total
	BRF1	BRF1	BRF1
	tpy	tpy	tpy
Criteria/Non-HAP Pollutants			
Filterable particulate matter (PM_fil)	29.6	0.222	29.9
PM < 10-micrometer aero. diam. (PM10_fil)	19.9	0.111	20.0
PM < 2.5-micrometer aero. diam. (PM2.5_fil)	8.60	0.0278	8.62
Condensable PM (PM_cond)	51.9	0.0652	52.0
Sulfur dioxide (SO2)	332	0.0188	332
Nitrogen oxides (NOx)	528	6.66	535
Carbon monoxide (CO)	150	1.39	151
Volatile organic compounds (VOC)	18.0	0.0555	18.0
Sulfuric acid (SO3/H2SO4) as H2SO4	22.3	0.00255	22.3
Carbon Dioxide Equivalent	1,534,162	6,294	1,540,456
PM Trace-Element HAP			
Antimony (Sb)	7.93E-04	3.39E-04	1.13E-03
Arsenic (As)	7.94E-03	6.16E-05	8.00E-03
Beryllium (Be)	2.73E-04	4.62E-05	3.19E-04
Cadmium (Cd)	2.24E-03	4.62E-05	2.28E-03
Chromium (Cr)	1.84E-02	4.62E-05	1.85E-02
Cobalt (Co)	4.10E-03	1.40E-04	4.24E-03
Lead (Pb)	9.18E-03	1.38E-04	9.31E-03
Manganese (Mn)	2.34E-02	9.23E-05	2.35E-02
Nickel (Ni)	2.16E-02	4.62E-05	2.17E-02
Particulate HAP Total	8.79E-02	9.56E-04	8.89E-02
Gaseous Trace-Element HAP			
Hydrogen chloride (HCl)	14.3	4.78E-03	14.3
Hydrogen fluoride (HF)	2.63		2.63
Mercury (Hg)	8.43E-03	4.62E-05	8.48E-03
Selenium (Se)	0.182	2.31E-04	0.182
Non-VOC Gaseous HAP Total	17.1	5.06E-03	17.1
VOC HAP Total	0.466	1.78E-02	0.484
	Ci/yr		Ci/yr
Radionuclides	1.43E-03		1.43E-03

DATA AND SAMPLE EMISSION CALCULATIONS FOR COAL EMISSION ESTIMATES AT BULL RUN FOSSIL PLANT

Maximum Allowable Emissions

Applicable emission standards for particulate matter and sulfur dioxide, maximum boiler heat input capacity, and maximum operating schedule were used to determine the maximum allowable emissions.

PM: $\frac{0.03\ lb}{10^6\ Btu} \times \frac{8{,}871 \times 10^6\ Btu}{hr} \times \frac{8{,}760\ hr}{yr} \times \frac{ton}{2{,}000\ lb} = 1{,}166\ ton/yr$ PM

SO_2: $\frac{4.0\ lb}{10^6\ Btu} \times \frac{8{,}871 \times 10^6\ Btu}{hr} \times \frac{8{,}760\ hr}{yr} \times \frac{ton}{2{,}000\ lb} = 155{,}420\ ton/yr$ SO_2

Actual Emissions

To determine actual emissions, the heat input from each type of coal burned in the boiler was multiplied by the controlled emission factors. Filterable particulate matter emissions are based on AY 2012 stack test. Sulfur dioxide and nitrogen oxide emissions are based on AY 2012 CEMs data. Carbon dioxide equivalent emissions were determined from 40 CFR Part 98.

TABLE 3-20. AY 2012 COAL DATA

Appalachian Basin Bituminous Coal, ton/yr	495,779
Illinois Basin Bituminous Coal, ton/yr	34,171
Uinta Basin Bituminous Coal, ton/yr	69,541
Appalachian Basin Coal Heat Content, Btu/lb	12,513
Illinois Basin Coal Heat Content, Btu/lb	11,514
Uinta Basin Coal Heat Content, Btu/lb	11,683
Appalachian Basin Coal Average Sulfur Content, %	0.92
Illinois Basin Coal Average Sulfur Content, %	1.25
Uinta Basin Coal Average Sulfur Content, %	0.62
Appalachian Basin Coal Average Moisture Content, %	6.31
Illinois Basin Coal Average Moisture Content, %	14.19
Uinta Basin Coal Average Moisture Content, %	10.17
Appalachian Basin Coal Average Ash Content, %	9.98
Illinois Basin Coal Average Ash Content, %	7.15
Uinta Basin Coal Average Ash Content, %	7.58
Appalachian Basin Coal Average Chlorine Content, ppm	814
Illinois Basin Coal Average Chlorine Content, ppm	1,630
Uinta Basin Coal Average Chlorine Content, ppm	70

Filterable Particulate

The PM stack test for AY 2012 conducted on July 2011 was 0.004 lb/10^6 Btu.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{12{,}513\ \text{Btu}}{\text{lb}} \times \frac{0.004\ \text{lb}}{10^6\text{Btu}} +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{11{,}514\ \text{Btu}}{\text{lb}} \times \frac{0.004\ \text{lb}}{10^6\text{Btu}} +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{11{,}683\ \text{Btu}}{\text{lb}} \times \frac{0.004\ \text{lb}}{10^6\text{Btu}} =$$

$$24.8 + 1.57 + 3.25 = 29.6\ \text{ton/yr}$$

Filterable Particulate PM 10 and PM 2.5

From Table 3-8, PM 10 is 67% of total PM and PM 2.5 is 29% of total PM.

PM 10 = 29.6 x 0.67 = 19.9 ton/yr

PM 2.5 = 29.6 x 0.29 = 8.60 ton/yr

Condensable Particulate

PM Condensable = Organic fraction of total PM condensable + Sulfuric Acid

From AP-42, for PC boilers with FGD, the organic fraction is 20% of the total PM condensable (Table 3-6) and for coals over 0.4% S, the total PM condensable emission factor is 0.02 lb/10^6 Btu (Table 3-5).

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{12{,}513\ \text{Btu}}{\text{lb}} \times 0.2 \times 0.02\frac{\text{lb}}{10^6\text{Btu}} +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{11{,}514\ \text{Btu}}{\text{lb}} \times 0.2 \times 0.02\frac{\text{lb}}{10^6\text{Btu}} +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{11{,}683\ \text{Btu}}{\text{lb}} \times 0.2 \times 0.02\frac{\text{lb}}{10^6\text{Btu}} =$$

$$24.8 + 1.57 + 3.25 = 29.6\ \text{ton/yr}$$

Unit 1 sulfuric acid emissions = 22.3 ton/yr

PM Condensable = 29.6 + 22.3 = 51.9 ton/yr

The sulfuric acid emissions were estimated from EPRI document, “Estimating Total Sulfuric Acid Emissions from Stationary Power Plants”, Version 2010a, 1020636, Technical Update, April 2010.

Sulfur Dioxide

The total sulfur dioxide emissions based on CEMs data were: Unit 1 – 332 ton/yr

The sulfur dioxide based on coal would be the CEMs data minus the sulfur dioxide emissions from light-off oil added to the boiler.

332 – 0.0188 = 332 ton/yr

Nitrogen Oxides

The total nitrogen oxides emissions based on CEMs data were: Unit 1 – 535 ton/yr

The nitrogen oxides based on coal would be the CEMs data minus the nitrogen oxides emissions from light-off oil added to the boiler.

535 – 6.66 = 528 ton/yr

Carbon Monoxide

The AP-42 uncontrolled emission factor for dry-bottom tangential PC boilers is 0.5 lb/ton.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{0.5\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{0.5\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{0.5\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} =$$

124 + 8.54 + 17.4 = 150 ton/yr

Volatile Organic Compounds

The AP-42 uncontrolled emission factor for dry-bottom tangential PC boilers is 0.06 lb/ton (non-methane total organic compounds).

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{0.06\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{0.06\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{0.06\text{ lb}}{\text{ton}} \times \frac{\text{ton}}{2000\text{ lb}} =$$

14.9 + 1.03 + 2.09 = 18.0 ton/yr

Sulfuric Acid

Unit 1 sulfuric acid emissions = 22.3 ton/yr

The sulfuric acid emissions were estimated from EPRI document, "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants", Version 2010a, 1020636, Technical Update, April 2010.

Carbon Dioxide Equivalent

From 40 CFR Part 98, using default values for bituminous coal.

$$495{,}779\frac{\text{ton}}{\text{yr}}\times\frac{12{,}513\ \text{Btu}}{\text{lb}}\times(93.4+0.001\times21+0.0016\times310)\frac{\text{kg CO}_2\text{e}}{10^6\ \text{Btu}}\times\frac{2.20462\ \text{lb}}{\text{kg}}+$$

$$34{,}171\frac{\text{ton}}{\text{yr}}\times\frac{11{,}514\ \text{Btu}}{\text{lb}}\times(93.4+0.001\times21+0.0016\times310)\frac{\text{kg CO}_2\text{e}}{10^6\ \text{Btu}}\times\frac{2.20462\ \text{lb}}{\text{kg}}+$$

$$69{,}541\frac{\text{ton}}{\text{yr}}\times\frac{11{,}683\ \text{Btu}}{\text{lb}}\times(93.4+0.001\times21+0.0016\times310)\frac{\text{kg CO}_2\text{e}}{10^6\ \text{Btu}}\times\frac{2.20462\ \text{lb}}{\text{kg}}=$$

$$1{,}284{,}481+81{,}463+168{,}218=1{,}534{,}162\ \text{ton/yr}$$

Antimony

The PM trace element HAP emissions are calculated from the Emission Factor Handbook regression equation for median emissions using the median concentrations for each coal from the PISCES database (Tables 3-10, 3-11, and 3-12). For antimony (Table 3-9), the regression equation is 0.92 x (antimony concentration/ash content x total particulate matter emission rate)$^{0.63}$. For Unit 1 the total particulate matter emission rate is 0.004 lb/10^6 Btu. Appalachian coal moisture content = 6.31% and ash content = 9.98%. Illinois coal moisture content = 14.19% and ash content = 7.15%. Uinta coal moisture content = 10.17% and ash content = 7.58%.

$$495{,}779\frac{\text{ton}}{\text{yr}}\times\frac{12{,}513\ \text{Btu}}{\text{lb}}\times0.92\times\left(0.9\times\frac{(1-0.0631)}{0.0998}\times0.004\right)^{0.63}\frac{\text{lb}}{10^{12}\ \text{Btu}}$$

$$+\ 34{,}171\frac{\text{ton}}{\text{yr}}\times\frac{11{,}514\ \text{Btu}}{\text{lb}}\times0.92\times\left(2\times\frac{(1-0.1419)}{0.0715}\times0.004\right)^{0.63}\frac{\text{lb}}{10^{12}\ \text{Btu}}$$

$$+\ 69{,}541\frac{\text{ton}}{\text{yr}}\times\frac{11{,}683\ \text{Btu}}{\text{lb}}\times0.92\times\left(0.16\times\frac{(1-0.1017)}{0.0758}\times0.004\right)^{0.63}\frac{\text{lb}}{10^{12}\ \text{Btu}}$$

$$=6.75\text{E}-04+8.27\text{E}-05+3.45\text{E}-05=7.93\text{E}-04\ \text{ton/yr}$$

Calculations are similar for arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.

Hydrogen Chloride

From actual coal measurements, the as-received average chlorine content for Appalachian coal is 814 ppm, the as-received average chlorine content for Illinois coal is 1,630 ppm, and the as-received average chlorine content for Uinta coal is 70 ppm. From Table 3-13, the control efficiency for HCl using bituminous coal and a FGD is 97%.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{814\text{ lb}}{10^6\text{ lb}} \times \frac{36.5\text{ lb HCl}}{35.5\text{ lb Cl}} \times (1-0.97) +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{1{,}630\text{ lb}}{10^6\text{ lb}} \times \frac{36.5\text{ lb HCl}}{35.5\text{ lb Cl}} \times (1-0.97) +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{70\text{ lb}}{10^6\text{ lb}} \times \frac{36.5\text{ lb HCl}}{35.5\text{ lb Cl}} \times (1-0.97) =$$

$$12.5 + 1.72 + 0.150 = 14.3\frac{\text{ton}}{\text{yr}}$$

Hydrogen Fluoride

The median fluoride concentration from the PISCES database (Tables 3-10, 3-11 and 3-12) is 73 ppm (dry basis) for Appalachian coal, 92 ppm (dry basis) for Illinois coal, and 80 ppm (dry basis) for Uinta coal. From Table 3-13, the control efficiency for HF using bituminous coal and a FGD is 94%.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{73\text{ lb}}{10^6\text{ lb}} \times (1-0.0631) \times \frac{20\text{ lb HF}}{19\text{ lb F}} \times (1-0.94) +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{92\text{ lb}}{10^6\text{ lb}} \times (1-0.1419) \times \frac{20\text{ lb HF}}{19\text{ lb F}} \times (1-0.94) +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{80\text{ lb}}{10^6\text{ lb}} \times (1-0.1017) \times \frac{20\text{ lb HF}}{19\text{ lb F}} \times (1-0.94) =$$

$$2.14 + 0.170 + 0.316 = 2.63\text{ ton/yr}$$

Mercury

Mercury emissions for eastern bituminous coal (Appalachian coal and Illinois coal) were estimated using Emission Factor Handbook (EFH) Update, April 2005. For power plants with a SCR, ESP, and wet FGD the mercury removal rate is 86%. For Uinta coal, mercury emissions were estimated using the EFH correlation equations developed from EPA's 1999 Information Collection Request (ICR) stack-test program. These equations correlate Hg control efficiency for various combinations of air pollution control equipment with coal chloride contents. The equation for the cold-side ESP and wet FGD control systems is:

Hg efficiency = 0.1157 x ln(Cl, mg/kg dry basis) – 0.1438 x 100%

For Uinta coal, the Cl content is 70 mg/kg (as-received).

For Uinta coal, Hg efficiency = 0.1157 x ln(70/(1-0.1017)) – 0.1438 x 100% = 36.02%

The median mercury concentration from the PISCES database (Tables 3-10, 3-11, and 3-12) is 0.1 ppm (dry basis) for Appalachian coal, 0.08 ppm (dry basis) for Illinois coal, and 0.04 ppm (dry basis) for Uinta coal. The control efficiency as determined above for Hg using Appalachian coal and Illinois coal is 86% and 36.02% using Uinta coal.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{0.1\text{ lb}}{10^6\text{ lb}} \times (1-0.0631) \times (1-0.86) +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{0.08\text{ lb}}{10^6\text{ lb}} \times (1-0.1419) \times (1-0.86) +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{0.04\text{ lb}}{10^6\text{ lb}} \times (1-0.1017) \times (1-0.3602) =$$

$$6.50E-03 + 3.28E-04 + 1.60E-03 = 8.43E-03 \text{ ton/yr}$$

Selenium

The median selenium concentration from the PISCES database (Tables 3-10, 3-11 and 3-12) is 3 ppm (dry basis) for Appalachian coal, 1.7 ppm (dry basis) for Illinois coal, and 1.2 ppm (dry basis) for Uinta coal. From Table 3-13, the control efficiency for Se using bituminous coal and a FGD is 88%.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{3\text{ lb}}{10^6\text{ lb}} \times (1-0.0631) \times (1-0.88) +$$

$$34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{1.7\text{ lb}}{10^6\text{ lb}} \times (1-0.1419) \times (1-0.88) +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{1.2\text{ lb}}{10^6\text{ lb}} \times (1-0.1017) \times (1-0.88) =$$

$$0.167 + 5.98\text{E}-03 + 9.00\text{E}-03 = 0.182\text{ ton/yr}$$

Benzene

The organic HAP emissions are calculated from Emission Factor Handbook data (Table 3-14).

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{12{,}513\text{ Btu}}{\text{lb}} \times \frac{3.9\text{ lb}}{10^{12}\text{ Btu}} + 34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{11{,}514\text{ Btu}}{\text{lb}} \times \frac{3.9\text{ lb}}{10^{12}\text{ Btu}} +$$

$$69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{11{,}683\text{ Btu}}{\text{lb}} \times \frac{3.9\text{ lb}}{10^{12}\text{ lb}} = 2.42\text{E}-02 + 1.53\text{E}-03 + 3.17\text{E}-03 =$$

$$2.89\text{E}-02\text{ ton/yr}$$

Calculations are similar for the other organic HAP compounds.

Radionuclides

The radionuclides are calculated from the sum of the geometric mean (53.1E-12 Curies/gram fly ash emitted) of the isotopes shown in Table 3-15.

$$495{,}779\frac{\text{ton}}{\text{yr}} \times \frac{12{,}513\text{ Btu}}{\text{lb}} \times \frac{2000\text{ lb}}{\text{ton}} \times \frac{0.004\text{ lb}}{10^6\text{ Btu}} \times \frac{53.1\text{E}-12\text{ Ci}}{\text{gram}} \times \frac{453.59\text{ gram}}{\text{lb}}$$
$$+ 34{,}171\frac{\text{ton}}{\text{yr}} \times \frac{11{,}514\text{ Btu}}{\text{lb}} \times \frac{2000\text{ lb}}{\text{ton}} \times \frac{0.004\text{ lb}}{10^6\text{ Btu}} \times \frac{53.1\text{E}-12\text{ Ci}}{\text{gram}} \times \frac{453.59\text{ gram}}{\text{lb}}$$
$$+ 69{,}541\frac{\text{ton}}{\text{yr}} \times \frac{11{,}683\text{ Btu}}{\text{lb}} \times \frac{2000\text{ lb}}{\text{ton}} \times \frac{0.004\text{ lb}}{10^6\text{ Btu}} \times \frac{53.1\text{E}-12\text{ Ci}}{\text{gram}} \times \frac{453.59\text{ gram}}{\text{lb}}$$

$$= 1.20\text{E}-03 + 7.58\text{E}-05 + 1.57\text{E}-04 = 1.43\text{E}-03\text{ Ci/yr}$$

DATA AND SAMPLE EMISSION CALCULATIONS FOR LIGHT-OFF OIL EMISSION ESTIMATES AT BULL RUN FOSSIL PLANT

The quantity of light-off oil burned in the boiler was multiplied times the uncontrolled emission factors (Table 3-16). A control efficiency of 60% was used for PM species and acid gas HAPs (HCl, Hg, and Se) due to less than optimal conditions that occur during startup and shutdown. Control efficiencies for sulfur dioxide (96.77%) and condensable particulate (81.92%) are assumed to be the same as they were for coal. Carbon dioxide equivalent emissions were determined from 40 CFR Part 98.

TABLE 3-21. AY 2012 LIGHT-OFF OIL DATA

Light-Off Oil Burned in Unit 1, gal/yr	555,193
Light-Off Oil Average Sulfur Content, wt %	0.0148
Light-Off Oil Average Heat Content, Btu/gal	138,589

Filterable Particulate

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{2\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.6) = 0.222\ \text{ton/yr}$$

Filterable Particulate PM 10

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{1\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.6) = 0.111\ \text{ton/yr}$$

Filterable Particulate PM 2.5

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{0.25\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.6) = 0.0278\ \text{ton/yr}$$

Condensable Particulate

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{1.3\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.8192) = 0.0652\ \text{ton/yr}$$

Sulfur Dioxide

The light-off oil average sulfur content was 0.0148 wt %.

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{142\ \text{lb}}{1{,}000\ \text{gal}} \times 0.0148\ \% \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.9677) = 0.0188\ \text{ton/yr}$$

Nitrogen Oxides

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{24\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0) = 6.66\ \text{ton/yr}$$

Carbon Monoxide

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{5\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0) = 1.39\ \text{ton/yr}$$

Volatile Organic Compounds

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{0.2\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0) = 0.0555\ \text{ton/yr}$$

Sulfuric Acid

Sulfuric Acid = 0.00255 ton/yr

The sulfuric acid emissions were estimated from EPRI document, "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants", Version 2010a, 1020636, Technical Update, April 2010.

Carbon Dioxide Equivalent

The light-off oil average heat content was 138,589 Btu/gal.
From 40 CFR Part 98, using default value for "distillate fuel oil No. 2"

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{138{,}589\ \text{Btu}}{\text{gal}} \times \frac{(73.96 + 0.003 \times 21 + 0.0006 \times 310)\text{kg } CO_2e}{1{,}000{,}000\ \text{Btu}} \times \frac{2.20462\ \text{lb}}{\text{kg}}$$

$$\times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0) = 6{,}294\ \text{ton/yr}$$

Antimony

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{138{,}589\ \text{Btu}}{\text{gal}} \times \frac{22\ \text{lb}}{10^{12}\ \text{Btu}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.6) = 3.39\text{E} - 04\ \text{ton/yr}$$

The calculations for arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel are identical to the antimony calculation using the appropriate emission factor for each pollutant. The Particulate HAP Total is the sum of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.

Hydrogen Chloride

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{138{,}589\ \text{Btu}}{\text{gal}} \times \frac{311\ \text{lb}}{10^{12}\text{Btu}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0.6) = 4.78\text{E} - 03\ \text{ton/yr}$$

The calculations for mercury and selenium are identical to the hydrogen chloride calculation using the appropriate emission factor for each pollutant. The Non-VOC Gaseous HAP Total is the sum of hydrogen chloride, mercury, and selenium.

Formaldehyde

$$\frac{555{,}193\ \text{gal}}{\text{yr}} \times \frac{0.061\ \text{lb}}{1{,}000\ \text{gal}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} \times (1 - 0) = 1.69\text{E} - 02\ \text{ton/yr}$$

The calculation for polycyclic organic matter (POM) is identical to the formaldehyde calculation using the appropriate emission factor for POM. The VOC HAP Total is the sum of formaldehyde and POM.

ATTACHMENT 4

Auxillary Boilers Process descripton
OPERATIONAL AND CALCULATION METHODOLOGY
DATA AND SAMPLE EMISSION CALCULATIONS

AUXILIARY BOILERS PROCESS DESCRIPTION

BULL RUN FOSSIL PLANT

Bull Run Fossil Plant has two auxiliary (aux) startup boilers (Boilers 1A and 1B) that provide steam to the coal-fired boiler during start-up. Steam is generally circulated to the aux startup boilers from the main boiler on a continuous basis to keep the boilers ready to fire. Bull Run also has an auxiliary heating boiler (Boiler 1H) that provides steam to the boiler building heating system as needed.

All three boilers burn only distillate (No. 2) fuel oil (or alternate fuel oils which meet all applicable standards). The fuel oil for these boilers is stored in three (3) storage tanks (65,000 gallons each). After firing in the aux boilers, exhaust gases are emitted into the atmosphere without any treatment by add-on emission control equipment.

Aux startup boilers 1A and 1B exhaust through a common stack, and each has a rated heat input capacity of 126×10^6 Btu/hr. The aux heating boiler exhausts through a separate stack from the aux startup boilers and has a rated heat input capacity of 16.75×10^6 Btu/hr. Because the two stacks are at essentially the same elevation and fairly close to one another, the plumes from these stacks are presumed to tend to merge. Consequently, aux boilers 1A, 1B, and 1H are considered to be a single fuel-burning installation for purposes of determining allowable emission limits. The flue gas exiting through the two stacks is the only significant emissions from the auxiliary boilers.

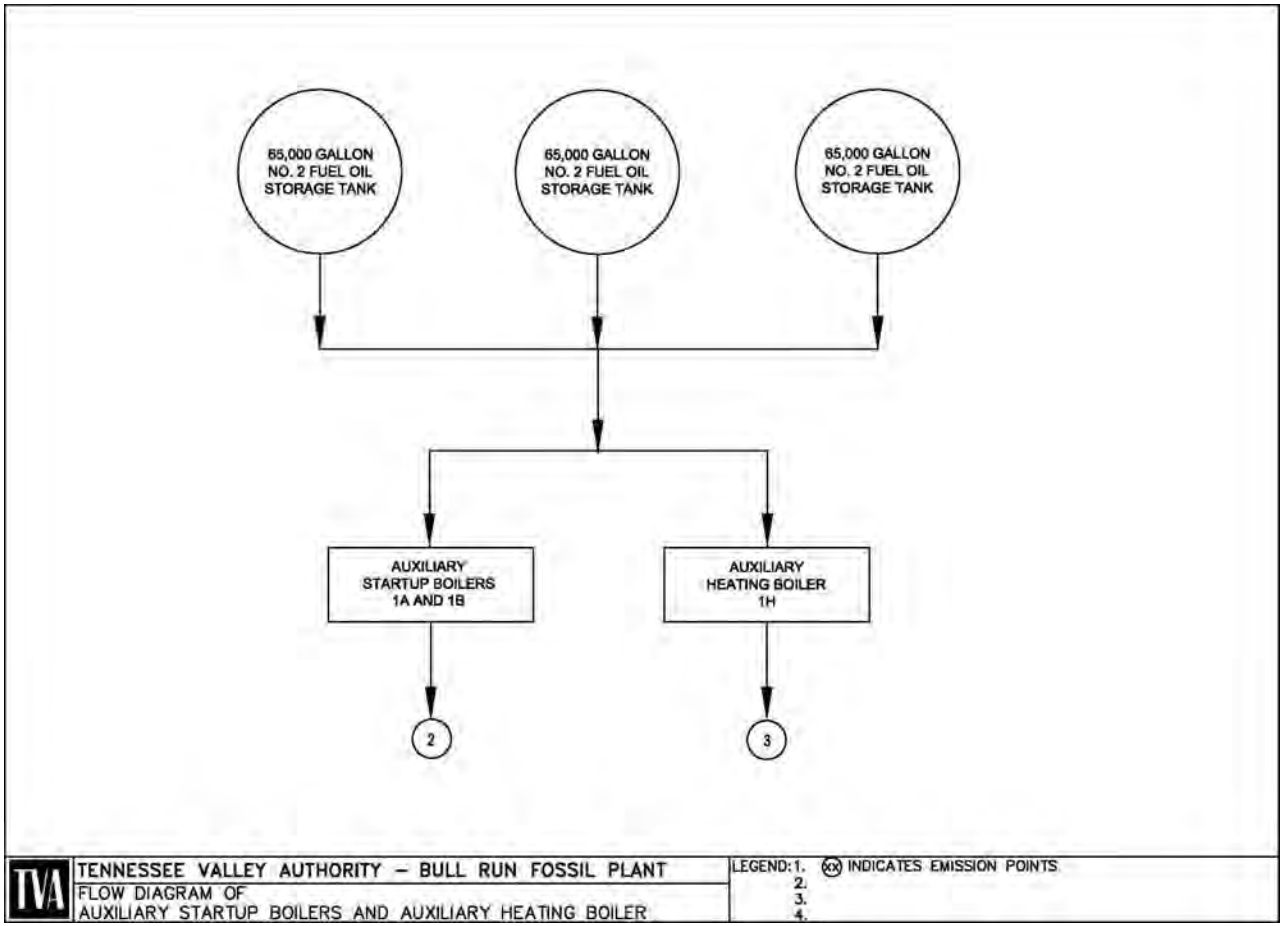
65,000 GALLON NO. 2 FUEL OIL STORAGE TANK
65,000 GALLON NO. 2 FUEL OIL STORAGE TANK
65,000 GALLON NO. 2 FUEL OIL STORAGE TANK
AUXILIARY STARTUP BOILERS 1A AND 1B
AUXILIARY HEATING BOILER 1H
2
3
TVA
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
FLOW DIAGRAM OF
AUXILIARY STARTUP BOILERS AND AUXILIARY HEATING BOILER
LEGEND: 1. (xx) INDICATES EMISSION POINTS
2.
3.
4.

FIGURE 4-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
AUXILIARY BOILERS

Rated heat input capacities for the auxiliary (aux) startup boilers (126 x 10^6 Btu/hr/unit) and the aux heating boiler (16.75 x 10^6 Btu/hr) were used to estimate hourly emissions. For the heating value of distillate fuel oil at BRF during July 2011 – June 2012, this is equivalent to a firing rate of 909 gallons per hour for each aux startup boiler and 121 gallons per hour for the aux heating boiler. Annual emission estimates for the aux startup boilers are based on the amount of distillate fuel oil burned (381,300 gallons/yr both boilers) during July 2011 - June 2012. Annual emission estimates for the aux heating boiler are based on the amount of distillate fuel oil burned (85,474 gallons/yr) during July 2011 - June 2012.

AP-42 emission factors for boilers firing distillate (No. 2) fuel oil without add-on emission control equipment (Table 4-2) were used for calculating actual emissions. Annual sulfur dioxide (SO_2) emission estimates were based on fuel oil sulfur content of 0.0148%, the average value from July 2011 – June 2012.

Since the auxiliary boilers were installed as original equipment at BRF in 1966, they are subject to Tennessee Air Pollution Control Regulations (TAPCR) for existing fuel burning installations. The emission limits for particulate matter (PM) and SO_2 taken from TAPCR 1200-3-6-.02(1) and 1200-3-14-.02(1), respectively, are listed in Table 4-1 below.

TABLE 4-1
INPUT DATA FOR AUXILIARY BOILERS EMISSION ESTIMATES
BULL RUN FOSSIL PLANT
JULY 2011 - JUNE 2012

Parameters	Units	Aux 1A	Aux 1B	Heating Boiler
Rated Heat Input Capacity	10^6 Btu/hr	126	126	16.75
Annual Fuel Burned	gallons/yr	381,300 combined		85,474
Oil Analysis:				
Sulfur (Average)	%	0.0148	0.0148	0.0148
Heating Value	Btu/gal	138,589	138,589	138,589
PM Emission Limit	lb/10^6 Btu	0.255	0.255	0.255
SO_2 Emission Limit	lb/10^6 Btu	4.0	4.0	4.0

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
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APC V.4

MAJOR SOURCE OPERATING PERMIT APPLICATION
FUEL BURNING NON-PROCESS EQUIPMENT

1. FACILITY NAME:
Tennessee Valley Authority – Bull Run Fossil Plant

2. LIST ALL FUEL - BURNING EQUIPMENT THAT IS AT THIS FUEL BURNING INSTALLATION (PLEASE COMPLETE AN APC V.4 FORM FOR EACH PIECE OF FUEL BURNING EQUIPMENT).
Two oil - fired auxiliary startup boilers and one oil - fired auxiliary heating boiler.

3. FUEL BURNING EQUIPMENT IDENTIFICATION NUMBER:
Auxiliary Startup Boilers 1A and 1B

4. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Stack 2

5. FUEL BURNING EQUIPMENT DESCRIPTION:
Aux startup boilers 1A and 1B are two identical boilers each with rated heat input capacities of 126 million Btu/hr. They are fired with distillate (No. 2) fuel oil, or alternate fuel oils which meet all applicable standards.

6. YEAR OF INSTALLATION OR LAST MODIFICATION OF FUEL BURNING EQUIPMENT:
1966

7. FURNACE TYPE:
Oil-fired conventional two-drum vertical boiler

8. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
Combustion Engineering

9. MAXIMUM RATED HEAT INPUT CAPACITY (IN MILLION BTU/HOUR):
126 MM Btu/hr (Aux Boiler 1A)
126 MM Btu/hr (Aux Boiler 1B)

10. IF WOOD IS USED AS FUEL, SPECIFY THE AMOUNT OF WOOD USED AS A FRACTION OF TOTAL HEAT INPUT.
N/A

11. FUELS:	PRIMARY FUEL	BACKUP FUEL #1	BACKUP FUEL #2	BACKUP FUEL #3
FUEL NAME	No. 2 Fuel Oil			
ACTUAL YEARLY CONSUMPTION	381,300 gallons/yr total for both boilers July 2011 – June 2012			

12. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE CONTROLLED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF CONTROL:
N/A

13. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE MONITORED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF MONITORING:
N/A

14. LOCATION OF THIS FUEL BURNING INSTALLATION IN UTM COORDINATES:
UTM VERTICAL: 3990 km UTM HORIZONTAL: 756 km

15. NORMAL OPERATING SCHEDULE:
These units are not operated on a normal schedule.
___ HRS/DAY _____ DAYS/WK ___ DAYS/YR

16. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY).
N/A

17. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN – 1007 RDA 1298

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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant	FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Stack 2		LOG/PERMIT NO.
3. EMISSION SOURCE (IDENTIFY): Auxiliary Startup Boilers 1A and 1B		
4. STACK HEIGHT ABOVE GRADE IN FEET: 190 ft (est.)		
5. VELOCITY (DATA AT EXIT CONDITIONS): 66.8 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 6 ft diameter	
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 113×10^3	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 46.3×10^3	
9. EXHAUST TEMPERATURE: 685 DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 11.7 PERCENT 43.2 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)	
11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY): N/A (°F)		
12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2 , NO_X , etc.)? N/A		
COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.		
13. DO YOU HAVE A BYPASS STACK? _____ YES ___X___ NO IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.		
14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION		

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APC V.4

MAJOR SOURCE OPERATING PERMIT APPLICATION
FUEL BURNING NON-PROCESS EQUIPMENT

1. FACILITY NAME:
Tennessee Valley Authority – Bull Run Fossil Plant

3. LIST ALL FUEL - BURNING EQUIPMENT THAT IS AT THIS FUEL BURNING INSTALLATION (PLEASE COMPLETE AN APC V.4 FORM FOR EACH PIECE OF FUEL BURNING EQUIPMENT).
Two oil - fired auxiliary startup boilers and one oil - fired auxiliary heating boiler.

3. FUEL BURNING EQUIPMENT IDENTIFICATION NUMBER:
Auxiliary Heating Boiler 1H

4. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Stack 3

5. FUEL BURNING EQUIPMENT DESCRIPTION:
Aux heating boiler 1H with rated heat input capacity of 16.75 million Btu/hr. Fired with distillate (No. 2) fuel oil, or alternate fuel oils which meet all applicable standards.

6. YEAR OF INSTALLATION OR LAST MODIFICATION OF FUEL BURNING EQUIPMENT:
1966

7. FURNACE TYPE:
Oil-fired packaged boiler

8. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
Cyclotherm division, Crane Company

9. MAXIMUM RATED HEAT INPUT CAPACITY (IN MILLION BTU/HOUR):
16.75 MM Btu/hr

10. IF WOOD IS USED AS FUEL, SPECIFY THE AMOUNT OF WOOD USED AS A FRACTION OF TOTAL HEAT INPUT.
N/A

11. FUELS:	PRIMARY FUEL	BACKUP FUEL #1	BACKUP FUEL #2	BACKUP FUEL #3
FUEL NAME	No. 2 Fuel Oil			
ACTUAL YEARLY CONSUMPTION	85,474 gallons/yr July 2011 – June 2012			

12. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE CONTROLLED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF CONTROL:
N/A

13. IF EMISSIONS FROM THIS FUEL BURNING EQUIPMENT ARE MONITORED FOR COMPLIANCE, PLEASE SPECIFY THE TYPE OF MONITORING:
N/A

14. LOCATION OF THIS FUEL BURNING INSTALLATION IN UTM COORDINATES:
UTM VERTICAL: 3990 km UTM HORIZONTAL: 756 km

15. NORMAL OPERATING SCHEDULE:
This unit is not operated on a normal schedule.

_____ HRS/DAY _____ DAYS/WK _____ DAYS/YR

16. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY).
N/A

17. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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DIVISION OF AIR POLLUTION CONTROL
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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant		FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Stack 3			LOG/PERMIT NO.
3. EMISSION SOURCE (IDENTIFY): Auxiliary Heating Boiler 1H			
4. STACK HEIGHT ABOVE GRADE IN FEET: 190 ft (est.)			
5. VELOCITY (DATA AT EXIT CONDITIONS): 38.4 (est.) (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 1.94 ft diameter		
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 6.81×10^3 (est.)	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 4.33×10^3 (est.)		
9. EXHAUST TEMPERATURE: 300 (est.) DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 9.45 PERCENT 34.1 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)		
11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY): N/A (°F)			
12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2 , NO_X , etc.)? N/A			
COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.			
13. DO YOU HAVE A BYPASS STACK? ____ YES X NO IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.			
14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION			

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DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
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APC V.28

MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority – Bull Run Fossil Plant	Stacks 2 and 3

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):

Auxiliary Startup Boilers 1A and 1B and Auxiliary Heating Boiler 1H

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
PARTICULATES (TSP) FILTERABLE	300		0.467	
PARTICULATES CONDENSABLE	N/A		0.303	
(FUGITIVE EMISSIONS)	N/A		N/A	
SULFUR DIOXIDE	4,709		0.489	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		0.0467	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		1.17	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		2.91E-04	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		5.43	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		9.70E-05	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

APC V.28(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		9.70E-05	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
SULFURIC ACID	N/A		0.0212	
CARBON DIOXIDE EQUIVALENT	N/A		5,292	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

See Data and Sample Emission Calculations

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
LEAD	N/A		2.91E-04	
MERCURY	N/A		9.70E-05	
BERYLLIUM	N/A		9.70E-05	
PARTICULATE HAP TOTAL*	N/A		2.01E-03	
NON-VOC GASEOUS HAP TOTAL**	N/A		1.06E-02	
VOC HAP TOTAL***	N/A		1.50E-02	

6. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

*Includes antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.
**Includes hydrogen chloride, mercury, and selenium.
***Includes formaldehyde and POM

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME:	2. EMISSION SOURCE NUMBER
Tennessee Valley Authority – Bull Run Fossil Plant	2 and 3 - Auxiliary Startup and Heating Boilers

3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR.

This fuel burning installation consists of two auxiliary startup boilers sharing a common stack (Stack 2) and an auxiliary heating boiler (Stack 3). All three boilers are fired with distillate (No. 2) fuel oil or alternative fuel oils which meet all applicable standards.

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulates	TAPCR 1200-3-6-.02(1); Permit # 556854 – Condition E4 -1; 40 CFR 51.110(a) : Particulate Emission Standard	0.255 lb/10^6 Btu	0.015 lb/10^6 Btu	IN
	Particulates	TAPCR 1200-3-8-.01; 40 CFR 51.110(a) : Fugitive Dust - Take reasonable precautions to prevent particulate matter from becoming airborne.	No visible emission beyond the property line for more than 5 minutes per hour or 20 minutes per day.	No visible emissions at property line.	IN
	Opacity	TAPCR 1200-3-5-.01(1); Permit #556854 – Condition E4 - 3; 40 CFR 51.110(a) : Visible Emission Standard	No visible emission >20% opacity for more than 5 minutes in one hour or more than 20 minutes in 24 hours.	20 percent opacity, except for allowed exclusions.	IN
	Opacity	TAPCR 1200-3-5-.02(1); 40 CFR 51.211: Exceptions to opacity during startup and shutdown.	Take reasonable precaution to minimize emissions.	20 percent opacity, except for allowed exclusions.	IN
	Sulfur Dioxide	TAPCR 1200-3-14-.02(1)(a); Permit # 556854 – Condition E4 -2; 40 CFR 51.110(a): Sulfur Dioxide Standard	4.0 lb/10^6 Btu - 1 hour average	0.52 lb/10^6 Btu (fuel content – 0.5% S)	IN

11. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-20-.02: 40 CFR 51.211: Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211 : Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1) 40 CFR 51.211 : Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN
	All Regulated Pollutants	TAPCR 1200-2-20-.06; 40 CFR 51.211 : Report Required Upon The Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after receipt of the notice of violation.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04 : Sampling, Recording, and Reporting Required for Major Stationary Sources - Department may require periodic or enhanced monitoring, recording, and reporting deemed necessary for the verification of a source's compliance with applicable requirements.			IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii) and 1200-3-30-.01(6)(f); 40 CFR 70.6(a)(3) : Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3) : Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Department, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.	Take all reasonable steps to minimize levels of emissions that exceed an emission standard or other permit requirements.		IN
10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)					
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
   Tennessee Valley Authority – Bull Run Fossil Plant

3. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):
   Auxiliary Startup Boilers 1A and 1B and Auxiliary Heating Boiler 1H

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
   Stacks 2 and 3

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

   _____ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
   POLLUTANT(S):

   _____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
   POLLUTANT(S):

   _____ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
   POLLUTANT(S):

   _____ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
   POLLUTANT(S):

   _____ STACK TESTING - APC FORM V.24
   POLLUTANT(S):

   _____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
   POLLUTANT(S):

   _____ RECORDKEEPING - APC FORM V.26
   POLLUTANT(S):

   __X__ OTHER (PLEASE DESCRIBE) - APC FORM V.27
   POLLUTANT(S):
   Sulfur Dioxide, Particulates, Opacity

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.
   START DATE: N/A
   AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:
   START DATE: N/A
   AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

CN-1007 RDA 1298

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY OTHER METHOD(S)

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority – Bull Run Fossil Plant	Stacks 2 and 3

3. EMISSION SOURCE (IDENTIFY):

Auxiliary Startup Boilers 1A and 1B and Auxiliary Heating Boiler 1H

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Sulfur Dioxide (SO_2), Particulates, Opacity

5. DESCRIPTION OF THE METHOD OF MONITORING:

Only Grade No. 2 fuel oil, or alternate fuel oils which meet all applicable standards, will be burned in the auxiliary startup boilers and the auxiliary heating boiler. Due to the inherent properties of this fuel, no other compliance demonstration is necessary for the sulfur dioxide, particulates, and opacity standards.

6. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

N/A

7. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 4-2 BRF AUXILIARY BOILERS FUEL OIL EMISSION FACTORS*			
	Startup Boilers		Heating Boiler
Criteria/Non-HAP Pollutants	lb/10^3 gal		lb/10^3 gal
Filterable particulate matter (PM_fil)	2		2
PM < 10-micrometer aero. diam. (PM10_fil)	1		1
PM < 2.5-micrometer aero. diam. (PM2.5_fil)	0.25		0.25
Condensable PM (PM_cond)	1.3		1.3
Sulfur dioxide (SO_2)	142 x %S		142 x %S
Nitrogen oxides (NOx)	24		20
Carbon monoxide (CO)	5		5
Volatile organic compounds (VOC)	0.2		0.2
Sulfur trioxide (SO_3)	5.7 x %S		2.0 x %S
%S = weight % sulfur in fuel oil			
Assume all SO_3 is converted to H_2SO_4			
	lb/10^6 Btu		lb/10^6 Btu
Carbon Dioxide Equivalent**	163.6		163.6
Trace Element	lb/10^12 Btu		lb/10^12 Btu
Antimony (Sb)	22		22
Arsenic (As)	4		4
Beryllium (Be)	3		3
Cadmium (Cd)	3		3
Chromium (Cr)	3		3
Cobalt (Co)	9.1		9.1
Lead (Pb)	9		9
Manganese (Mn)	6		6
Nickel (Ni)	3		3
Hydrogen chloride (HCl)***	311		311
Mercury (Hg)	3		3
Selenium (Se)	15		15
Organic HAP (CAS Number)	lb/10^3 gal		lb/10^3 gal
Formaldehyde (50000)	0.061		0.061
Polycyclic organic matter (POM)	0.0033		0.0033
*Reference: US EPA's Compilation of Air Pollutant Emission Factors (AP-42), Vol. I, 5th Edition, Supplement E, 9-98 (Section 1.3, "Fuel Oil Combustion"); also, (for Sb and Co) AP-42, Vol. I, 5th Edition, Supplement B, 10-96 (Section 3.1, "Stationary Gas Turbines for Electricity Generation").			
**Based on 40 CFR Part 98.			
*** HCl based on maximum TVA fuel oil specifications.			

TABLE 4-3

JULY 2011 - JUNE 2012 BRF AUXILIARY BOILERS EMISSION ESTIMATES, TON/YR

	Aux Boiler 1A & 1B	Aux Boiler 1H	Aux Boiler 1A & 1B	Aux Boiler 1H	Total
	maximum, lb/blr-hr	maximum, lb/blr-hr	ton/yr	ton/yr	ton/yr
Criteria/Non-HAP Pollutants					
Filterable particulate matter (PM_fil)	1.82	0.242	0.381	0.0855	0.467
PM < 10-micrometer aero. diam. (PM10_fil)	0.909	0.121	0.191	0.0427	0.233
PM < 2.5-micrometer aero. diam. (PM2.5_fil)	0.227	0.0302	0.0477	0.0107	0.0583
Condensable PM (PM_cond)	1.18	0.157	0.248	0.0556	0.303
Sulfur dioxide (SO2)	1.91	0.253	0.400	0.0896	0.489
Nitrogen oxides (NOx)	21.8	2.42	4.58	0.855	5.43
Carbon monoxide (CO)	4.55	0.604	0.953	0.214	1.17
Volatile organic compounds (VOC)	0.182	0.0242	0.0381	0.00855	0.0467
Sulfuric acid (SO3/H2SO4)	0.0937	0.00437	0.0197	0.00155	0.0212
Carbon Dioxide Equivalent	20,614	2,740	4,323	969	5,292
PM Trace-Element HAP					
Antimony (Sb)	2.77E-03	3.69E-04	5.81E-04	1.30E-04	7.12E-04
Arsenic (As)	5.04E-04	6.70E-05	1.06E-04	2.37E-05	1.29E-04
Beryllium (Be)	3.78E-04	5.03E-05	7.93E-05	1.78E-05	9.70E-05
Cadmium (Cd)	3.78E-04	5.03E-05	7.93E-05	1.78E-05	9.70E-05
Chromium (Cr)	3.78E-04	5.03E-05	7.93E-05	1.78E-05	9.70E-05
Cobalt (Co)	1.15E-03	1.52E-04	2.40E-04	5.39E-05	2.94E-04
Lead (Pb)	1.13E-03	1.51E-04	2.38E-04	5.33E-05	2.91E-04
Manganese (Mn)	7.56E-04	1.01E-04	1.59E-04	3.55E-05	1.94E-04
Nickel (Ni)	3.78E-04	5.03E-05	7.93E-05	1.78E-05	9.70E-05
Partculate HAP Total*	7.82E-03	1.04E-03	1.64E-03	3.68E-04	2.01E-03
Hydrogen chloride (HCl)	3.92E-02	5.20E-03	8.21E-03	1.84E-03	1.01E-02
Mercury (Hg)	3.78E-04	5.03E-05	7.93E-05	1.78E-05	9.70E-05
Selenium (Se)	1.89E-03	2.51E-04	3.96E-04	8.88E-05	4.85E-04
Non-VOC Gaseous HAP Total**	4.14E-02	5.51E-03	8.69E-03	1.95E-03	1.06E-02
Organic HAP (CAS Number)					
Formaldehyde (50000)	5.55E-02	7.37E-03	1.16E-02	2.61E-03	1.42E-02
Polycyclic organic matter (POM)	3.00E-03	3.99E-04	6.29E-04	1.41E-04	7.70E-04
VOC HAP Total***	5.85E-02	7.77E-03	1.23E-02	2.75E-03	1.50E-02
* Includes antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.					
** Includes hydrogen chloride, mercury, and selenium.					
***Includes formaldehyde and POM.					

SAMPLE CALCULATIONS FOR THE AUXILIARY BOILERS
BULL RUN FOSSIL PLANT

MAXIMUM ALLOWABLE EMISSIONS

The auxiliary (aux) startup boilers (1A and 1B) and the aux heating boiler (1H) are regulated as existing boilers (commenced construction before April 1972). The aux startup boilers share a common stack which is in close proximity to the heating boiler stack, therefore all three boilers are considered as a single fuel burning installation. The rated boiler heat input capacity and the maximum possible operating schedule for each boiler were used to determine the maximum allowable emissions for those pollutants with applicable emission standards. For these three boilers, these pollutants are particulate matter (PM) and sulfur dioxide (SO_2). Citations of the Tennessee Air Pollution Control Regulations (TAPCR) are given in the table below:

TABLE 4-4
EMISSION STANDARDS APPLICABLE TO THE AUXILIARY BOILERS
BULL RUN FOSSIL PLANT

Pollutant	TAPCR Citation	Emission Limit, $lb/10^6$ Btu
PM	1200-3-6-.02(1)	0.255
SO_2	1200-3-14-.02(1)	4.0

Sample calculations for the total maximum allowable annual emissions of PM and SO_2 for the three aux boilers are given below. These annual quantities are not considered to be enforceable permit conditions.

Particulate Matter (PM)

$$\frac{0.255\ lb}{10^6\ Btu} \times \frac{(126 + 126 + 16.75) \times 10^6\ Btu}{hr} \times \frac{8{,}760\ hr}{yr} \times \frac{ton}{2{,}000\ lb} = 900\ ton/yr$$

Sulfur Dioxide (SO_2)

$$\frac{4.0\ lb}{10^6\ Btu} \times \frac{(126 + 126 + 16.75) \times 10^6\ Btu}{hr} \times \frac{8{,}760\ hr}{yr} \times \frac{ton}{2{,}000\ lb} = 4{,}709\ ton/yr$$

MAXIMUM HOURLY EMISSIONS

Maximum hourly emissions were determined from the emission factors from Table 4-2 and the rated heat input capacity for each aux boiler. If the emission factors were in lb/10^3 gallons the average heat content of the fuel oil (138,589 Btu/gal) was used. The sulfur content of the fuel oil was 0.0148 % S. Sample calculations for the aux startup boiler 1A with a heat input capacity of 126 x 10^6 Btu/hr are shown below.

Particulate Matter (PM)

$$\frac{2 \text{ lb FM}}{10^3 \text{ gal}} \times \frac{\text{gal}}{138{,}589 \text{ Btu}} \times \frac{126 \times 10^6 \text{ Btu}}{\text{hr}} = 1.82 \text{ lb FM/hr}$$

Sulfur Dioxide (SO_2)

$$\frac{142 \times 0.0148 \text{ lb } SO_2}{10^3 \text{ gal}} \times \frac{\text{gal}}{138{,}589 \text{ Btu}} \times \frac{126 \times 10^6 \text{ Btu}}{\text{hr}} = 1.91 \text{ lb } SO_2/\text{hr}$$

Sulfuric Acid (H_2SO_4)

$$\frac{5.7 \times 0.0148 \text{ lb } SO_2}{10^3 \text{ gal}} \times \frac{\text{gal}}{138{,}589 \text{ Btu}} \times \frac{126 \times 10^6 \text{ Btu}}{\text{hr}} \times \frac{98 \text{ lb } H_2SO_4}{80 \text{ lb } SO_2} = 0.0937 \text{ lb } H_2SO_4/\text{hr}$$

Carbon Dioxide Equivalent (CO_2 e)

$$\frac{(73.96 + 0.003 \times 21 + 0.0006 \times 310) \text{ kg}}{10^6 \text{ Btu}} \times \frac{2.20462 \text{ lb}}{\text{kg}} \times \frac{126 \times 10^6 \text{ Btu}}{\text{hr}} = 20{,}514 \text{ lb } CO_2\text{e/hr}$$

Antimony (Sb)

$$\frac{22 \text{ lb Sb}}{10^{12} \text{ Btu}} \times \frac{126 \times 10^6 \text{ Btu}}{\text{hr}} = 2.77\text{E}-03 \text{ lb Sb/hr}$$

ACTUAL ANNUAL EMISSIONS

Actual annual emission from July 2011 – June 2012 were determined from 381,300 gallons per year of fuel oil burned in the aux startup boilers and 85,474 gallons per year burned in the aux heating boiler. Sample calculations for aux startup boilers 1A and 1B are shown below.

Particulate Matter (PM)

$$\frac{2 \text{ lb PM}}{10^3 \text{ gal}} \times \frac{381{,}300 \text{ gal}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} = 0.381 \text{ ton PM/yr}$$

Sulfur Dioxide (SO_2)

$$\frac{142 \times 0.0148 \text{ lb } SO_2}{10^3 \text{ gal}} \times \frac{381{,}300 \text{ gal}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} = 0.400 \text{ ton } SO_2/\text{yr}$$

Sulfuric Acid (H_2SO_4)

$$\frac{5.7 \times 0.0148 \text{ lb } SO_2}{10^3 \text{ gal}} \times \frac{381{,}300 \text{ gal}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} \times \frac{98 \text{ lb } H_2SO_4}{80 \text{ lb } SO_2} = 0.0197 \text{ ton } H_2SO_4/\text{yr}$$

Carbon Dioxide Equivalent (CO_2e)

$$\frac{(73.96 + 0.003 \times 21 + 0.0006 \times 310) \text{ kg}}{10^6 \text{ Btu}} \times \frac{2.20462 \text{ lb}}{\text{kg}} \times \frac{138{,}589 \text{ Btu}}{gal} \times \frac{381{,}300 \text{ gal}}{yr} \times$$

$$\frac{\text{ton}}{2{,}000 \text{ lb}} = 4{,}323 \text{ ton } CO_2e/\text{yr}$$

Antimony (Sb)

$$\frac{22 \text{ lb Sb}}{10^{12} \text{ Btu}} \times \frac{138{,}589 \text{ Btu}}{\text{gal}} \times \frac{381{,}300 \text{ gal}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} = 5.817 - 04 \text{ ton Sb/yr}$$

ATTACHMENT 5

Solid-Fuel Handling
Coal Handling Facility
Data and Sample Emission Calculations

Process (01-0009-07)

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.10

MAJOR SOURCE OPERATING PERMIT APPLICATION - MISCELLANEOUS PROCESSES

1. FACILITY NAME:	2. PROCESS IDENTIFICATION NUMBER:
Tennessee Valley Authority - Bull Run Fossil Plant	Solid-Fuel Handling Process

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

IF EMISSIONS ARE CONTROLLED FOR COMPLIANCE, ATTACH THE APPROPRIATE AIR POLLUTION CONTROL SYSTEM FORM.

4. NORMAL OPERATING SCHEDULE:	5. YEAR OF CONSTRUCTION OR LAST MODIFICATION:
___24__ HRS/DAY ___7___ DAYS/WK ___365___ DAYS/YR	1966 (Construction)

6. DESCRIBE THIS PROCESS (PLEASE ATTACH A FLOW DIAGRAM OF THIS PROCESS) AND CHECK ONE OF THE FOLLOWING:

_____ BATCH ____X___ CONTINUOUS

See attached process description: Solid-Fuel Handling

7. LIST THE TYPES AND AMOUNTS OF RAW MATERIALS INPUT TO THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS)
Coal	Covered conveyors, enclosed transfer points, open storage, sampling equipment, breaker operation, pan scraper stockout and reclaim, dozer pile maintenance	2,160 ton/hr (90% capacity)	2,400 ton/hr

8. LIST THE TYPES AND AMOUNTS OF PRIMARY PRODUCTS PRODUCED BY THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE AMOUNT PRODUCED (UNITS)	MAXIMUM AMOUNT PRODUCED (UNITS)
N/A			

9. PROCESS FUEL USAGE:

TYPE OF FUEL	MAX HEAT INPUT (10^6 BTU/HR)	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS
N/A			

10. LIST ANY SOLVENTS, CLEANERS, etc., ASSOCIATED WITH THIS PROCESS:
Small amounts of nonhazardous solvents and cleaners are used in maintenance activities. Antifreeze solutions are added to coal and/or conveying systems during extremely cold weather.

IF THE EMISSIONS AND/OR OPERATIONS OF THIS PROCESS ARE MONITORED FOR COMPLIANCE, PLEASE ATTACH THE APPROPRIATE COMPLIANCE DEMONSTRATION FORM.

11. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, OPEN AIR SAND BLASTING, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY) .
Open storage pile, stockout/reclaim vehicles on storage pile, storage pile maintenance - see attached process descriptions

12. LOCATION OF THIS PROCESS EMISSION SOURCE IN UTM COORDINATES:

UTM VERTICAL: _3990 km____ UTM HORIZONTAL: _756 km_____

13. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

CN-1007

SOLID-FUEL HANDLING PROCESS DESCRIPTION
BULL RUN FOSSIL PLANT

A flow diagram for the solid-fuel handling process at Bull Run Fossil Plant (BRF) is depicted in Figure 5-1. Coal is currently the only solid fuel received at BRF, but TVA may begin cofiring wood waste with coal in the main boiler at BRF during this permit cycle.

Approximately 800,000 tons of coal was received at BRF in AY 2012 via rail transport only. BRF has received up to 2 million tons of coal per year in the past. Coal is unloaded into a series of six (6) rail hoppers. Two (2) Hewitt Robbins railcar shakeouts are used when needed during cold weather to aid in unloading rail cars. The car dumper facilities are not enclosed but are shielded on one side by an acoustic wall. Typically 90 to 100 auto-dump rapid-discharge railcars with a capacity of ninety tons are unloaded during an 8-hour shift, 5 days per week.

Coal is transferred from the rail hoppers to conveyors BC-1 or BC-2 (nominal rated capacity 1200 tons per hour each) via belt feeders. The transfers are made within the enclosed concrete pit beneath the unloading facility. BC-1 and BC-2 are totally enclosed within an underground concrete tunnel. Coal is then transferred from conveyor BC-1 to BC-3 and from BC-2 to BC-4 (capacity 1200 ton/hr each). BC-3 and BC-4 are enclosed within a concrete tunnel while underground and within a full conveyor gallery while above ground.

At the Breaker Building, coal is transferred from BC-3 to self-cleaning grizzly screens (1.25-inch screen size) and onto Breakers 1 and 3. (The grizzly screens remove about 75% of the coal feed, and the remainder goes through the breakers). Coal is transferred from BC-4 to screens and Breakers 2 and 4. Breakers 1 and 3 transfer coal to BC-5, and Breakers 2 and 4 transfer coal to BC-6 (capacity 1200 ton/hr each). All transfers are made within an enclosed Breaker Building. Water sprays located at the discharge of the breakers onto conveyors BC-5 and BC-6 are used as needed for fugitive dust emission control. To avoid freezing of coal, chutework, and equipment, the sprays may not be operated during freezing conditions. BC-5 and BC-6 are above-ground conveyors and are totally enclosed in a gallery.

BC-5 and BC-6 transfer coal to either BC-7 (capacity 2400 ton/hr) or to BC-14 (capacity 2400 ton/hr) at Transfer Station A. All transfers take place within the fully enclosed transfer station. Coal is transferred from BC-7 to the enclosed live silo (capacity 20,000 tons) and from BC-14 to pan scrapers for stock out. Coal is transferred from the live silo via belt feeders to BC-8 (capacity 2000 ton/hr). The transfer to BC-8 takes place in an enclosed underground concrete pit beneath the silo.

Coal is transferred from BC-8 to either BC-9 or BC-10 (capacity 1000 ton/hr each) at Transfer Station B. BC-9 and BC-10 are enclosed. Coal is transferred from BC-9 to BC-12 and from BC-10 to BC-11 (capacity 1000 ton/hr each) at Transfer Station C. BC-11 and BC-12 are totally enclosed within the bunker room. All transfers at Transfer Station B and Transfer Station C are totally enclosed within each respective transfer station. Coal is transferred from BC-11 and BC-12 to plant bunkers via traveling trippers within the confines of the bunker room.

Sampling systems utilizing swing-arm type primary samplers are located on conveyors BC-3 and BC-4. All sampling equipment, other than the swing-arm primary cutters, is enclosed within separate sampling buildings; the swing-arm cutters are enclosed in the conveyor galleries.

Tramp iron is removed from the coal stream by magnetic separators above conveyors BC-8 and BC-13. The rejected materials are then disposed of in an approved manner.

The maximum available long-term coal storage area is approximately 13.2 acres, but could vary to less than 7.5 acres. The storage area presently covers an area of approximately 7.5 acres. Targeted coal supply quantities are set at 14 days (105,000 tons at a full burn of 7,500 tons per day); however, various circumstances, such as equipment outages and miner strikes, will influence this quantity. It is possible that storage can be built to greater than 30 days burn in anticipation of these events.

Reclaiming is accomplished utilizing mobile equipment (pan scrapers or dozers) to haul or push coal from storage to the underground reclaim hoppers. The coal is transferred from the reclaim hoppers to conveyor BC-13 (capacity 2000 ton/hr) using belt feeders. BC-13 is totally enclosed by an underground concrete tunnel. The transfers to BC-13 are made within the enclosed concrete pit beneath the reclaim hopper. The reclaimed coal is transferred from BC-13 to either conveyor BC-9 or BC-10. This transfer takes place within the enclosure of Transfer Station B, which is underground.

Wood waste will likely be delivered to BRF by truck, but plans for handling this material have not yet been developed.

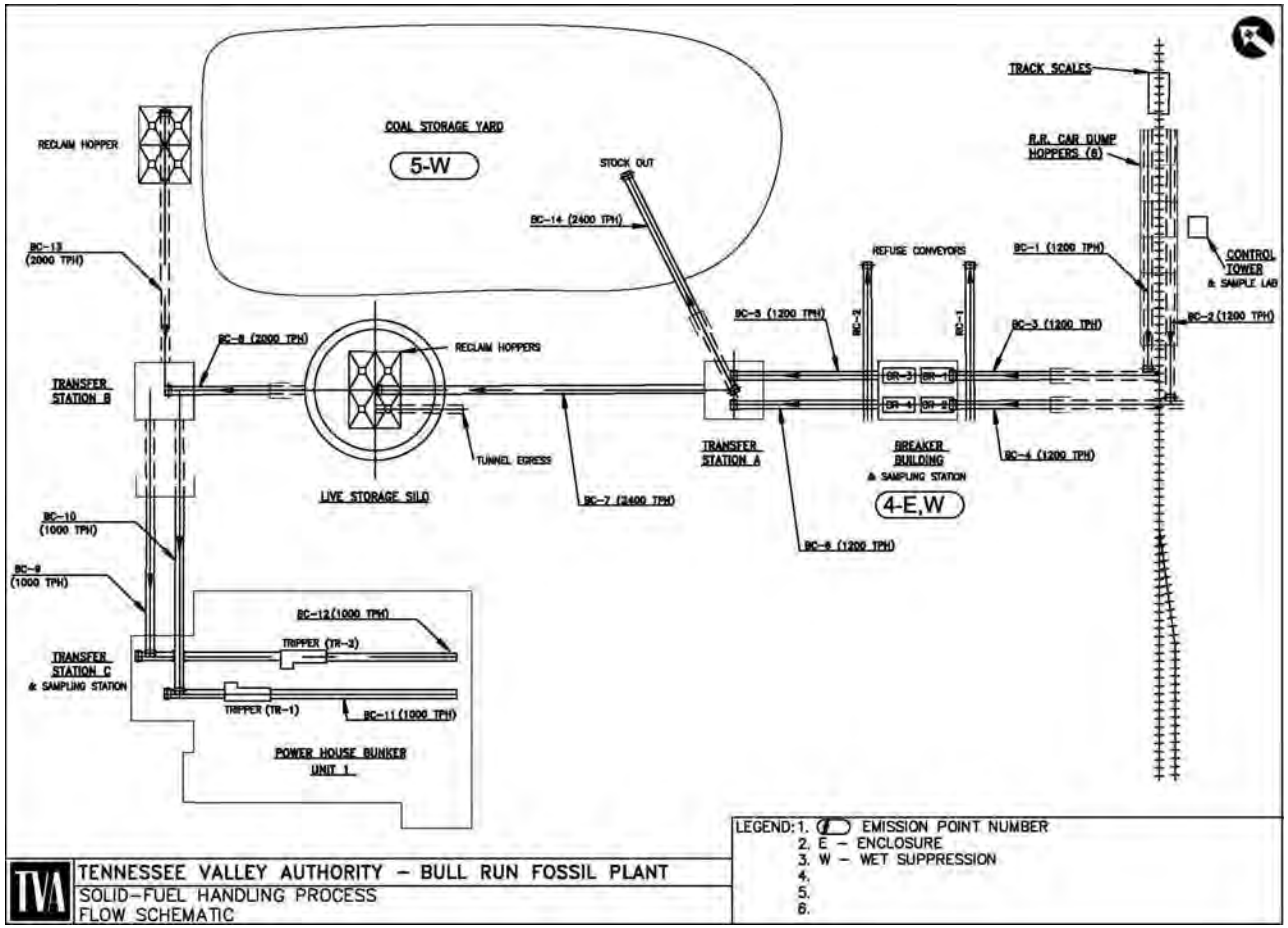
TRACK SCALES
R.R. CAR DUMP HOPPERS (6)
COAL STORAGE YARD
5-W
RECLAIM HOPPER
STOCK OUT
BC-14 (2400 TPH)
CONTROL TOWER & SAMPLE LAB
BC-13 (2000 TPH)
REFUSE CONVEYORS
BC-1 (1200 TPH)
BC-2 (1200 TPH)
BC-5 (1200 TPH)
BC-3 (1200 TPH)
BC-8 (2000 TPH)
RECLAIM HOPPERS
TRANSFER STATION B
TUNNEL EGRESS
TRANSFER STATION A
BREAKER BUILDING
& SAMPLING STATION
BC-4 (1200 TPH)
LIVE STORAGE SILO
BC-7 (2400 TPH)
4-E,W
BC-6 (1200 TPH)
BC-10 (1000 TPH)
BC-9 (1000 TPH)
BC-12 (1000 TPH)
TRIPPER (TR-2)
TRANSFER STATION C
& SAMPLING STATION
TRIPPER (TR-1)
BC-11 (1000 TPH)
POWER HOUSE BUNKER UNIT 1
LEGEND: 1. EMISSION POINT NUMBER
2. E – ENCLOSURE
3. W – WET SUPPRESSION
4.
5.
6.
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
SOLID-FUEL HANDLING PROCESS
FLOW SCHEMATIC

FIGURE 5-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
SOLID-FUEL HANDLING PROCESS

Coal is the only solid fuel currently burned at Bull Run Fossil Plant (BRF). During this permit cycle, TVA may begin cofiring wood waste at a maximum expected rate of 3 percent of the boiler's heat input (approximately 8 percent by weight). Because wood waste handling plans have not yet been developed, potential emission calculations to determine whether individual emission units in the solid-fuel handling process are significant (see Appendix B) do not include wood waste.

Maximum actual hourly total suspended particulate (TSP) emissions from these solid-fuel handling sources were estimated using the maximum rated conveying capacity of the system. Actual annual emissions were estimated based on the tonnage received during July 2011- June 2012. The actual coal received for AY 2012 was 795,907 tons.

The Bradford breakers reduce received coal to an acceptable size (to 1.25-inch top size). For the current coal supply, however, adequate sizing is obtained from the tumbling action of the breakers (i.e., the breakers are not equipped with hammer mills). The emission factor in AP-42 Section 11.24.2 for primary crushing of high-moisture ore, 0.02 pound per ton of material handled, was deemed appropriate for the breakers. About 75% of the coal received passes through the breaker pre-screen and bypasses the breakers.

Conveyor transfer emissions were estimated using the drop operation emission equation in AP-42 Section 13.2.4. Many of the conveyor transfers are inside an enclosed transfer building, and the coal falls within an enclosed chute to the receiving conveyor. Enclosure control efficiencies for conveyor transfer emissions are listed in the literature in the 70 to 90 percent range. Emissions were conservatively estimated using the lower value. Conveyor transfers at transfer stations A and B and to and from the breakers also take place in an enclosure, but the emissions are released uncontrolled into the atmosphere because the dust control portion of the system is no longer operable. The dust collector fan is operated for ventilation only. Water sprays are operated as needed for the fugitive dust control on the discharge from the breakers to conveyors BC-5 and BC-6.

The stockout and reclaim tonnages for AY 2012 were 404,624 tons and 599,491 tons, respectively. Fugitive dust emissions from haul roads in the coal storage yard were estimated using the unpaved road emission equation in AP-42 Section 13.2.2. Wet suppression (watering truck) control measures estimated at 75 percent efficiency are used as needed for fugitive dust emission control.

Targeted coal storage quantities are set at 14 day supply for full burn rates; however, under unusual circumstances, storage quantities could be increased to greater than 30 day supply. The footprint for the coal storage pile under such extreme operations is 13.2 acres. This area was used to estimate wind erosion emissions based on the equation for frequently disturbed storage piles in EPA's 1992 Fugitive Dust Background Document.

No emission estimates were prepared for hazardous air pollutants (HAP) contained in the fugitive (coal dust) emissions from the coal handling system. Although TVA recognizes that several trace-element HAP are contained in the coal dust, no generally recognized emission factors are available for HAP emissions from coal handling facilities.

Data used to estimate the emissions from the solid-fuel handling process are summarized in the table below.

TABLE 5-1
BULL RUN FOSSIL PLANT
INPUT DATA FOR SOLID-FUEL HANDLING EMISSION ESTIMATES

Maximum rated capacity of coal handling system, ton/hr	2,400
July 2011 – June 2012 coal received, ton/yr	795,907
July 2011 – June 2012 coal stockout, ton/yr	404,624
July 2011 – June 2012 coal reclaimed, ton/yr	599,491
Maximum coal storage pile area, acres	13.2
Coal silt content, %	4
Coal moisture content, %	7.21
Breaker bypass rate as fraction of coal received, %	75
Breaker capacity, ton/hr/breaker	600
Coal refuse conveyor handling rate, ton/hr	0.0422
Coal refuse conveyor handling rate, ton/yr	246
Average wind speed, mph	4.38
Wet days per year	126.6
Wind frequency > 12 mph, %	1.2
Coal pan scraper capacity, tons	52
Coal pan scraper empty weight, tons	75.9
Coal pan scraper average one-way trip haul length, ft/trip	1,000
Enclosure control efficiency, % *	70
Water spray control efficiency, %	80
Wet suppression control efficiency for haul road, %	75
Maximum coal storage, days of maximum burn capacity	30
Minimum coal heat content for maximum coal tonnage, Btu/lb	11,000
Dozer operation for coal-pile maintenance, dozer-hours/yr	150
Dozer average speed, mph	4
Dozer gross vehicle weight, tons	18.6
Dozer fugitive emissions control efficiency, %	0
Watering truck average operating speed, mph	4
Watering truck gross vehicle weight, tons	45
Watering truck capacity, tons	41.7
Watering truck annual average operation on coal haul roads, hr/yr	520

*Except for transfer points with dust control equipment used only for ventilation (transfer stations A and B, and conveyor transfers to and from the breakers).

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MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - MISCELLANEOUS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority - Bull Run Fossil Plant	Solid-Fuel Handling Process

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE (e.g., PRESSURE DROP, GAS FLOW RATE, TEMPERATURE):

Water sprays located at the discharge of the breakers onto conveyors BC-5 and BC-6 are used as needed for fugitive dust emission control. To avoid freezing of coal, chutework, and equipment, the sprays may not be operated during freezing conditions.

During stockout and reclaim operations, a watering truck provides wet suppression of fugitive dust on the coal storage yard haul roads as needed.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):

N/A

6. YEAR OF INSTALLATION:

N/A

7. LIST OF POLLUTANT (S) TO BE CONTROLLED BY THIS EQUIPMENT AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulates	75 (Watering Truck)	Wet suppression for unpaved roads: AWMA Air Pollution Engineering Manual, p. 143-144, 1992
Particulates	80 (Breaker Building Water Sprays)	Engineering estimate

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

N/A

9. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

10. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE/FUEL BURNING INSTALLATION/INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority - Bull Run Fossil Plant	Emission Unit 4 - Coal Breaker Building

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):

Solid-Fuel Handling Process - Coal Breaker Building

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED.ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
PARTICULATES (TSP)	392	89.5	0.158	0.954
(FUGITIVE EMISSIONS)	N/A		0.597	14.4
SULFUR DIOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

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(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

N/A

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)

6. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

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MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE/FUEL BURNING INSTALLATION/INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority - Bull Run Fossil Plant	Emission Unit 5 - Coal Storage Yard

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):

Solid-Fuel Handling Process - Coal Storage Yard

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED.ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
PARTICULATES (TSP)	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		10.1	78.0
SULFUR DIOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

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(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

N/A

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)

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MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME:	2. EMISSION SOURCE NUMBER
Tennessee Valley Authority - Bull Run Fossil Plant	Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR.

Coal handling process consisting of coal breakers, and coal stockpile and reclaiming activities. Wet suppression and equipment enclosures are used as needed to control emissions.

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulates	TAPCR 1200-3-8-.01; 40 CFR 51.110(a): Fugitive Dust – Take reasonable precautions to prevent particulate matter from becoming airborne. No visible fugitive dust beyond the property line for more than 5 minutes per hour or 20 minutes per day.	No visible emissions across the property line for more than 5 minutes per hour or 20 minutes per day.	No visible fugitive dust at property line.	IN
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211: Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211: Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
Coal breakers	Particulates	TAPCR 1200-3-7-.02(4) and 1200-3-7-.04(2); 40 CFR 51.110(a); Permit # 556854 Condition E6-1: Particulate Emission Limit	89.5 lb/hr Concentration < 0.25 grains/dscf		IN

11. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
Coal breakers	Opacity	TAPCR 1200-3-5-.01(1); 40 CFR 51.110(a); Permit #556854 Condition E6-2: Opacity Standard	20 percent opacity – except for aggregate of 5 minutes in any 1 hour or 20 minutes in any 24 hour period (excluding malfunctions, startups, and shutdowns). Visible emissions determined by Method 2.		IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1); 40 CFR 51.211: Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211 : Report Required Upon The Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after receipt of the notice of violation.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04 : Sampling, Recording, and Reporting Required For Major Stationary Sources - Department may require periodic or enhanced monitoring, recording, and reporting deemed necessary for the verification of a source's compliance with applicable requirements.			IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3) : Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Department, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.	Take all reasonable steps to minimize levels of emissions that exceed an emission standard or other permit requirements.		IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii); 40 CFR 70.6(a)(3) : Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)					
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
Tennessee Valley Authority - Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):

Solid-Fuel Handling Process: Coal Breaker Building and Coal Storage Yard

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

_____ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
POLLUTANT(S):

_____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
POLLUTANT(S):

_____ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
POLLUTANT(S):

__X__ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
POLLUTANT(S):
Opacity

_____ STACK TESTING - APC FORM V.24
POLLUTANT(S):

_____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
POLLUTANT(S):

__X__ RECORDKEEPING - APC FORM V.26
POLLUTANT(S):
Opacity

_____ OTHER (PLEASE DESCRIBE) - APC FORM V.27
POLLUTANT(S):

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.
START DATE: Within 60 days after June 30 and December 31 of each year.
AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:
START DATE: Within 60 days after June 30 and December 31 of each year.
AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN-1007 RDA 1298

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES

THE MONITORING OF A MAINTENANCE PROCEDURE SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT IS ESTABLISHED.

1. FACILITY NAME:

Tennessee Valley Authority - Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

3. EMISSION SOURCE (IDENTIFY):

Solid-Fuel Handling Process: Coal Breaker Building and Coal Storage Yard

4. POLLUTANT(S) BEING MONITORED:

Opacity

5. PROCEDURE BEING MONITORED:

Maintenance and Inspection Procedures

6. DESCRIPTION OF THE METHOD OF MONITORING AND ESTABLISHMENT OF CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT:

1. The water spray dust suppression system at the coal breakers will be maintained, kept in good condition, and used as needed for fugitive dust emission control. The dust suppression system will be inspected semiannually. Records documenting these inspections will be maintained for 5 years.

2. A watering truck will be employed as needed for fugitive dust emission control on the coal storage yard.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance with the opacity standard as determined by the scheduled inspections will be demonstrated semiannually and submitted as part of the semiannual reports and annual certification report.

8. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority - Bull Run Fossil Plant	Emission Unit 4 - Coal Breaker Building Emission Unit 5 - Coal Storage Yard

3. EMISSION SOURCE (IDENTIFY):

Solid-Fuel Handling Process: Coal Breaker Building and Coal Storage Yard

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Opacity

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:

Opacity

6. METHOD OF MONITORING AND RECORDING:

Compliance with the opacity standard will be demonstrated utilizing the opacity matrix dated June 18, 1996, amended September 12, 2005. Records documenting any visible emission evaluations will be maintained for at least 5 years.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance with the opacity standard as determined by visible emission evaluations, if required, will be submitted as part of the semiannual reports and annual certification report.

8. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION

DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 5-2. BULL RUN FOSSIL PLANT (BRF): AY12 ACTUAL PARTICULATE-MATTER (TSP) EMISSION ESTIMATES FROM SIGNIFICANT SOURCES IN THE SOLID-FUEL HANDLING SYSTEM

EMISSION UNIT NUMBER	EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
				PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
4	BREAKER BUILDING	COAL DISCHG FROM CONV. BC-3 TO SCREENS FOR BREAKERS NO. 1 & 3	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 397,954 T/YR	6.59E-02	3.97E-01	NONE	0	6.59E-02	3.97E-01
		BREAKERS No. 1 & 3	PRIMARY CRUSHER (AP-42, SEC. 11.24)	---	---	0.02 LB/T	1200 T/HR 99,488 T/YR	9.95E-01	24.0	ENCLOSURE	70	2.98E-01	7.20
		COAL DISCHG FROM BREAKERS No. 1 & 3 TO CONV. BC-5	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 397,954 T/YR	6.59E-02	3.97E-01	WATER SPRAY	80	1.32E-02	7.95E-02
		COAL DISCHG FROM CONV. BC-4 TO SCREENS FOR BREAKERS NO. 2 & 4	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 397,954 T/YR	6.59E-02	3.97E-01	NONE	0	6.59E-02	3.97E-01
		BREAKERS No. 2 & 4	PRIMARY CRUSHER (AP-42, SEC. 11.24)	---	---	0.02 LB/T	1200 T/HR 99,488 T/YR	9.95E-01	24.0	ENCLOSURE	70	2.98E-01	7.20
		COAL DISCHG FROM BREAKERS No. 2 & 4 TO CONV. BC-6	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 397,953.5 T/YR	6.59E-02	3.97E-01	WATER SPRAY	80	1.32E-02	7.95E-02
		COAL DISCHG FROM BREAKERS No. 1 - 4 TO REFUSE CONV. RC-1 & 2	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	4.22E-02 T/HR 246 T/YR	4.08E-05	1.40E-05	ENCLOSURE	70	1.22E-05	4.19E-06
		COAL DISCHG FROM REFUSE CONV. RC-1 & 2 TO GROUND	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	4.22E-02 T/HR 246 T/YR	4.08E-05	1.40E-05	ENCLOSURE	70	1.22E-05	4.19E-06
		EMISSIONS SUB-TOTAL						**2.25**	**49.6**		66.49	**0.755**	**15.4**
5	COAL STORAGE YARD	OPEN STORAGE	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MPH, %	4 126.6 1.2	0.368 LB/ACRE-D	13.2 ACRE	8.87E-01	2.03E-01	NONE	0	8.87E-01	2.03E-01
		STORAGE PILE MAINTENANCE BULLDOZERS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 4 18.6 4 126.6	3.37 LB/VMT	150 HR/YR 600 VMT/YR	1.01	13.5	NONE	0	1.01	13.5
		PAN SCRAPERS STOCKOUT HAULING, ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 127.9 4 126.6	8.03 LB/VMT	2400 T/HR 404,624 T/YR 52 T/TRIP 1000 FT/TRIP	5.92	70.2	WET SUPPRESSION	75	1.48	17.5
		PAN SCRAPERS STOCKOUT HAULING, ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 75.9 4 126.6	6.35 LB/VMT	2400 T/HR 404,624 T/YR 52 T/TRIP 1000 FT/TRIP	4.68	55.5	WET SUPPRESSION	75	1.17	13.9
		PAN SCRAPERS DISCHG COAL TO STORAGE PILE	STORAGE PILE BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2400 T/HR 404,624 T/YR	6.70E-02	7.95E-01	NONE	0	6.70E-02	7.95E-01
		PAN SCRAPERS RECLAIM HAULING, ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 127.9 4 126.6	8.03 LB/VMT	2000 T/HR 599,491 T/YR 52 T/TRIP 1000 FT/TRIP	8.76	58.5	WET SUPPRESSION	75	2.19	14.6
		PAN SCRAPERS RECLAIM HAULING, ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 75.9 4 126.6	6.35 LB/VMT	2000 T/HR 599,491 T/YR 52 T/TRIP 1000 FT/TRIP	6.93	46.2	WET SUPPRESSION	75	1.73	11.6

TABLE 5-2. BULL RUN FOSSIL PLANT (BRF): AY12 ACTUAL PARTICULATE-MATTER (TSP) EMISSION ESTIMATES FROM SIGNIFICANT SOURCES IN THE SOLID-FUEL HANDLING SYSTEM

5 (cont.)		PILE WATERING DUST SUPPRESSION ON HAUL ROADS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHIC. SPEED, MI/HR GVW EMPTY, TONS MAX VEHICLE WEIGHT, T CAPACITY, T AVG. HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	4 4 45 86.7 41.7 65.9 4 126.6	5.95 LB/VMT	4 VMT/HR 520 HR/YR	6.19	23.8	WET SUPPRESSION	75	1.55	5.95
		EMISSIONS SUB-TOTAL						**34.4**	**269**		70.72	**10.1**	**78.0**

BRF SOLID-FUEL-HANDLING PARTICULATE-MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP		CONTROLLED TSP	
	T/YR	LB/HR	T/YR	LB/HR
POINT-SOURCE	0.264	1.59	0.158	0.954
FUGITIVE	36.4	317	10.7	92.4
TOTAL	**36.7**	**318**	**10.8**	**93.4**

NOTES:

	References
(1) The sources of emission equations/factors are:	
(a) Material drop operations (continuous and batch)	EPA, AP-42, 5th Edition, Section 13.2.4, November 2006
(b) Unpaved roads fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
(c) Coal crushers, primary and secondary (high moisture material)	EPA, AP-42, 5th Edition, Section 11.24.2, August 1982 (reformatted 1-1995)
(d) Wind erosion from active (frequently disturbed) piles	EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, Sept. 1992.
(2) The sources for meteorological input parameters are:	
(a) Average wind speed (4.38 mph) and frequency of winds greater than 12 mph (1.2 %)	Bull Run Fossil Plant Meteorological Tower, 1986-87 data base
(b) Number of wet days per year (126.6)	National Weather Service, Knoxville, Tennessee, 1942-94 Average.
(3) The sources of control efficiencies are:	
(a) Enclosures of conveyors and transfer points	70 % (AWMA, Air Pollution Engineering Manual, p. 794, 1992)
(b) Wet suppression (for stockout/reclaim haul roads)	75 % (AWMA, Air Pollution Engineering Manual, p. 143-144, 1992)
(c) Water Spray (for discharge from breakers)	80 % (DOE/RG/10312-1 (Vol. 2), Technical Guide for Estimating Fugitive Dust Impacts from Coal Handling Operations, p. 4-3, 1984)

SAMPLE CALCULATIONS FOR THE SOLID-FUEL HANDLING PROCESS
BULL RUN FOSSIL PLANT

The equations shown in the following sections were used to calculate total suspended particulates (TSP) emission estimates for a representative sample of emission sources in the solid-fuel handling process at the Bull Run Fossil Plant (BRF). The detailed results of the emission calculations for significant emission sources in the BRF solid-fuel handling process are presented in Table 5-2. The detailed results of the emission calculations for those sources determined to be insignificant (based on their potential to emit falling below the regulatory threshold) are presented in Appendix B.

Maximum Allowable Emissions

From the current air permit (556854), the particulate matter (PM) emission limit for the mechanical dust collectors and the ventilation fans is 89.5 lb/hr. For the maximum potential operations, this equates to an annual allowable rate of:

$$\frac{89.5\ \text{lb}}{\text{hr}} \times \frac{8{,}760\ \text{hr}}{\text{yr}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 392\ \text{ton/yr}$$

Actual Emissions

Currently coal is the only solid fuel burned at Bull Run Fossil Plant. During this permit cycle, wood waste may be cofired with coal at a maximum expected rate of 3 percent of the boiler heat input (approximately 8 percent by weight). However, wood waste material will not be involved in either of the two significant emission units in the solid fuel handling process (the breaker building and coal storage yard). This section is restricted to estimating total suspended particulate (TSP) emissions from processing coal alone at the maximum hourly and July 2011 – June 2012 actual coal usage rates. The following discussion reviews the assumptions and equations used to generate the TSP emission estimates for these two significant emission units.

(1) Batch and Continuous Drop

Source: AP-42 Section 13.2.4, 11/2006

$$E = k\ (0.0032)\ \frac{(\frac{U}{5})^{1.3}}{(\frac{M}{2})^{1.4}}$$

Where E = Uncontrolled TSP (< 30μ) emission factor, lb/ton
U = Mean wind speed, mph
M = Material moisture content, weight %
k = Particle size multiplier (0.74 for TSP)

Sample Calculation – Discharge of Conveyor BC-3 to Screens for Breakers No. 1 & 3 (Source No. 4)

$$E = 0.74\ (0.0032)\ x\ \frac{(\frac{4.38}{5})^{1.3}}{(\frac{7.21}{2})^{1.4}} = 3.31 \times 10^{-4}\ \text{lb/ton}$$

Uncontrolled Emissions:

Basis: During AY 2012, 795,907 tons of coal were received at BRF. It is assumed that 50% of the coal went to the screens for breakers 1 & 3 and 50% went to the screens for breakers 2 & 4. The maximum hourly coal handling rate of BC-3 is 1,200 tons//hr.

$$\text{ANNUAL} = 3.31 \times 10^{-4}\ \text{lb/ton} \times 795{,}907\ \text{tons/yr} \times 0.5 \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 0.0659\ \text{tons/yr}$$

$$\text{HOURLY} = 3.31 \times 10^{-4}\ \text{lb/ton} \times 1{,}200\ \text{tons/hr} = 0.397\ \text{lb/hr}$$

Controlled Emissions:

Controlled Emissions are the same as Uncontrolled Emissions because no add-on emission control equipment is used for this transfer operation.

(2) Breakers No. 1 and 3

Source: EPA, AP-42 Section 11.24.2, 8/1982

The breakers reduce to an acceptable size that portion (about 25%) of the coal received which do not pass through the 1.25-inch screen size of the grizzly screens. They do not contain hammermills; adequate sizing is obtained from the tumbling action of the breakers. The AP-42 emission factor for primary crushing of high-moisture ore (0.02 lb/ton) was deemed appropriate for the breakers. The coal delivered to the screens for breakers No. 1 and 3 is equal to 50% of the total coal received because there are four breakers.

Sample Calculation – Breakers No. 1 and 3 (Source No. 4)

Uncontrolled Emissions:

$$\text{ANNUAL} = 0.02\,\text{lb/ton} \times 795{,}907\,\text{tons/yr} \times 0.5 \times 0.25 \times \frac{\text{ton}}{2{,}000\,\text{lb}} = 0.995\,\text{tons/yr}$$

$$\text{HOURLY} = 0.02\,\text{lb/ton} \times 1{,}200\,\text{tons/hour} = 24.0\,\text{lb/hr}$$

Controlled Emissions:

Controlled Emissions = (Uncontrolled emissions) x (1 - e/100)

Where: e = control efficiencies (%)

Using e = 70 percent for the enclosure control efficiency and

$$\text{ANNUAL} = 0.995\,\text{tons/yr} \times \left(1 - \frac{70}{100}\right) = 0.298\,\text{tons/yr}$$

$$\text{HOURLY} = 24.0\,\text{lb/hr} \times \left(1 - \frac{70}{100}\right) = 7.20\,\text{lb/hr}$$

(3) Wind Erosion from Storage Piles

Source: EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, September 1992, Section 2.3.1.3.3.

$$E = 1.7\left(\frac{s}{1.5}\right)\left(\frac{d}{235}\right)\left(\frac{f}{15}\right)$$

Where: E = TSP (< 30µ0emission factor, lb/day/acre of pile area

s = Silt content of material, weight %

d = Number of dry days per year (< 0.01 inch of precipitation per day)

f = Frequency of wind speeds greater than 12 mph at the mean pile height (%)

Sample Calculation - Coal Storage Yard - Open Storage (Source No. 5)

$$E = 1.7\left(\frac{4.0}{1.5}\right)\left(\frac{365 - 126.6}{235}\right)\left(\frac{1.2}{15}\right) = 0.368 \text{ lb/day/acre}$$

The footprint for the Coal Storage Yard under extreme operations (30-day supply at full coal burn rates) is 13.2 acres.

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{0.368\,\text{lb}}{\text{acre - day}} \text{ x } 13.2\,\text{acre} \text{ x } \frac{365\,\text{day}}{1\,\text{year}} \text{ x } \frac{1\,\text{ton}}{2{,}000\,\text{lb}} = 0.887 \text{ tons/yr}$$

$$\text{HOURLY} = \frac{0.368\,\text{lb}}{\text{acre - day}} \text{ x } 13.2\,\text{acre} \text{ x } \frac{1\,\text{day}}{24\,\text{hour}} = 0.203\,\text{lb/hr}$$

Controlled Emissions:

Controlled Emissions are the same as Uncontrolled Emissions because no fugitive emissions controls are in use to counteract wind erosion of the storage pile.

(4) Unpaved Road

Source: EPA AP-42, Section 13.2.2, 11/2006

$$E = k\left(\frac{s}{12}\right)^{a}\left(\frac{W}{3}\right)^{b}\left(\frac{365 - p}{365}\right)$$

Where: E = Emission factor, lb/VMT (VMT = Vehicle Miles Traveled)
k = Particle size multiplier (4.9 for TSP)
s = Silt content of road surface material, weight % (4% for coal yard)
W = Mean vehicle weight, tons
p = Number of days per year with at least 0.01 inch of precipitation
a = Empirical constant of 0.7 for TSP
b = Empirical constant of 0.45 for TSP

VMT = (Total weight hauled/weight hauled per trip) x (length of each trip)

Sample Calculation – Coal Storage Yard: Pan Scrapers Stockout Hauling - One Way Full (Source No. 5)

$$E = 4.9 \times \left(\frac{4}{12}\right)^{0.7} \times \left(\frac{127.9}{3}\right)^{0.45} \times \left(\frac{365 - 126.6}{365}\right) = 8.03 \text{ lb/VMT}$$

Uncontrolled Emissions:

Stockout tonnages for AY 2012 were 404,624 tons. The hourly panscraper stockout rate is 2,400 tons/hr.

$$\text{ANNUAL} = 8.03\,\text{lb/VMT} \times 404{,}624\,\text{tons/year} \times \frac{1\,\text{trip}}{52\,\text{tons}} \times 1{,}000\,\text{feet/trip} \times \frac{\text{mile}}{5{,}280\,\text{feet}} \times \frac{\text{ton}}{2{,}000\,\text{lb}} = 5.92\,\text{tons/yr}$$

$$\text{HOURLY} = 8.03\,\text{lb/VMT} \times 2{,}400\,\text{tons/hr} \times \frac{1\,\text{trip}}{52\,\text{tons}} \times 1{,}000\,\text{feet/trip} \times \frac{\text{mile}}{5{,}280\,\text{feet}} = 70.2\,\text{lb/hr}$$

Controlled Emissions:

Controlled emissions = (Uncontrolled emissions) (1 - e/100)
Where e = Control Efficiency (%)

The AWMA Air Pollution Engineering Manual, citing field-test data at a coal-fired power plant, indicates that wet suppression methods can effectively control unpaved-road fugitive emissions. It is estimated that the watering program will achieve 75 percent control efficiency for coal yard stockout/reclaim fugitive emissions, taking into account realistic limitations in the area that the water truck can cover as compared to the pan scrapers.

Controlled Emissions:

$$\text{ANNUAL} = 5.92 \text{ tons/yr} \times (1 - \frac{75}{100}) = 1.48 \text{ tons/yr}$$

$$\text{HOURLY} = 70.2 \text{ lb/hr} \times (1 - \frac{75}{100}) = 17.5 \text{ lb/hr}$$

ATTACHMENT 6

ASH HANDLING PROCESS DESCRIPTION

Ash Handling Process Emission Factors - Table 6-2
of 7-8-2013 Permit Application
and
Calculation of Particulate Emissions from Ash Handling
Process (01-0009-06)

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.10

MAJOR SOURCE OPERATING PERMIT APPLICATION - MISCELLANEOUS PROCESSES

1. FACILITY NAME:
Tennessee Valley Authority - Bull Run Fossil Plant

2. PROCESS IDENTIFICATION NUMBER:
Ash Handling Process

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

6	Dry Fly Ash Storage Silo #1 and Unloading
7	Conditioned Fly Ash Disposal
8	Bottom Ash Reclaim and Disposal
21	Dry Fly Ash Storage Silo #2 and Unloading
22-26	Fly Ash Liquid Ring Vacuum Pump System Filters

IF EMISSIONS ARE CONTROLLED FOR COMPLIANCE, ATTACH THE APPROPRIATE AIR POLLUTION CONTROL SYSTEM FORM.

4. NORMAL OPERATING SCHEDULE:
__24__ HRS/DAY __7__ DAYS/WK __365__ DAYS/YR

5. YEAR OF CONSTRUCTION OR LAST MODIFICATION:
1966 - Wet Sluice Ash Handling Construction
1982 - Dry Fly Ash Silo
2010 - Dry Fly Ash System Upgrade

6. DESCRIBE THIS PROCESS (PLEASE ATTACH A FLOW DIAGRAM OF THIS PROCESS) AND CHECK ONE OF THE FOLLOWING:

_____ BATCH ___X___ CONTINUOUS See attached process descriptions: Ash Handling

7. LIST THE TYPES AND AMOUNTS OF RAW MATERIALS INPUT TO THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS)
Dry Fly Ash (sales)	Liquid ring vacuum pumps, filter separators, storage silos with bin vent filters, dry ash unloader, tanker trucks	50-75 (tph)	300 (tph)
Bottom Ash/ Economizer Ash	Wet sluiced to ash pond then reclaimed to dewatering area. Dewatered ash is dry stacked with self-loading pan scrapers	204 (tph) (wet basis)	1.48×10^5 (tpy) (dry basis)
Conditioned Fly Ash	Liquid ring vacuum pumps, filter separators, storage silos with bin vent filters, pin mixers, hopper trucks, dozers, compactor	1.38×10^5(tpy) (wet basis, no sales)	4.49×10^5(tpy) (wet basis, no sales)

8. LIST THE TYPES AND AMOUNTS OF PRIMARY PRODUCTS PRODUCED BY THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE AMOUNT PRODUCED (UNITS)	MAXIMUM AMOUNT PRODUCED (UNITS)
Dry Fly Ash (sales)	Liquid ring vacuum pumps, filter separators, storage silos with bin vent filters, dry ash unloader, tanker trucks	50-75 (tph)	8.50×10^4 (tpy)

9. PROCESS FUEL USAGE:

TYPE OF FUEL	MAX HEAT INPUT (10^6 BTU/HR)	AVERAGE USAGE (UNITS	MAXIMUM USAGE (UNITS)
None			

10. LIST ANY SOLVENTS, CLEANERS, etc., ASSOCIATED WITH THIS PROCESS:

Small amounts of nonhazardous solvents and cleaners are used in maintenance activities.

IF THE EMISSIONS AND/OR OPERATIONS OF THIS PROCESS ARE MONITORED FOR COMPLIANCE, PLEASE ATTACH THE APPROPRIATE COMPLIANCE DEMONSTRATION FORM.

11. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, OPEN AIR SAND BLASTING, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY).

Dry fly ash sales are unloaded through a telescoping chute to tanker trucks. The chute is equipped with an exhaust fan and piping which discharge back into the silo. Fugitive emissions only occur when the collar connecting the chute to the truck is disconnected to allow weighing and closing the truck hatch. Fugitive emissions also come from vehicle traffic to move ash (fly ash and bottom ash) for disposal and sales, wind erosion of dry ash storage pile, pile maintenance, batch dumping of ash at disposal pile, and loadout of conditioned ash to disposal vehicles.

12. LOCATION OF THIS PROCESS EMISSION SOURCE IN UTM COORDINATES:
UTM VERTICAL: __3990 km__ UTM HORIZONTAL: __756 km__

13. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN-1007 RDA 1298

Comment [COMMENT1]: Based on rated heat input capacity at 15% ash, 15% moisture of ash when dry stacked

Comment [COMMENT2]: Based on 80% of total ash being fly ash and 90% of fly ash being ESP ash. 15% moisture when conditioned, actual coal burn rate AY 1995,

Comment [COMMENT3]: Based on 80% of total ash being fly ash and 90% of fly ash being ESP ash. 15% moisture when conditioned, max burn rate,

Comment [COMMENT4]: Based on current contract.

ASH HANDLING PROCESS DESCRIPTION
BULL RUN FOSSIL PLANT

OVERVIEW
Pyrites, bottom ash, and fly ash from the two furnaces firing Bull Run's single-unit boiler are handled by an integrated ash system which produces a coarse wet ash that is stored at ash piles onsite, damp or conditioned fly ash that is stored onsite, and dry fly ash for sale to offsite users. The flow diagram in Figure 6-1 depicts the overall ash handling process described in detail below. Conditioned fly ash in the past has also been taken offsite to a structural landfill. Emission calculations are included for this option although presently all fly ash is disposed onsite.

PYRITES
Pyrites are the reject material occurring during pulverization of the incoming coal. This material is removed from the pulverizer mill outlet hoppers (5 per furnace, 10 total) by a Jetpulsion pump (10 total) located under each mill hopper and discharged into one of two ash mixing tanks. These tanks discharge slurry through Jetpulsion pumps (2 per tank, 4 total) to a shallow ash pond described below.

BOTTOM ASH
The pulverized coal is fed to the two furnaces where it is burned, producing fly ash and a coarse bottom ash or clinker. Each furnace has two bottom ash enclosures (4 total) and each enclosure is equipped with a clinker grinder (4 total). Ground clinker is sluiced to the ash mixing tanks by a Jetpulsion pump (1 per grinder, 4 total).

SCR ASH
Some of the coarser fly ash contained in the flue gas exiting the furnaces falls into the SCR hoppers. This fly ash is mixed with water and the resultant slurry flows by gravity into the ash mixing tanks.

ECONOMIZER ASH
Some of the coarser fly ash contained in the flue gas exiting the furnaces falls into the economizer hoppers (4 per furnace, 8 total). Each hopper discharges into a Denslury pot (8 total) where water is added. The resultant slurry flows by gravity into the ash mixing tanks.

PRECIPITATOR FLY ASH
Gases and fly ash fines exiting the economizers enter electrostatic precipitators (1 per furnace, 2 total) where the fines are removed from the gas stream and fall into hoppers. The gases discharge into a wet flue gas desulfurization (FGD) system to scrub sulfur dioxide before they vent into the atmosphere. Fly ash from the precipitator hoppers is removed in an air current generated by a vacuum-producing system. The vacuum system consists of four (4) ring vacuums pumps (with one spare) and four (4) corresponding filter separators (with four spares). Each filter separator is sized at a 4:1 air to cloth ratio and contains 65 Ryton 16-ounce bags with a PTFE membrane. All filter separators have a Filtersense dust detector to verify that all bags are performing as designed. The vacuum system has a total air flow of 2,940 standard cubic feet per minute, and the maximum clean air dust concentration exiting each filter separator is 0.005 grains per dry standard cubic foot. The conveying piping under the ESPs lies perpendicular to the precipitator gas flow to eliminate excessive flue gas carry over to the filter separators.

The collected dry fly ash is vacuumed into one of two (2) three-day storage silos. Fly ash is conveyed to the silos alternately or simultaneously. Each silo is equipped with two pin mixer ash unloaders, a dry ash unloader, and a bin vent. Each bin vent has PTFE membrane Polyester sixteen ounce bags. The total air flow exiting each bin vent is 3,264 standard cubic feet per minute. The maximum clean air dust concentration exiting each bin vent is 0.005 grains per dry standard cubic foot.

Ash unloaded through the pin mixer ash unloaders is conditioned at 15 percent moisture and loaded into hopper trucks for dry stacking. The mixers are each capable of loading 250 tons of ash per hour and handling two hopper trucks simultaneously. Ash that is sold is not conditioned to 15 percent but maintains its storage silo moisture content, approximately two (2) percent. The ash that is sold is unloaded through the dry ash unloader (i.e., a spout) into tanker trucks and hauled offsite. The silos share a common truck scale which limits sold ash loading to one truck at a time. During dry fly ash (i.e., sold ash) unloading to tanker trucks, the exhaust feeds back into the silo for discharge through the bin vent filter into the atmosphere.

CONDITIONED ASH STACKING

The conditioned fly ash is transported to the conditioned ash stacking onsite disposal area. Pile maintenance and sloping are performed with a grader/compactor and dozer and a water truck wets the work areas and roads during ash stacking activities.

WET ASH STACKING

Bottom ash, SCR ash, economizer ash, and pyrites from the ash mixing tanks flow to the broad shallow pond (4.08 acres by 2 feet deep). A bulldozer mounds the ash in the channel at the shallow pond and two pan scrapers remove the ash and stack it alongside the channel for dewatering. The drained water flows into the Main Ash Pond. The dewatered ash is reclaimed by the pan scrapers and transported to Pond 2A, where it is stacked. A water truck wets the work areas and roads during the time the pan scrapers are reclaiming and transporting the ash to Pond 2A.

SIGNIFICANT EMISSION SOURCES

The significant emission sources for the ash handling system are the two fly ash storage silo bagfilters, the fly ash vacuum system filters, the conditioned fly ash disposal activities and the bottom ash reclaim and disposal activities.

The following list summarizes the stationary equipment used in the ash handling process at BRF. Typical mobile equipment used in the process is described in Table 6-1.

ASH HANDLING EQUIPMENT SUMMARY

Item	Number
Jetpulsion Pumps (Pyrites)	10
Jetpulsion Pumps (Bottom Ash)	4
Jetpulsion Pumps (Ash Mixing Tanks)	4
Clinker Grinders	4
Economizer Denslury Pots	8
Liquid Ring Vacuum Pumps	4 & 1 spare
Filter Separators	4 & 4 spares
Dry Fly Ash Storage Silos	2
Silo Bin Vent Bagfilter Exhausts	2
Dry Fly Ash Unloaders	2
Dry Fly Ash Unloading Spouts	2
Conditioned Fly Ash Pin Mixers	4
Conditioned Fly Ash Unloading Spouts	4
Dry Fly Ash Fluidizing Blowers	2 & 1 spare
Vacuum/Pressure Relief Valves (one per Silo)	2

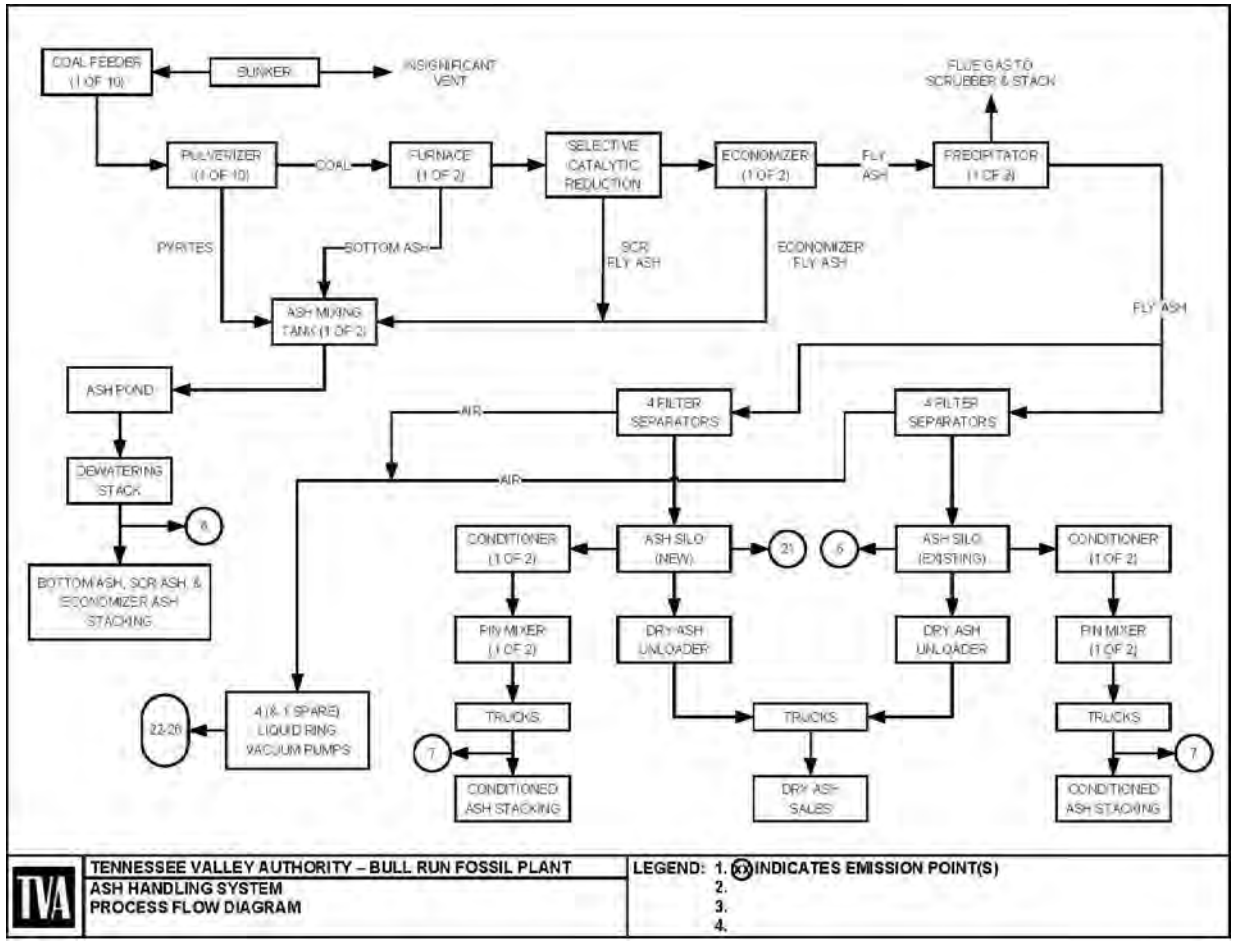
COAL FEEDER (1 OF 10)
SURGE BIN
INSIGNIFICANT VENT
FLUE GAS TO SCRUBBER & STACK
PULVERIZER (1 OF 10)
COAL
FURNACE (1 OF 2)
SELECTIVE CATALYTIC REDUCTION
ECONOMIZER (1 OF 2)
FLY ASH
PRECIPITATOR (1 OF 2)
PYRITES
BOTTOM ASH
SCR FLY ASH
ECONOMIZER FLY ASH
ASH MIXING TANK (1 OF 2)
FLY ASH
ASH POND
AIR
4 FILTER SEPARATORS
4 FILTER SEPARATORS
DEWATERING STACK
AIR
6
CONDITIONER (1 OF 2)
ASH SILO (NEW)
21
6
ASH SILO (EXISTING)
CONDITIONER (1 OF 2)
BOTTOM ASH, SCR ASH, & ECONOMIZER ASH STACKING
PIN MIXER (1 OF 2)
DRY ASH UNLOADER
DRY ASH UNLOADER
PIN MIXER (1 OF 2)
22-26
4 (& 1 SPARE) LIQUID RING VACUUM PUMPS
TRUCKS
TRUCKS
TRUCKS
7
7
CONDITIONED ASH STACKING
DRY ASH SALES
CONDITIONED ASH STACKING
TVA
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
ASH HANDLING SYSTEM
PROCESS FLOW DIAGRAM
LEGEND: 1. (XX) INDICATES EMISSION POINT(S)
2.
3.
4.

FIGURE 6-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
ASH HANDLING PROCESS

The maximum potential annual total fly ash production (SCR and economizer ash plus ash collected by electrostatic precipitators [ESP]) was calculated based on boiler maximum heat input capacity (8,871 million Btu/hr), minimum coal heat content (11,000 Btu/lb), 8,760 hr/yr, 15% total ash, and an 80/20 fly ash/bottom ash split. The maximum conditioned flyash production was calculated based on 90% of the total fly ash going to the ESP (10% to SCRs and economizers) and 15% moisture content for the conditioned fly ash. The bottom ash, SCR fly ash, and economizer fly ash are wet sluiced to the shallow pond and do not contribute to the conditioned ash totals. Actual fly ash production for July 2011 - June 2012 was 51,474 tons (dry basis).

The total suspended particulates (TSP) collection efficiency of the silo bin vent filters and fly ash vacuum system filters are taken as 99.9%, based on an estimated inlet TSP concentration to the particulate control system of 5 gr/dscf.

Uncontrolled fugitive dust emissions from the conditioned fly ash and dry fly ash unloading operations at the storage silos were estimated using the drop operation equation in AP-42 Section 13.2.4. Control of fugitive emissions for conditioned fly ash loadout is obtained by water added in the conditioner. Conditioned fly ash is delivered to hopper trucks at 10-20% moisture content (15% was used for emission calculations). Dry fly ash is delivered to tank trucks through a telescoping chute with an exhaust fan to return fugitive emissions back into the silo. The chute connects to the tank trucks using a collar which will vary in the tightness of its fit with different hatch configurations. Some emissions also occur when the collar is released from the truck hatch to allow for weighing the truck and closing the hatch. A 90 percent control efficiency is estimated for this connection=s capture of the fugitive emissions. The emissions that are captured are controlled by the bin vent filters on each storage silo.

No emission estimates were prepared for hazardous air pollutants (HAP) contained in the fly ash escaping the bagfilter control system. Although TVA recognizes that several trace element HAP are contained in the PM emissions, no generally recognized emission factors were found for HAP emissions from coal ash handling facilities.

Bottom ash, SCR fly ash, and economizer fly ash are sluiced out together. Pan scrapers are used to reclaim this ash and place it in the dewatering area adjacent to the ash pond. The ash is dewatered to approximately 15% moisture and then it is reclaimed again by pan scrapers and transferred to the ash pile for stacking.

TVA will operate a wet suppression program for all paved and unpaved ash haul roads and ash piles including the onsite conditioned fly ash stack and the bottom ash stack in Pond 2A. A 95 percent control efficiency for wet suppression is expected for haul vehicles and pile maintenance activities.

Data used to estimate the emissions from the ash handling process are summarized in Table 6-1.

TABLE 6-1
INPUT DATA FOR ASH HANDLING EMISSION ESTIMATES

Maximum boiler heat input capacity, million Btu/hr	8,871
Minimum coal heat content, Btu/lb	11,000
Maximum coal burn rate, tpy	3,532,271
Maximum coal burn rate, tpd	9,677
Maximum total ash, %	15
Maximum total ash, tpy (dry)	529,841
Bottom ash as fraction of total ash, %	20
Fly ash as fraction of total ash, %	80
AY 2012 fly ash (dry basis)	51,474
Economizer fly ash as fraction of total fly ash, %	10
Conditioned (cond) ash moisture content, %	15
Cond fly ash, tpy (wet basis with no sales)	60,557
Cond ash loadout capacity, tph	250
Pan scraper gross vehicle weight (GVW), tons	56
Pan scraper capacity, tons	51
Water truck GVW, lbs	97,000
Water truck average speed, mph	4
Water truck maximum capacity, tons	41.7
Paved road silt loading, g/m^2 (Quarry)	8.2
Unpaved haul road silt content, % (Western surface coal mining)	8.4
Cond ash hopper truck capacity, tons	30
Cond ash hopper truck empty weight, tons	20
Cond ash water truck operating hours, hr/yr	1,560
Cond ash compactor average speed, mph	2
Cond ash compactor operating hours, hr/yr	520
Cond ash compactor GVW, tons	12.25
Cond ash offsite one-way paved-road haul distance on TVA property, mi	0.35
Cond ash one-way paved-road haul distance from silo to pile, mi	0.35
Cond ash one-way unpaved-road haul distance from silo to pile, mi	0.35
Cond ash haul distance (one-way) over pile, mi	0.25
Cond ash silt content, %	100
Cond ash active storage area, acres	20
Cond ash dozer GVW, tons	38.19
Dozer maximum speed, mph	5
Cond ash dozer operating hours, hr/yr	700
Bottom ash moisture content at reclaim, %	50

Bottom ash moisture content for dry stacking, %	15
Bottom ash and economizer ash reclaim, tpy (wet)	11,439
Bottom ash and economizer ash reclaim, tph (wet)	204
Bottom ash and economizer ash dry stack, tpy (wet)	6,729
Bottom ash + economizer ash silt cont, %	6.9
Bottom ash one-way unpaved-road haul distance for stacking, mi	0.35
Bottom ash one-way haul over pile, mi	0.15
Bottom ash one-way haul distance for dewatering area, mi	0.165
Bottom ash dozer GVW, tons	38.19
Bottom ash dozer average speed, mph	5
Bottom ash dozer operation, hr/yr	150
Bottom ash dewater area, acres	1.5
Bottom ash dry stack, acres	56
Bottom ash water truck operation, hr/yr	150
Dry fly ash maximum sales, tpy	85,000
Dry fly ash sales July 2011-June 2012, tpy	0
Dry ash sales maximum number of trucks per hour, #	4
Dry ash sales trucks capacity, tons	25
Dry ash truck empty weight, tons	15
Dry ash roundtrip paved-road haul distance, mi	0.7
Dry ash sales loadout capacity, tph per silo	150
Average wind speed, mph	4.38
Wet days per year	126.6
Wind frequency greater than 12 mph, %	1.20
Onsite haul road wet suppression control efficiency, %	95
Ash stacking wet suppression control efficiency, %	95
Operating hours of storage silo bin vent bagfilter, hr/yr	8,760
Exhaust flow rate for storage silo bin vent bagfilter, actual ft^3/min	4,217
Exhaust temperature for storage silo bin vent bagfilter, EF	211
Moisture content in exhaust from storage silo bin vent bagfilter, %	2
Exhaust flow rate for storage silo bin vent bagfilter, dry standard ft^3/min	3,264
Inlet grain loading to storage silo particulate control system, gr/dscf	5
Outlet grain loading from storage silo bin vent bagfilter, gr/dscf	0.005
Operating hours of liquid ring vacuum pumps/filter separators, hr/yr	8,760
Exhaust flow rate for liquid ring vacuum pumps/filter separators, actual ft^3/min	775
Exhaust temperature for liquid ring vacuum pumps/filter separators, EF	88
Moisture content in exhaust from liquid ring vacuum pumps/filter separators, %	2
Exhaust flow rate for liquid ring vacuum pumps/filter separators, dry standard ft^3/min	735
Inlet grain loading to liquid ring vacuum pumps/filter separators, gr/dscf	5
Outlet grain loading from liquid ring vacuum pumps/filter separators, gr/dscf	0.005

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DIVISION OF AIR POLLUTION CONTROL
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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION - STACK IDENTIFICATION

1. FACILITY NAME:	FOR APC USE ONLY	APC COMPANY NO.
Tennessee Valley Authority - Bull Run Fossil Plant		
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION):		LOG/PERMIT NO.
6 & 21 (Identical)		

3. EMISSION SOURCE (IDENTIFY):

Dry Fly Ash Storage and Unloading – The collected electrostatic precipitator dry fly ash is vacuumed into one of two (2) storage silos. Each silo has a bin vent filter.

4. STACK HEIGHT ABOVE GRADE IN FEET

121

5. VELOCITY (DATA AT EXIT CONDITIONS):	6. INSIDE DIMENSIONS AT OUTLET IN FEET:
98.0 (ACTUAL FEET PER SECOND)	0.955
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM):	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM):
4,217	3,264
9. EXHAUST TEMPERATURE:	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS):
211 DEGREES FAHRENHEIT (EF)	2 PERCENT 8.41 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (EF)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2, NO_x, etc.)?

N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9 OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

____ YES __X__ NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

14. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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APC V.18

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - BAGHOUSES/FABRIC FILTERS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority - Bull Run Fossil Plant	Dry Fly Ash Storage and Unloading (Storage Silo Bin Vent Filters)

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

6 & 21 (Identical)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

The device is a bin vent bagfilter that exhausts fluidizing air and displacement air from ash entering the dry fly ash storage silo and air return from tank trucks. The outlet diameter is 0.955 feet and exhausts 121 feet above grade. The bagfilter operates 24 hours per day 365 days per year. The operating parameter is pressure drop across the bagfilter. A telescoping spout delivers fly ash from the silo to the tank trucks during dry fly ash sales loading. These fugitive emissions are feed back into the silo for discharge through the bin vent filter.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE)	6. YEAR OF INSTALLATION:
United Conveyor Corporation	2010

7. LIST OF POLLUTANT(S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT (SEE INSTRUCTIONS).

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Fly Ash Particulates	99.9%	Engineering estimate based on estimated inlet grain loading and design outlet grain loading

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL

Material collected by the bin vent bagfilter drops back into the dry fly ash storage silo.

9. IF THE BAGS ARE COATED, SPECIFY THE MATERIAL USED FOR COATING AND FREQUENCY OF COATING.

N/A

10. DOES THE BAGHOUSE COLLECT ASBESTOS CONTAINING MATERIAL?

YES ___ NO _X__

IF AYES≧, PROVIDE DATA AS OUTLINED IN ITEM 10, INSTRUCTIONS FOR THIS FORM.

11. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION - STACK IDENTIFICATION

1. FACILITY NAME:	FOR APC USE ONLY	APC COMPANY NO.
Tennessee Valley Authority - Bull Run Fossil Plant		
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION):		LOG/PERMIT NO.
22 - 26 (Identical) 4 operating and 1 spare		

3. EMISSION SOURCE (IDENTIFY):

Liquid Ring Vacuum Pump Filter Separators - Fly ash from the electrostatic precipitators are removed in an air current generated by a vacuum
producing system consisting of four (4) liquid ring vacuum pumps (with 1 spare).

4. STACK HEIGHT ABOVE GRADE IN FEET

6.06

5. VELOCITY (DATA AT EXIT CONDITIONS):	6. INSIDE DIMENSIONS AT OUTLET IN FEET:
37.0 (ACTUAL FEET PER SECOND)	0.667
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM):	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM):
775	735
9. EXHAUST TEMPERATURE:	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS):
88 DEGREES FAHRENHEIT (EF)	2 PERCENT — 6.88 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (EF)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2, NO_X, etc.)?

N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9 OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

____ YES __X__ NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

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APC V.18

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - BAGHOUSES/FABRIC FILTERS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority - Bull Run Fossil Plant	Dry Fly Ash Storage and Unloading (Liquid Ring Vacuum Pump Filter Separators)

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

22 - 26 (Identical) 4 operating and 1 spare

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

Liquid ring vacuum pumps (4 operating and 1 spare) will vacuum ash from the precipitators into four 72-inch filter separators (4 operating and 4 spares). Each filter separator is equipped with 65 bags and has a 4 to 1 air to cloth ratio. The outlet diameter from each vacuum pump is 0.667 feet and exhausts 6.06 feet above grade. The bagfilters operate 24 hours per day 365 days per year. The operating parameter is pressure drop across the bagfilter.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE)	6. YEAR OF INSTALLATION:
United Conveyor Corporation	2010

7. LIST OF POLLUTANT(S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT (SEE INSTRUCTIONS).

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Fly Ash Particulates	99.9%	Engineering estimate based on estimated inlet grain loading and design outlet grain loading

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL

Material collected by the liquid ring vacuum pump filter separators is deposited into the dry fly ash storage silos.

9. IF THE BAGS ARE COATED, SPECIFY THE MATERIAL USED FOR COATING AND FREQUENCY OF COATING.

N/A

10. DOES THE BAGHOUSE COLLECT ASBESTOS CONTAINING MATERIAL?

YES ___ NO X

IF AYES≡, PROVIDE DATA AS OUTLINED IN ITEM 10, INSTRUCTIONS FOR THIS FORM.

11. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

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APC V.11

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - MISCELLANEOUS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority - Bull Run Fossil Plant	Conditioned Ash Disposal and Bottom Ash Reclaim and Disposal

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

7 and 8

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE, (e.g., PRESSURE DROP, GAS FLOW RATE, TEMPERATURE).

Watering trucks operate as needed to provide wet suppression of fugitive dust on ash haul roads and on the ash stacking area.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):

N/A

6. YEAR OF INSTALLATION:

1982

7. LIST OF POLLUTANT(S) TO BE CONTROLLED BY THIS EQUIPMENT AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulates	95 (Watering trucks)	Wet Suppression for unpaved roads: AWMA Air Pollution Engineering Manual, pages 143-144, 1992

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

N/A

9. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

10. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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APC V.28

MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Tennessee Valley Authority - Bull Run Fossil Plant	6, 7, 8, 21, and 22 through 26

3. PROCESS EMISSION SOURCE/FUEL BURNING INSTALLATION/INCINERATOR (IDENTIFY):
Ash Handling Process: Dry Fly Ash Storage and Unloading, Conditioned Ash Disposal, Bottom Ash Reclaim and Disposal, Fly Ash Vacuum System Filters

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 - June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)
PARTICULATES (TSP)	N/A		1.16	0.406
(FUGITIVE EMISSIONS)	N/A		17.4	57.8
SULFUR DIOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 - June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT(S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. N/A

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 - June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION : CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME: Tennessee Valley Authority - Bull Run Fossil Plant		2. EMISSION SOURCE NUMBER 6, 7, 8, 21, and 22 through 26			
3. DESCRIBE THE PROCESS EMISSION SOURCE/FUEL BURNING INSTALLATION/INCINERATOR Ash Handling Process (Dry Fly Ash Storage and Unloading, Conditioned Ash Disposal, Bottom Ash Reclaim and Disposal, Fly Ash Vacuum System Filters)					
4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a): Permit #556854 - Condition #SM-1 E5-2(d) : Maximum Annual Throughput	Maximum Annual Throughput 449,000 tons per year.		IN
Dry Fly Ash Storage Silos and Fly Ash Vacuum System Filters Only (6, 21, 22-26)	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a): Permit #556854 - Condition #SM-1 E5-1	Capacity not to exceed 160,000 lb/hr of fly ash.		IN
	Particulate	TAPCR 1200-3-8-.01; Permit # 556854 - Condition #SM-1 E5-4; 40 CFR 51.110(a): Fugitive Dust - Take reasonable precautions to prevent particulate matter from becoming airborne. No visible fugitive dust beyond the property line for more than 5 minutes per hour or 20 minutes per day. Compliance determined by Tennessee Visible Emission Evaluation (TVEE) Method 4.	No visible emissions across the property line for more than 5 minutes per hour or 20 minutes per day.	No visible emissions at property line.	IN
Dry Fly Ash Storage Silos Only (6C, 21C)	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit #556854 - Condition #SM-1 E5-2(b)	0.28 lbs/hr (0.005 gr/dscf) 1.23 tons per year		IN
Fly Ash Vacuum System Filters Only (22-26)	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit #556854 - Condition #SM-1 E5-2(a)	0.126 lbs/hr (0.005 gr/dscf) 0.55 tons per year		IN
Fly Ash Loadout Only (6A, 6B, 21A, 21B)	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit #556854 - Condition #SM-1 E5-2(c)	0.12 lb/hr 0.02 tons per year		IN
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4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
Dry Fly Ash Storage Silos and Fly Ash Vacuum Filter Systems Only (6, 21, 22-26)	Opacity	TAPCR 1200-3-5-.03(6) and TAPCR 1200-3-5-.01(1): Permit # 556854 - Condition #SM-1 E5-3; 40 CFR 51.110(a) : Opacity standard	10 percent opacity- except for an aggregate of 6 minutes in any 1 hour or 24 minutes in any 24 hour period (excluding malfunction, startups, and shutdowns). Visible emissions determined by Method 9.	Maximum Actual Opacity #10 percent except for allowed exceptions.	IN
Conditioned Fly Ash Disposal and Bottom Ash Reclaim and Onsite Disposal (7, 8)	Particulates	TAPCR 1200-3-5-.01; 40 CFR 51.110(a); Permit #556854 - Condition #SM-1 E5-5: Visible Emission Standard	No visible emissions >10% opacity as determined by TVEE Method 1		IN
	Opacity	TAPCR 1200-3-5-.02(1); 40 CFR 51.211: Exceptions - Due allowance for emissions in excess of the opacity limit during startup, shut down and malfunction. Maintain logs containing specified information and provide copy upon request.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211: Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211 : Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1); 40 CFR 51.211: Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN

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4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211: Report Required Upon The Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after receipt of the notice of violation.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04: Sampling, Recording and Reporting Required for Major Stationary Sources - Technical Secretary may require periodic or enhanced monitoring, recording, and reporting that he deems necessary for the verification of a source=s compliance with applicable requirements.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3); TAPCB Permit #556854 - Condition B7: Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Technical Secretary, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii); 40 CFR 70.6(a)(3): Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN

10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)

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DIVISION OF AIR POLLUTION CONTROL
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NASHVILLE, TN 37243-1531

APC V.19

COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
Tennessee Valley Authority - Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):

Ash Handling Process (Dry Fly Ash Storage and Unloading, Conditioned Ash Disposal, Bottom Ash Reclaim and Disposal, Fly Ash Vacuum System Filters)

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
6, 7, 8, 21, and 22 through 26

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

___ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
POLLUTANT(S): _____

___ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
POLLUTANT(S): _____

___ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
POLLUTANT(S): _____

__X__ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
POLLUTANT(S): Opacity, Particulates

___ STACK TESTING - APC FORM V.24
POLLUTANT(S): _____

___ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
POLLUTANT(S): _____

__X__ RECORDKEEPING - APC FORM V.26
POLLUTANT(S): Opacity

___ OTHER (PLEASE DESCRIBE) - APC FORM V. 27
POLLUTANT(S): _____

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.

START DATE: Within 60 days after June 30 and December 31 of each year.

AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:
START DATE: Within 60 days after June 30 and December 31 of each year.

AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN-1007 RDA 1298

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

APC V.23

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES

THE MONITORING OF A MAINTENANCE PROCEDURE SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT IS ESTABLISHED.

1. FACILITY NAME:

Tennessee Valley Authority - Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

6, 7, 8, 21, and 22 through 26

3. EMISSION SOURCE (IDENTIFY):

Ash Handling Process

4. POLLUTANT(S) BEING MONITORED:

Particulates, Opacity

5. PROCEDURE BEING MONITORED:

Maintenance and Inspection Procedures

6. DESCRIPTION OF THE METHOD OF MONITORING AND ESTABLISHMENT OF CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT:

1. The bagfilters on the fly ash storage silos and filter separators will be maintained, kept in good operating condition, and operated whenever the ash handling system is operational. The bagfilters will be inspected semiannually. Records documenting these inspections and any necessary maintenance will be maintained for at least 5 years.

2. A watering truck will be employed as needed for fugitive dust emission control on the ash handling haul roads.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance with the opacity and particulate standards as determined by scheduled inspections will be demonstrated semiannually and submitted as part of the annual compliance report.

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED.

1. FACILITY NAME	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Tennessee Valley Authority - Bull Run Fossil Plant	6, 7, 8, 21, and 22 through 26

3. EMISSION SOURCE (IDENTIFY):

Ash Handling Process

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:
Opacity

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:
Opacity

6. METHOD OF MONITORING AND RECORDING:

1. Fugitive emissions from the ash handling process will be evaluated at the property boundary semiannually by a trained observer in accordance with TVEE Method 4. Records documenting these evaluations will be maintained for 5 years.

2. Fugitive emissions from the ash handling haul roads will be evaluated by a trained observer in accordance with TVEE Method 1 and the Tennessee Division of Air Pollution Control (TDAPC) opacity matrix (June 18, 1996). Records documenting these evaluations will be maintained for 5 years.

   Note: In accordance with the TDAPC opacity matrix (June 18, 1996), no scheduled TVEE Method 2 visible emission evaluations are required for the ash handling bagfilter(s).

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

1. Compliance with the opacity standard at the property boundary as determined by visible emission evaluations will be demonstrated semiannually and submitted as part of the annual compliance report.

2. Compliance with the opacity standard for the ash handling haul roads as determined by visible emission evaluations will be demonstrated in accordance with the TDAPC opacity matrix (June 18, 1996).

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DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 6-2. BULL RUN FOSSIL PLANT (BRF): AY12 ASH-HANDLING PARTICULATE-MATTER (PM) [TOTAL SUSPENDED PARTICULATES (TSP)] EMISSION ESTIMATES

EMISSION UNIT NUMBER	DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
				PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
6	DRY FLY ASH STORAGE SILO #1 AND UNLOADING	DRY FLY ASH SALES: ENCLOSED FLUIDIZED CONVEYOR TO DRY UNLOADING SPOUT INTO CLOSED TANK TRUCK-- VENTS BACK TO SILO	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	2 4.38	1.99E-03 LB/T	150 T/HR 0.00 T/YR	0.00	0.299	COLLAR SUCTION TO SILO	90 (CAPTURE EFFICIENCY)	0.00	2.99E-02
		CONDITIONED FLY ASH LOADOUT TO HOPPER TRUCKS (PIN MIXER ASH UNLOADER)-- FUGITIVE DUST	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 60,557 T/YR	3.59E-03	2.97E-02	NONE	0	3.59E-03	2.97E-02
		SILO W/ BIN VENT FILTER (BAGHOUSE VENT)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	3264 DSCF/MIN 4217 ACF/MIN 1 BAGFILTER 8760 HR/YR	613	140	BAG FILTER	99.9	0.613	0.140
		EMISSIONS SUB-TOTAL						**613**	**140**		99.90	**0.616**	**0.199**
7	CONDITIONED FLY ASH DISPOSAL	HAUL ROAD FOR TRACTOR TRAILER TRUCKS ONE-WAY EMPTY (COND. ASH OFFSITE DISPOSAL)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 15 126.6	1.08 LB/VMT	250 T/HR 0.00 T/YR 25 T/TRIP 0.35 MI/TRIP	0.00	3.78	NONE	0	0.00	3.78
		HAUL ROAD FOR TRACTOR TRAILER TRUCKS ONE-WAY FULL (COND. ASH OFFSITE DISPOSAL)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 40 126.6	2.94 LB/VMT	250 T/HR 0.00 T/YR 25 T/TRIP 0.35 MI/TRIP	0.00	10.3	NONE	0	0.00	10.3
		ASH HAULING FROM SILO TO DRY ASH STACKING AREA ONE-WAY FULL (HOPPER TRUCKS) (PAVED PORTION)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 50.0 126.6	3.69 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.35 MI/TRIP	1.30	10.7	WET SUPPRESSION	95	0.0651	0.537
		ASH HAULING FROM DRY ASH STACKING AREA TO SILO - RETURN TRIP EMPTY (HOPPER TRUCKS) (PAVED PORTION)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 20.0 126.6	1.45 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.35 MI/TRIP	0.511	4.22	WET SUPPRESSION	95	0.0256	0.211
		ASH HAULING FROM SILO TO DRY ASH STACKING AREA ONE-WAY FULL (HOPPER TRUCKS) (UNPAVED PORTION)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 50.0 4 126.6	8.84 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.35 MI/TRIP	3.12	25.8	WET SUPPRESSION	95	0.156	1.29
		ASH HAULING FROM DRY ASH STACKING AREA TO SILO - RETURN TRIP EMPTY (HOPPER TRUCKS) (UNPAVED PORTION)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 20.0 4 126.6	5.86 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.35 MI/TRIP	2.07	17.1	WET SUPPRESSION	95	0.103	0.854
		COND ASH HAULING ON ASH PILE ONE-WAY FULL (HOPPER TRUCKS)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 50.0 4 126.6	50.1 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.25 MI/TRIP	12.6	104	WET SUPPRESSION	95	0.632	5.22
		COND ASH HAULING ON ASH PILE ONE-WAY EMPTY (HOPPER TRUCKS)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 20.0 4 126.6	33.2 LB/VMT	250 T/HR 60,557 T/YR 30.0 T/TRIP 0.25 MI/TRIP	8.37	69.1	WET SUPPRESSION	95	0.418	3.45

TABLE 6-2. BULL RUN FOSSIL PLANT (BRF): AY12 ASH-HANDLING PARTICULATE-MATTER (PM) [TOTAL SUSPENDED PARTICULATES (TSP)] EMISSION ESTIMATES

EMISSION UNIT NUMBER	DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
				PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
7	CONDITIONED FLY ASH DISPOSAL (CONTINUED)	DUMPING OF CONDITIONED FLY ASH AT DRY STACK	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 60,557 T/YR	3.59E-03	2.97E-02	NONE	0	3.59E-03	2.97E-02
		OPEN STORAGE OF FLY ASH	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	100.0 126.6 1.2	9.21 LB/ACRE-D	20 ACRE OF DISTURBED PILE AREA	33.6	7.67	WET SUPPRESSION COMPACTION CRUSTOVER	95	1.68	0.384
		PILE WATERING DUST SUPPRESSION (FLY ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE EMPTY WT , T VEHICLE FULL WT, T CAPACITY, T AVERAGE HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 4 48.5 90.2 41.7 69.4 4 126.6	58.0 LB/VMT	4 VMT/HR 1560 HR/YR	181	232	WET SUPPRESSION	95	9.05	11.6
		PILE MAINTENANCE--GRADING, COMPACTING (COMPACTOR)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 2 12.25 2 126.6	26.6 LB/VMT	2 VMT/HR 520 HR/YR	13.8	53.2	WET SUPPRESSION	95	0.691	2.66
		PILE MAINTENANCE--DOZER GRADING, COMPACTING PILE SLOPE SHAPING (CONDITIONED ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 38.19 4 126.6	44.4 LB/VMT	5 VMT/HR 700 HR/YR	77.6	222	WET SUPPRESSION	95	3.88	11.1
		EMISSIONS SUB-TOTAL						**334**	**760**		95.00	**16.7**	**51.4**
8	BOTTOM ASH RECLAIM AND ONSITE DISPOSAL	DOZER CLEAN BOTTOM ASH CHANNEL FOR RECLAIM BY PAN SCRAPERS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 5 38.19 4 126.6	6.83 LB/VMT	5 VMT/HR 150 HR/YR	2.56	34.1	WET SUPPRESSION	95	0.128	1.71
		BOTTOM ASH RECLAIM FROM ASH POND AND HAUL TO DEWATERING AREA (PAN SCRAPER) ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 107.0 4 126.6	10.9 LB/VMT	204 T/HR 11,439 T/YR 51.0 T/TRIP 0.165 MI/TRIP 4 TRIPS/HR	0.201	7.16	WET SUPPRESSION	95	1.00E-02	0.358
		DUMPING OF BOTTOM ASH AT DEWATERING AREA	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	50 4.38	2.20E-05 LB/T	204 T/HR 11,439 T/YR	1.26E-04	4.49E-03	NONE	0	1.26E-04	4.49E-03
		BOTTOM ASH HAULING RETURN TRIP TO ASH POND FROM DEWATERING AREA (PAN SCRAPER) ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 56.0 4 126.6	8.11 LB/VMT	204 T/HR 11,439 T/YR 51.0 T/TRIP 0.165 MI/TRIP 4 TRIPS/HR	0.150	5.35	WET SUPPRESSION	95	7.50E-03	0.268
		DEWATERING AREA OPEN STORAGE (BOTTOM ASH/ECON. ASH)	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	6.9 126.6 1.2	0.635 LB/ACRE-D	1.5 ACRE OF DISTURBED PILE AREA	0.174	3.97E-02	WET SUPPRESSION COMPACTION CRUSTOVER	95	8.69E-03	1.98E-03
		BOTTOM ASH DISPOSAL HAULING FROM DEWATERED ASH RECLAIM AREA TO DRY STACK (PAN SCRAPER, GRAVEL RD) ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 107.0 4 126.6	12.5 LB/VMT	204 T/HR 6,729 T/YR 51.0 T/TRIP 0.35 MI/TRIP 4 TRIPS/HR	0.288	17.4	WET SUPPRESSION	95	1.44E-02	0.872
		BOTTOM ASH DISPOSAL HAULING FROM DRY STACK TO DEWATERED ASH RECLAIM AREA (PAN SCRAPER, GRAVEL RD) ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 56.0 4 126.6	9.31 LB/VMT	204 T/HR 6,729 T/YR 51.0 T/TRIP 0.35 MI/TRIP 4 TRIPS/HR	0.215	13.0	WET SUPPRESSION	95	1.07E-02	0.652

TABLE 6-2. BULL RUN FOSSIL PLANT (BRF): AY12 ASH-HANDLING PARTICULATE-MATTER (PM) [TOTAL SUSPENDED PARTICULATES (TSP)] EMISSION ESTIMATES

EMISSION UNIT NUMBER	DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
				PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
8	BOTTOM ASH RECLAIM AND ONSITE DISPOSAL (CONTINUED)	BOTTOM ASH HAULING ON ASH PILE ONE-WAY FULL (PAN SCRAPER)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 107.0 4 126.6	10.9 LB/VMT	204 T/HR 6,729 T/YR 51.0 T/TRIP 0.15 MI/TRIP 4 TRIPS/HR	0.107	6.51	WET SUPPRESSION	95	5.37E-03	0.326
		BOTTOM ASH HAULING ON ASH PILE ONE-WAY EMPTY (PAN SCRAPER)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 56.0 4 126.6	8.11 LB/VMT	204 T/HR 6,729 T/YR 51.0 T/TRIP 0.15 MI/TRIP 4 TRIPS/HR	8.03E-02	4.87	WET SUPPRESSION	95	4.01E-03	0.243
		DUMPING OF BOTTOM ASH AT DRY STACK	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	204 T/HR 6,729 T/YR	3.99E-04	2.42E-02	NONE	0	3.99E-04	2.42E-02
		OPEN STORAGE (BOTTOM ASH/ECON. ASH)	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	6.9 126.6 1.2	0.635 LB/ACRE-D	56 ACRE OF DISTURBED PILE AREA	6.49	1.48	WET SUPPRESSION COMPACTION CRUSTOVER	95	0.325	7.41E-02
		PILE WATERING DUST SUPPRESSION (BOTTOM ASH/ ECON. ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE EMPTY WT , T VEHICLE FULL WT, T CAPACITY, T AVERAGE HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 4 48.5 90.2 41.7 69.4 4 126.6	8.93 LB/VMT	4 VMT/HR 150 HR/YR	2.68	35.7	WET SUPPRESSION	95	0.134	1.79
		EMISSIONS SUB-TOTAL						**12.9**	**126**		95.00	**0.648**	**6.32**
21	DRY FLY ASH STORAGE SILO #2 AND UNLOADING	DRY FLY ASH SALES: ENCLOSED FLUIDIZED CONVEYOR TO DRY UNLOADING SPOUT INTO CLOSED TANK TRUCK-- VENTS BACK TO SILO	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	2 4.38	1.99E-03 LB/T	150 T/HR 0.00 T/YR	0.00	0.299	COLLAR SUCTION TO SILO	90 (CAPTURE EFFICIENCY)	0.00	2.99E-02
		CONDITIONED FLY ASH LOADOUT TO HOPPER TRUCKS (PIN MIXER ASH UNLOADER)-- FUGITIVE DUST	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 0.00 T/YR	0.00	2.97E-02	NONE	0	0.00	2.97E-02
		SILO W/ BIN VENT FILTER (BAGHOUSE VENT)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	3264 DSCF/MIN 4217 ACF/MIN 1 BAGFILTER 8760 HR/YR	0.00	140	BAG FILTER	99.9	0.00	0.140
		EMISSIONS SUB-TOTAL						**0.00**	**140**		0.00	**0.00**	**0.199**
22-26	FLY ASH LIQUID-RING VACUUM-PUMP FILTER SYSTEMS	4 LIQUID-RING VACUUM PUMPS (& 1 SPARE) W/ 4 BAGFILTERS (& 4 STANDBY)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	735 DSCF/MIN 775 ACF/MIN 4 BAGFILTER 8760 HR/YR	552	126	BAG FILTER	99.9	0.552	0.126

BRF ASH-HANDLING PARTICULATE-MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP		CONTROLLED TSP	
	T/YR	LB/HR	T/YR	LB/HR
POINT-SOURCE	1165	406	1.16	0.406
FUGITIVE	347	886	17.4	57.8
TOTAL	**1512**	**1292**	**18.5**	**58.2**

NOTES:

		References
(1)	The sources of emission equations/factors are:	
	(a) Material drop operations (continuous and batch)	EPA, AP-42, 5th Edition, Section 13.2.4, November 2006
	(b) Unpaved roads, fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
	(c) Bin vent bagfilter outlet grain loading	Design criteria
	(d) Paved roads, fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.1, January 2011
	(e) Wind erosion from active (frequently disturbed) piles	EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, Sept. 1992.
(2)	The sources for meteorological input parameters are:	
	(a) Average wind speed (4.38 mph) and frequency of winds greater than 12 mph (1.2 %)	Bull Run Fossil Plant Meteorological Tower, 1986-87 data base
	(b) Number of wet days per year (126.6)	National Weather Service, Knoxville, Tennessee, 1942-94 Average
(3)	The sources of control efficiencies are:	
	(a) Capture efficiency for telescopic chute with connecting collar for tank truck	90 % (Engineering estimate)
	(b) Bin vent bagfilter	99.9 % (Design criteria)
	(c) Wet suppression for haul roads	95% (AWMA, Air Pollution Engineering Manual, p. 143-144, 1992)
	(d) Wet suppression, compaction, crustover for ash pile	95 % Engineering Estimate

SAMPLE CALCULATIONS FOR THE ASH HANDLING PROCESS

BULL RUN FOSSIL PLANT

All the bottom ash, pyrite removal rejects, SCR ash, and economizer ash collected at Bull Run Fossil Plant (BRF) are pumped as a wet slurry to the ash disposal pond. This material is reclaimed and placed in a dewatering area. After the ash is dewatered it is dry stacked using pan scrapers. Fugitive emissions are generated by the mobile equipment used for reclaim and stacking.

The two storage silos have fluidizing blowers to keep the ash from becoming compacted. The storage silos have dry fly ash loadout systems which include chutes for loadout of dry fly ash sold as pozzolanic material to offsite users. The silos are equipped with blowers to collect ash emissions occurring as material is loaded out through telescoping chutes into tanker trucks. The storage silos have a bin vent bagfilters that control the ash emissions resulting from the air displaced from the transfer bin as ash is deposited in the silos, as well as the ash emissions occurring from the exhaust of the fluidizing blower air and the air exhausted by the blower as material is loaded out from the storage silo for dry fly ash sales.

All of the ESP fly ash is currently collected dry using a vacuum-producing system (liquid ring vacuum pumps) to convey the dry ash to the storage silos. The dry ash stored in the silo is either loaded into tank trucks for onsite use or is conditioned to 15-20% moisture and loaded into hopper trucks for onsite/disposal. The following discussion reviews the assumptions and equations used to estimate the ash emissions from the dry fly ash handling process at BRF.

POINT SOURCE EMISSIONS

(1) Fabric Filter Emissions

The following equations were used in calculating the total suspended particulate (TSP) emissions from the dry fly ash storage silo bin vent fabric filter.

Sample Calculation - Dry Fly Ash Storage Silo Bin Vent Filter (Source 6C)

Source: Engineering estimate of outlet grain loading:

Controlled emissions = 0.005 grain/dry standard ft^3 (gr/dscf)

Comment [COMMENT5]: Based on similar calcs for CUF and the information on BRF permit application for May 1982.

Since the inlet flow to the particulate control system was estimated to contain 5 gr/dscf, the control efficiency is:

$$\text{CONTROL EFFICIENCY} = \frac{\text{inlet} - \text{outlet}}{\text{inlet}} \times 100\% = \frac{(5 - 0.005)\,\text{gr/dscf}}{5\,\text{gr/dscf}} \times 100\% = 99.9\%$$

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{5\ \text{gr}}{\text{ft}^3} \times \frac{3{,}264\ \text{ft}^3}{\text{min}} \times \frac{\text{lb}}{7{,}000\ \text{gr}} \times \frac{60\ \text{min}}{\text{hr}} \times \frac{8{,}760\ \text{hr}}{\text{yr}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 613\ \text{tpy}$$

$$\text{HOURLY} = \frac{5\ \text{gr}}{\text{ft}^3} \times \frac{3{,}264\ \text{ft}^3}{\text{min}} \times \frac{\text{lb}}{7{,}000\ \text{gr}} \times \frac{60\ \text{min}}{\text{hr}} = 140\ \text{lb/hr}$$

Controlled Emissions:

Controlled Emissions = (Uncontrolled emissions) (1 - e/100)

Where: e = Control efficiency (%)

$$ANNUAL = 613\ tpy\ x\ (1 - 99.9/100) = 0.613\ \text{tpy}$$

$$HOURLY = \frac{140\ lb}{hr}\ x\ (1 - 99.9/100) = 0.140\ lb/hr$$

FUGITIVE DUST EMISSIONS

The following equations were used in calculating the fugitive dust (TSP) emissions from the dry fly ash handling process at Bull Run.

(2) Batch Unloading Operation

Source: EPA, AP-42, 5th Edition, Section 13.2.4, 2006

$$E = k \times (0.0032) \times \frac{\left(\frac{u}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\ \text{lb/ton}$$

Where: E = TSP (<30) emission factor, lb/ton
k = Particle size multiplier (0.74 for TSP)
u = Mean wind speed, mph
M = Material moisture content, weight%

Sample Calculation - Conditioned Fly Ash Unloading From Hopper Trucks (Source 6B): Fugitive Dust

$$E = 0.74 \times (0.0032) \times \frac{\left(\frac{4.38}{5}\right)^{1.3}}{\left(\frac{15}{2}\right)^{1.4}} = 1.19 \times 10^{-4}\ \text{lb/ton}$$

The estimated actual amount of conditioned fly ash produced for July 2011- June 2012 is 60,557 tons. The design loadout capacity for the conditioned fly ash system is 250 tons per hour.

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{1.19 \times 10^{-4}\ \text{lb}}{\text{ton}} \times \frac{60{,}557\ \text{ton}}{\text{yr}} \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 3.59 \times 10^{-3}\ \text{tpy}$$

$$\text{HOURLY} = \frac{1.19 \times 10^{-4}\ \text{lb}}{\text{ton}} \times \frac{250\ \text{ton}}{\text{hour}} = 2.97 \times 10^{-2}\ \text{lb/hr}$$

Controlled Emissions:

Controlled emissions = (Uncontrolled emissions) (1 - e/100)

Where: e = Capture Efficiency (%)

$$\text{ANNUAL} = 3.59 \times 10^{-3}\ \text{tpy} \times \left(1 - \frac{0}{100}\right) = 3.59 \times 10^{-3}\ \text{tpy}$$

$$\text{HOURLY} = 2.97 \times 10^{-2}\ \text{lb/hr} \times \left(1 - \frac{0}{100}\right) = 2.97 \times 10^{-2}\ \text{lb/hr}$$

(3) Paved Road

Source: EPA, AP-42, 5th Edition, Section 13.2.1, 2011

$$E = [k(sL)^{0.91} \times W^{1.02}][1 - P/(4N)]$$

Where: E = Emission factor, lb/VMT (VMT = Vehicle Miles Traveled)
k = Particle size multiplier (0.011 lb/VMT for TSP)
sL = Road surface material silt loading, g/m^2
W = Average weight (tons) of the vehicles traveling the road
P = Number of wet days per year with at least 0.01 inches of precipitation
N = Number of days in averaging period (365 for annual)

VMT = (Total weight hauled/weight hauled per trip) x (length of each trip)

The sL value was taken from AP-42 Section 13.2.1 as the typical silt loading for Quarry (8.2 g/m^2).

Sample Calculation - Ash Disposal (Source 7A): Offsite Paved Road Hauling Of Conditioned Ash For Disposal

$$E = 0.011 \times (8.2)^{0.91}\ (15)^{1.02}\ [1 - 126.6/(4 \times 365)] = 1.08\ \text{lb/VMT}$$

Estimated Actual Annual Conditioned Ash Offsite Disposal for July 2011-June 2012
= 0.0 tpy.

Uncontrolled Emissions:

$$\text{ANNUAL} = 1.08\ \text{lb/VMT} \times 0.0\ \text{tpy} \times \frac{1\ \text{trip}}{25\ \text{tons}} \times 0.35\ \text{mile/trip} \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 0.0\ \text{tpy}$$

$$\text{HOURLY} = 1.08\ \text{lb/VMT} \times 250\ \text{tons/hour} \times \frac{1\ \text{trip}}{25\ \text{tons}} \times 0.35\ \text{mile/trip} = 3.78\ \text{lb/hr}$$

Controlled Emissions:

Controlled emissions = (Uncontrolled emissions) (1-e/100)

Where e = Control Efficiency (%)

Wet suppression is not anticipated for the conditioned flyash paved haul road for offsite disposal; therefore the control efficiency =0%.

$$\text{ANNUAL} = 0.0\ \text{tons/yr} \times \left(1 - \frac{0}{100}\right) = 0.0\ \text{ton/yr}$$

$$\text{HOURLY} = 3.78\ \text{lb/hr} \times \left(1 - \frac{0}{100}\right) = 3.78\ \text{lb/hr}$$

(4) Unpaved Road

Source: EPA, AP-42, 5th Edition, Section 13.2.2, 2006

$$E = k(s/12)^a\ (W/3)^b\ [(365 - P)/365]$$

Where: E = Emission factor, lb/VMT (VMT = Vehicle Miles Traveled)
k = Particle size multiplier (4.9 for TSP)
s = Silt content of road surface material, wt%, 8.4% Western Surface Coal Mining
a = 0.7 for TSP
b = 0.45 for TSP
W = Mean vehicle weight, tons
P = Number of days per year with at least 0.01 inch of precipitation

VMT = (Total weight hauled/weight hauled per trip) x (length of each trip)

Sample Calculation – Ash Disposal (Source 7E): Haul Road for Conditioned Fly Ash Onsite Disposal Vehicles - One-Way Full

$$E = 4.9\ (8.4/12)^{0.7}\ (50/3)^{0.43}\ \frac{(365 - 126.6)}{365} = 8.84\ \text{lb/VMT}$$

Uncontrolled Emissions:

$$\text{ANNUAL} = 8.84\ \text{lb/VMT} \times 60{,}557\ \text{tpy} \times \frac{1\ \text{trip}}{30\ \text{tons}} \times 0.35\ \text{mile/trip} \times \frac{\text{ton}}{2{,}000\ \text{lb}} = 3.12\ \text{tpy}$$

$$\text{HOURLY} = 8.84\ \text{lb/VMT} \times 250\ \text{tons/hour} \times \frac{1\ \text{trip}}{30\ \text{tons}} \times \frac{0.35\ \text{mile}}{\text{trip}} = 25.8\ \text{lb/hr}$$

Controlled Emission:

Controlled emissions = (Uncontrolled emissions) (1 - e/100)

Where e = Control Efficiency (%)

The AWMA Air Pollution Engineering Manual, citing field-test data at a coal-fired power plant, indicates that wet suppression methods can effectively control unpaved-road fugitive dust emissions. It is estimated the watering program will achieve a 95% control efficiency for haul vehicle fugitive dust emissions in the ash handling process.

$$\text{ANNUAL} = 3.12\ \text{tons/yr} \times \left(1 - \frac{95}{100}\right) = 0.156\ \text{tons/yr}$$

$$\text{HOURLY} = 25.8\ \text{lb/hr} \times \left(1 - \frac{95}{100}\right) = 1.29\ \text{lb/hr}$$

(5) Wind Erosion from Storage Piles

Source: EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, September 1992, Section 2.3.1.3.3.

$$E = 1.7\ (\frac{s}{1.5})\ (\frac{d}{235})\ (\frac{f}{15})$$

Where: E=TSP (<30Φ) emission factor, lb/day/acre of pile area
s = Silt content of material, weight %
d = Number of dry days per year (<0.01 inch of precipitation per day)
f = Frequency of wind speeds greater than 12 mph at the mean pile height (%)

Sample Calculations - Fly Ash Disposal Pile (Source 7J): Wind Erosion

$$E = 1.7\left(\frac{100}{1.5}\right)\left(\frac{365-126.6}{235}\right)\left(\frac{1.20}{15}\right) = 9.21 \text{ lb/acre/day}$$

The maximum disturbed area for the ash storage pile is 20 acres.

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{9.21 \text{ lb}}{\text{acre-day}} \times 20 \text{ acre} \times \frac{365 \text{ day}}{1 \text{ year}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}} = 33.6 \text{ tons/yr}$$

$$\text{HOURLY} = \frac{9.21 \text{ lb}}{\text{acre-day}} \times 20 \text{ acre} \times \frac{1 \text{ day}}{24 \text{ hour}} = 7.67 \text{ lb/hr}$$

Controlled Emissions:

Controlled Emissions = (Uncontrolled emissions) (1 - e/100)

Where e = Control Efficiency (%)

Wet suppression, compaction, and crustover of the ash pile are estimated to achieve 95% control efficiency for wind erosion losses.

$$\text{ANNUAL} = 33.6 \text{ tons/yr} \times \left(1 - \frac{95}{100}\right) = 1.68 \text{ tons/yr}$$

$$\text{HOURLY} = 7.67 \text{ lb/hr} \times \left(1 - \frac{95}{100}\right) = 0.384 \text{ lb/hr}$$

ATTACHMENT 7

Pre – Ground Limestone Handling Process Description
Operational and Calculation Methodology

APC V.10

MAJOR SOURCE OPERATING PERMIT APPLICATION
MISCELLANEOUS PROCESSES

1. FACILITY NAME:
Tennessee Valley Authority - Bull Run Fossil Plant

2. PROCESS IDENTIFICATION NUMBER:
Pre-Ground Limestone Handling System

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Emission Unit 9 - Pre-Ground Limestone Truck Hauling
Emission Unit 10 - Pre-Ground Limestone Storage Silo A
Emission Unit 11 - Pre-Ground Limestone Storage Silo B

IF EMISSIONS ARE CONTROLLED FOR COMPLIANCE, ATTACH THE APPROPRIATE AIR POLLUTION CONTROL SYSTEM FORM.

4. NORMAL OPERATING SCHEDULE:

__24_ HRS/DAY __7___ DAYS/WK __365_ DAYS/YR

5. YEAR OF CONSTRUCTION OR LAST MODIFICATION:

2008

6. DESCRIBE THIS PROCESS (PLEASE ATTACH A FLOW DIAGRAM OF THIS PROCESS) AND CHECK ONE OF THE FOLLOWING:

_____ BATCH ___X___ CONTINUOUS See attached process description: Pre-Ground Limestone Handling

7. LIST THE TYPES AND AMOUNTS OF RAW MATERIALS INPUT TO THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS)
Pre-Ground Limestone	Trucks unloaded pneumatically to storage silos.	120 ton/hr	120 ton/hr
Pre-Ground Limestone	From silo by a rotary airlock feeder into a screw	34.2 ton/hr	34.2 ton/hr
	pump and fed into a transport pipe and pneumatically		
	conveyed to FGD scrubber.		

8. LIST THE TYPES AND AMOUNTS OF PRIMARY PRODUCTS PRODUCED BY THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE AMOUNT PRODUCED (UNITS)	MAXIMUM AMOUNT PRODUCED (UNITS)
N/A			

9. PROCESS FUEL USAGE:

TYPE OF FUEL	MAX HEAT INPUT (10^6 BTU/HR)	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS
N/A			

10. LIST ANY SOLVENTS, CLEANERS, etc., ASSOCIATED WITH THIS PROCESS:

Small amounts of nonhazardous solvents and cleaners are used in maintenance activities.

IF THE EMISSIONS AND/OR OPERATIONS OF THIS PROCESS ARE MONITORED FOR COMPLIANCE, PLEASE ATTACH THE APPROPRIATE COMPLIANCE DEMONSTRATION FORM.

11. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, OPEN AIR SAND BLASTING, MATERIAL HANDLING OPERATIONS, etc. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY) .
Fugitive emissions from trucks delivering pre-ground limestone on paved and unpaved roads. Wet-suppression control measures will be used as needed to reduce fugitive dust emissions.

12. LOCATION OF THIS PROCESS EMISSION SOURCE IN UTM COORDINATES:

UTM VERTICAL: ____3990 km___ UTM HORIZONTAL: ____756 km_

13. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

CN-1007 RDA 1298

PRE-GROUND LIMESTONE HANDLING PROCESS DESCRIPTION
BULL RUN FOSSIL PLANT

The pre-ground limestone handling system (LHS) will receive, store, and handle pre-ground limestone for use in the flue-gas desulfurization (FGD) scrubber.

Trucks will deliver BRF pre-ground limestone at 90% minus 325 mesh and less than 0.5% moisture. The trucks will traverse sections of both paved and unpaved plant roads from Edgemoor Road to one of three truck unloading stations. Wet suppression control measures will be used as needed to reduce fugitive dust emissions on the unpaved road and the paved road at the truck unloading station. Each truck unloading station will have a maximum unloading rate of 40 tons per hour.

The pre-ground limestone will be pneumatically conveyed in a 6 inch pipe from the trucks into one of two 1,730 ton limestone storage silos. Fugitive dust emissions from each storage silo will be controlled by a bin vent filter with 3,421 actual cubic feet per minute (acfm) flow rate, designed for a maximum outlet dust loading of 0.02 grain per standard cubic foot (gr/scf).

Below each of the two limestone storage silos is a pneumatic conveying system. Only one pneumatic conveying system will normally be operational at a time, with the other serving as a spare. The pre-ground limestone will be discharged from the silo outlet by a rotary airlock feeder into a screw pump where it will be fed into an 8 inch transport pipe and pneumatically conveyed at a maximum rate of 34.2 tons per hour to the FGD scrubber.

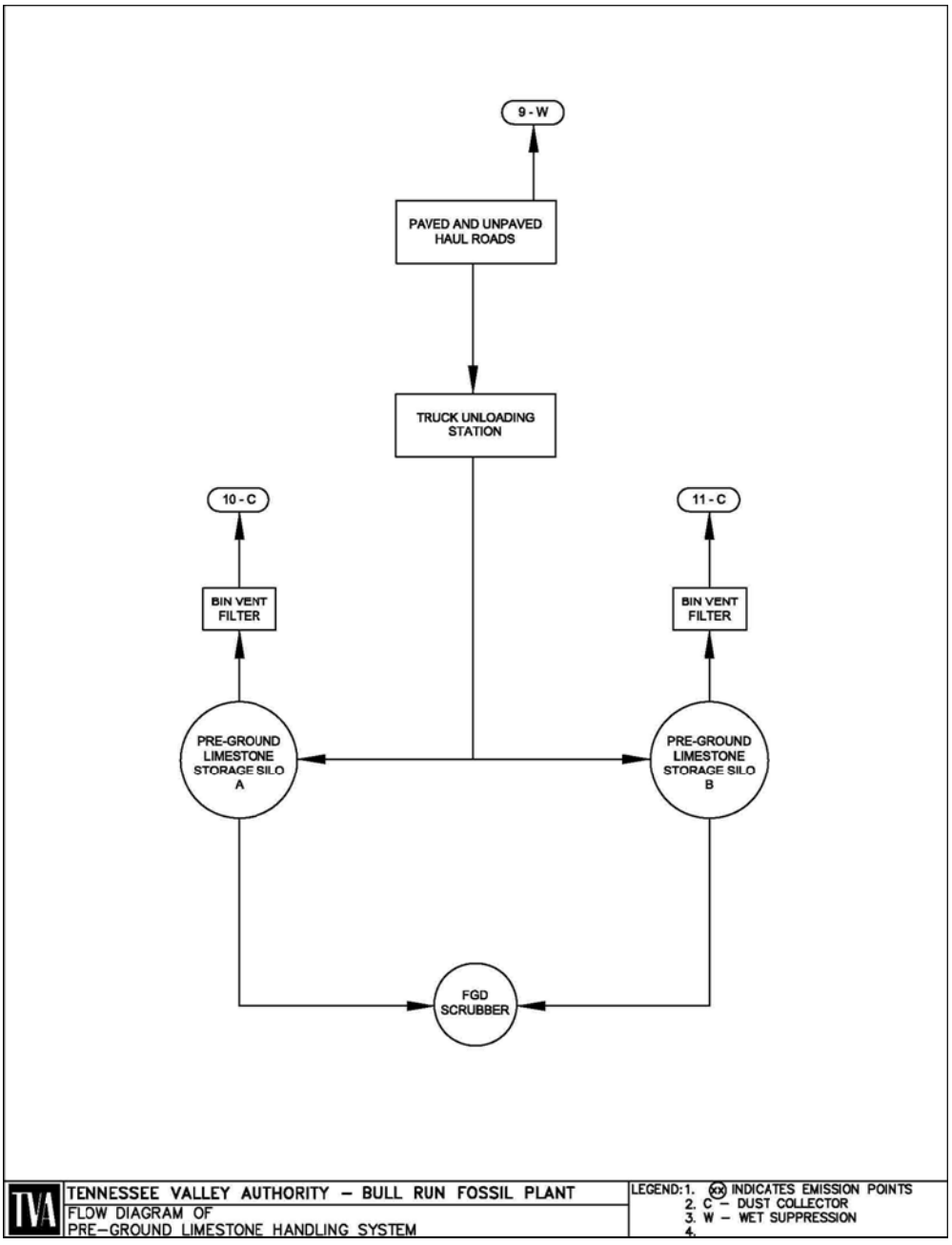
9 - W
PAVED AND UNPAVED HAUL ROADS
TRUCK UNLOADING STATION
10 - C
11 - C
BIN VENT FILTER
BIN VENT FILTER
PRE-GROUND LIMESTONE STORAGE SILO A
PRE-GROUND LIMESTONE STORAGE SILO B
FGD SCRUBBER
TVA
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
FLOW DIAGRAM OF
PRE–GROUND LIMESTONE HANDLING SYSTEM
LEGEND: 1. (xx) INDICATES EMISSION POINTS
2. C – DUST COLLECTOR
3. W – WET SUPPRESSION
4.

FIGURE 7-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
PRE-GROUND LIMESTONE HANDLING SYSTEM

The pre-ground limestone handling system (LHS) will supply limestone for the Bull Run Fossil Plant (BRF) flue-gas-desulfurization (FGD) scrubber. Annual limestone requirements will be about 300,000 tons per year (tpy) based on the maximum rate of 34.2 tons per hour of limestone fed to the FGD. The actual pre-ground limestone received for AY 2012 was 18,109 tons.

Round trip on site haul road distances will consist of about 1.65 miles of unpaved road and about 0.16 miles of paved roads at the entrance and 0.36 miles of paved road at the truck unloading station. Truck hauling fugitive dust emissions were estimated using equations in EPA's Compilation of Air Pollutant Emission Factors (AP-42), 5th Edition, Section 13.2.2 (unpaved roads), 11/2006 and Section 13.2.1 (paved roads), 1/2011. Wet-suppression control measures will be used as needed to reduce fugitive dust emissions from unpaved roads and the paved road at the truck unloading station. TVA expects these measures will achieve 95 percent control efficiency.

The pre-ground limestone will be pneumatically conveyed in a 6 inch pipe from the trucks to one of two 1,730 ton limestone storage silos. Each silo will use a bin vent filter to control fugitive dust emissions during loading. Particulate matter (PM) emission estimates for the bin vent filter were based on manufacturer's information on maximum outlet dust loading (0.02 grain per standard cubic foot) and design airflow. PM collection efficiency for the bin vent filter was estimated to be greater than 99 percent. All of the bin vent filter PM emissions are assumed to be smaller than 10 micrometers in diameter (PM_{10}).

Although TVA recognizes that pre-ground limestone contains several trace-element hazardous air pollutants (HAP), no generally recognized HAP emission factors were found for pre-ground limestone handling facilities. No detailed HAP emission estimates were prepared for the BRF pre-ground limestone handling system, but TVA estimates that total HAP emissions will be less than 0.01 tpy.

Data used to estimate BRF Pre-Ground Limestone Handling System emissions are summarized in the table below:

TABLE 7-1
INPUT DATA FOR BRF PRE-GROUND LIMESTONE HANDLING EMISSION ESTIMATES

Pre-Ground Limestone Maximum Annual Use, tons/yr	300,000
Pre-Ground Limestone AY 2012 Use, tons/yr	18,109
Pre-Ground Limestone Maximum Hourly Unloading Rate, tons/hr	120
Pre-Ground Limestone Haul Truck Empty Weight, tons	14
Pre-Ground Limestone Haul Truck Capacity, tons	26
Pre-Ground Limestone Haul Truck Average Weight, tons	27
Unpaved Haul Road Silt Content, %	10
Paved Haul Road Silt Loading, g/m^2	8.2
Unpaved Road Round Trip Truck Hauling Distance, miles	1.65
Paved Road Round Trip Truck Hauling Distance at Entrance, miles	0.16
Paved Road Round Trip Truck Hauling Distance at Truck Unloading Station, miles	0.36
Storage Silo Bin Vent Filter Design Flow Rate, actual ft^3 per minute (acfm)	3,421
Estimated Outlet Grain Loading of Bin Vent Filter, gr/scf	0.02
Maximum Bin Vent Filter Operating Schedule, hours per year	8,760
Number of Wet Days Per Year, (National Weather Service, Knoxville, TN, 1942-94 average)	126.6
Wet Suppression Control Efficiency for Haul Road Fugitive Dust Emissions, %	95
Bin Vent Filter Control Efficiency, % (minimum)	99

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority-Bull Run Fossil Plant	FOR APC	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Emission Unit 10 (11 identical)	USE ONLY	LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):

Pre-Ground Limestone Storage Silo A (Storage Silo B identical)

4. STACK HEIGHT ABOVE GRADE IN FEET:

122

5. VELOCITY (DATA AT EXIT CONDITIONS): 73.1 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 0.667 x 1.17
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 3,421	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 3,421
9. EXHAUST TEMPERATURE: 70 DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): ambient PERCENT _____ GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2, NO_X, etc.)?

N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

_____ YES ___X___ NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

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APC V.18

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - BAGHOUSES/FABRIC FILTERS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority-Bull Run Fossil Plant	Pre-Ground Limestone Storage Silo A (Storage Silo B identical)

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

Emission Unit 10 (11 identical)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

The device is a bin vent filter that exhausts fluidizing air and displacement air from pre-ground limestone entering the storage silo and air return from tank trucks. The outlet is 8 inches by 14 inches and exhausts 122 feet above grade. The flow is 3,421 acfm and operates 24 hours per day 365 days per year.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):	6. YEAR OF INSTALLATION:
N/A	2008

7. LIST OF POLLUTANT (S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT (SEE INSTRUCTIONS).

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Pre-Ground Limestone	99	Manufacturer's information

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

Material collected by the bin vent filter drops back into the storage silo.

9. IF THE BAGS ARE COATED, SPECIFY THE MATERIAL USED FOR COATING AND FREQUENCY OF COATING.

N/A

10. DOES THE BAGHOUSE COLLECT ASBESTOS CONTAINING MATERIAL?

YES _____ NO ___X___

IF "YES", PROVIDE DATA AS OUTLINED IN ITEM 10, INSTRUCTIONS FOR THIS FORM.

11. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

12. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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MAJOR SOURCE OPERATING PERMIT APPLICATION

CONTROL EQUIPMENT - MISCELLANEOUS

1. FACILITY NAME:	2. EMISSION SOURCE (IDENTIFY):
Tennessee Valley Authority-Bull Run Fossil Plant	Pre-Ground Limestone Truck Hauling

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Emission Unit 9

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE (e.g., PRESSURE DROP, GAS FLOW RATE, TEMPERATURE):

A watering truck operates as needed to provide wet suppression of fugitive dust on pre-ground limestone paved and unpaved haul roads.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
N/A

6. YEAR OF INSTALLATION:
N/A

7. LIST OF POLLUTANT (S) TO BE CONTROLLED BY THIS EQUIPMENT AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT.

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulates	95	Wet suppression for paved and unpaved roads: AWMA
		Air Pollution Engineering Manual, pages 143-144, 1992.

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

N/A

9. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

10. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

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APC V.28

MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority - Bull Run Fossil Plant	9-11

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):
Pre-Ground Limestone Truck Hauling, Storage Silo A, and Storage Silo B

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
PARTICULATES (TSP)	N/A		5.14	1.17
(FUGITIVE EMISSIONS)	N/A		0.339	4.50
SULFUR DIOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

APC V.28

(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. N/A

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (July 2011 – June 2012)	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)

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DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
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MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME:	2. EMISSION SOURCE NUMBER
Tennessee Valley Authority - Bull Run Fossil Plant	9-11

3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR.

Pre-Ground Limestone Truck Hauling, Storage Silo A, and Storage Silo B

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit # 556854 Condition #E7-1: Maximum annual throughput of pre-ground limestone handling trucks weighed and data recorded monthly.	Max. Annual Throughput 300,000 tons per year		IN
Pre-Ground Limestone Storage Silos A and B	Particulate	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit # 556854 Condition #E7-2: Particulate Emission Limit; documentation of semi-annual inspections and maintenance.	1.17 lbs/hr combined for both storage silos		IN
Pre-Ground Limestone Storage Silos A and B	Opacity	TAPCR 1200-3-5-.01(1) and (3), 1200-3-5-.03(6); 40 CFR 51.110(a); Permit # 556854 Condition #E7-3: Opacity standard - Compliance determined by opacity matrix.	10 percent opacity - except for one 6 minute period in any 1 hour period, and for no more than four 6 minute periods in any 24 hour period (excluding malfunction, startups, and shutdowns). Visible emissions determined by Method 9.		IN
	Particulate	TAPCR 1200-3-8-.01; 40 CFR 51.110(a); Permit # 556854 Condition #E7-4: Fugitive Dust - Take reasonable precautions to prevent particulate matter from becoming airborne. No visible fugitive dust beyond the property line for more than 5 minutes per hour or 20 minutes per day. Compliance determined by opacity matrix.	No visible emissions across the property line for more than 5 minutes per hour or 20 minutes per day. Visible emissions determined by Tennessee Visible Emission Evaluation (TVEE) Method 4.		IN

Pre-Ground Limestone Truck Haul Roads and Parking Area	Opacity	TAPCR 1200-3-5-.01(3), 1200-3-5-.03; 40 CFR 51.110(a); Permit # 556854 Condition #7-5: Opacity standard - Compliance determined by opacity matrix.	10 percent opacity – Visible emissions determined by Method 1.		IN
11. PAGE NUMBER:		REVISION NUMBER:		DATE OF REVISION:	

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Opacity	TAPCR 1200-3-5-.02(1); 40 CFR 51.211: Exceptions - Due allowance for emissions in excess of the opacity limit during startup, shut down and malfunction. Maintain logs containing specified information and provide copy upon request.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii); 40 CFR 70.6(a)(3) : Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
	All Applicable Pollutants	TAPCR 1200-3-10-.04: Sampling, Recording, and Reporting Required for Major Stationary Sources – Technical Secretary may require periodic or enhanced monitoring, recording, and reporting that he deems necessary for the verification of a source's compliance with applicable requirements.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211 : Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211 : Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1) and 1200-3-9-.02(11)(e)1.(iii); 40 CFR 51.211 : Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility			IN

	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211 : Report Required Upon The Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after receipt of the notice of violation.			IN

10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)

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DEPARTMENT OF ENVIRONMENT AND CONSERVATION
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NASHVILLE, TN 37243-1531

COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
   Tennessee Valley Authority - Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):
   Pre-Ground Limestone Truck Hauling, Storage Silo A, and Storage Silo B

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
   9-11

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

   _____ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
   POLLUTANT(S):

   _____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
   POLLUTANT(S):

   _____ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
   POLLUTANT(S):

   __X__ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
   POLLUTANT(S):
   Opacity, Particulates

   _____ STACK TESTING - APC FORM V.24
   POLLUTANT(S):

   _____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
   POLLUTANT(S):

   __X__ RECORDKEEPING - APC FORM V.26
   POLLUTANT(S):
   Opacity

   _____ OTHER (PLEASE DESCRIBE) - APC FORM V.27
   POLLUTANT(S):

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.

   START DATE: Within 60 days after June 30 and December 31 of each year.

   AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:

   START DATE: Within 60 days after June 30 and December 31 of each year.

   AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES

THE MONITORING OF A MAINTENANCE PROCEDURE SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT IS ESTABLISHED.

1. FACILITY NAME:

   Tennessee Valley Authority-Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

   9-11

3. EMISSION SOURCE (IDENTIFY):

   Pre-Ground Limestone Truck Hauling, Storage Silo A, and Storage Silo B

4. POLLUTANT(S) BEING MONITORED:

   Particulates, Opacity

5. PROCEDURE BEING MONITORED:

   Maintenance and Inspection Procedures

6. DESCRIPTION OF THE METHOD OF MONITORING AND ESTABLISHMENT OF CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT:

1. The bin vent filters on the pre-ground limestone storage silos will be maintained, kept in good operating condition, and operated whenever the pre-ground limestone handling system is operational. The bin vent filters will be inspected semiannually. Records documenting these inspections and any necessary maintenance will be maintained for at least 5 years.

2. A watering truck will be employed as needed for fugitive dust emission control on the pre-ground limestone handling haul roads.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):
Compliance with the opacity and particulate standards as determined by scheduled inspections will be demonstrated semiannually and submitted as part of the annual compliance report.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
Tennessee Valley Authority-Bull Run Fossil Plant	9-11

3. EMISSION SOURCE (IDENTIFY):

Pre-Ground Limestone Truck Hauling, Storage Silo A, and Storage Silo B

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Opacity

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:

Opacity

6. METHOD OF MONITORING AND RECORDING:

1. Fugitive emissions from the pre-ground limestone handling process will be evaluated at the property boundary semiannually by a trained observer in accordance with TVEE Method 4 and the Tennessee Division of Air Pollution Control (TDAPC) opacity matrix (June 18, 1996). Records documenting these evaluations will be maintained for 5 years.

2. Fugitive emissions from the pre-ground limestone handling haul roads and parking area will be evaluated by a trained observer in accordance with TVEE Method 1 and the Tennessee Division of Air Pollution Control (TDAPC) opacity matrix (June 18, 1996). Records documenting these evaluations will be maintained for 5 years.

Note: In accordance with the TDAPC opacity matrix (June 18, 1996), no scheduled TVEE Method 2 visible emission evaluations are required for the pre-ground limestone handling bin vent filters.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

1. Compliance with the opacity standard at the property boundary as determined by visible emission evaluations will be demonstrated in accordance with the TDAPC opacity matrix (June 18, 1996).

2. Compliance with the opacity standard for the pre-ground limestone handling haul roads as determined by visible emission evaluations will be demonstrated in accordance with the TDAPC opacity matrix (June 18, 1996).

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DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 7-2. BULL RUN FOSSIL PLANT (BRF): AY12 PRE-GROUND LIMESTONE-HANDLING PARTICULATE-MATTER (PM) [TOTAL SUSPENDED PARTICULATES (TSP)] EMISSION ESTIMATES

EMISSION UNIT NUMBER	EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	VALUE	PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS T/YR	LB/HR	CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS T/YR	LB/HR
9	PRE-GROUND LIMESTONE TRUCK HAULING	PRE-GROUND LIMESTONE TRUCK HAULING UNPAVED ROAD	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % AVG. VEHICLE WEIGHT, T WET DAYS/YR	10 27 126.6	7.57 LB/VMT	120 T/HR 18,109 T/YR 26 T/TRIP 1.65 MI/TRIP	4.35	57.7	WET SUPPRESSION	95	0.218	2.88
		PRE-GROUND LIMESTONE TRUCK HAULING PAVED ROAD AT ENTRANCE	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 27 126.6	1.97 LB/VMT	120 T/HR 18,109 T/YR 26 T/TRIP 0.160 MI/TRIP	0.110	1.45	NONE	0	0.110	1.45
		PRE-GROUND LIMESTONE TRUCK HAULING PAVED ROAD AT UNLOADING STATION	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 27 126.6	1.97 LB/VMT	120 T/HR 18,109 T/YR 26 T/TRIP 0.360 MI/TRIP	0.246	3.27	WET SUPPRESSION	95	0.0123	0.163
		EMISSIONS SUB-TOTAL						4.71	62.4		92.79	0.339	4.50
10	PRE-GROUND LIMESTONE STORAGE SILO A	PRE-GROUND LIMESTONE TO STORAGE SILO A	BIN VENT FILTER EXHAUST	BIN VENT FILTER DESIGN MAXIMUM OUTLET GRAIN LOADING	---	2.00E-02 GR/SCF	3421 ACF/MIN PER VENT 1 COLLECTR 8760 HR/YR	257	58.6	BIN VENT FILTER	99	2.57	0.586
11	PRE-GROUND LIMESTONE STORAGE SILO B	PRE-GROUND LIMESTONE TO STORAGE SILO B	BIN VENT FILTER EXHAUST	BIN VENT FILTER DESIGN MAXIMUM OUTLET GRAIN LOADING	---	2.00E-02 GR/SCF	3421 ACF/MIN PER VENT 1 COLLECTR 8760 HR/YR	257	58.6	BIN VENT FILTER	99	2.57	0.586

BRF LIMESTONE-HANDLING PARTICULATE-MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP T/YR	LB/HR	CONTROLLED TSP T/YR	LB/HR
POINT-SOURCE	514	117	5.14	1.17
FUGITIVES	4.71	62.4	0.339	4.50
TOTAL	**518**	**180**	**5.48**	**5.67**

Notes

	References
(1) The sources of emission equations/factors are:	
(a) Unpaved roads	EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
(b) Paved roads	EPA, AP-42, 5th Edition, Section 13.2.1, January 2011
(c) Bin vent filter design maximum outlet grain loading	Per 7-17-06 letter from G.J. Buchert (Advatech) to R. D. Nash.
(2) The sources for meteorological input parameters are:	
(a) Number of wet days per year (126.6)	National Weather Service, Knoxville, Tennessee Data, 1942-94 Average
(3) The sources of control efficiencies are:	
(a) Wet suppression (for haul roads)	95 % (AWMA, Air Pollution Engineering Manual, p. 143-144, 1992)
(b) Bin vent filter	99% (Engineering Estimate)

SAMPLE CALCULATIONS FOR THE PRE-GROUND LIMESTONE HANDLING PROCESS BULL RUN FOSSIL PLANT

Actual Emissions

Pre-Ground Limestone will be delivered by trucks over paved and unpaved roads and pneumatically conveyed to one of two 1730 ton storage silos. Each storage silo uses a bin vent filter to control fugitive dust during the load-in operation. Particulate matter (PM) and total suspended particulate (TSP) emissions are considered equivalent and the terms are used interchangeably.

(1) Unpaved Road

Source: EPA, 5th Edition, AP-42, Section 13.2.2, 12/2003

$$E = k\,(\frac{s}{12})^{a}\,(\frac{W}{3})^{b}\,\frac{(365 - p)}{365}$$

Where: E_{TSP} = Uncontrolled TSP Emission factor, lb/VMT (VMT = Vehicle Miles Traveled)
E_{PM10} = Uncontrolled PM_{10} Emission factor, lb/VMT
k = Particle size multiplier (k_{TSP} = 4.9; k_{PM10} = 1.5)
s = Silt content of road surface material, weight %
W = Mean vehicle weight, tons
p = Number of days per year with at least 0.01 inch of precipitation
a = 0.7 for TSP; a = 0.9 for PM_{10}
b = 0.45 for TSP and PM_{10}

VMT = (Round-trip distance) x (Total weight hauled) / (Weight hauled per trip)

Sample Calculation – Pre-Ground Limestone Hauling Unpaved Road (Source 9A)

$$E_{TSP} = 4.9 \times \left(\frac{10}{12}\right)^{0.7} \times \left(\frac{27}{3}\right)^{0.45} \times \frac{(365 - 126.6)}{365} = 7.57 \text{ lb/VMT}$$

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{7.57\,\text{lb}}{\text{VMT}} \times \frac{18{,}109 \text{ tons}}{\text{yr}} \times \frac{\text{trip}}{26 \text{ tons}} \times \frac{1.65\,\text{mi}}{\text{trip}} \times \frac{\text{ton}}{2000\,\text{lb}} = 4.35 \text{ tons/yr}$$

$$\text{HOURLY} = \frac{7.57\,\text{lb}}{\text{VMT}} \times \frac{120 \text{ tons}}{\text{hr}} \times \frac{\text{trip}}{26 \text{ tons}} \times \frac{1.65\,\text{mi}}{\text{trip}} = 57.7 \text{ lb/hr}$$

Controlled Emissions:

Controlled emissions = (Uncontrolled emissions) (1 - e/100)

Where e = Control Efficiency (%)

Wet suppression fugitive dust control measures are expected to achieve 95% control efficiency.

$$\text{ANNUAL} = 4.35 \text{ x } (1 - \frac{95}{100}) = 0.218 \text{ tons/yr}$$

$$\text{HOURLY} = 57.7 \text{ lb/hr x } (1 - \frac{95}{100}) = 2.88 \text{ lb/hr}$$

(2) Paved Road

Source: EPA AP-42, 5th Edition, Section 13.2.1, 1/2011

$$E = k(sL)^{0.91}(W)^{1.02} \text{ x } (1 - \frac{P}{4N})$$

Where: E = Emission factor, lb/VMT (VMT=Vehicle Miles Traveled)
k = Particle size multiplier (0.082 for TSP, 0.016 for PM_{10})
sL = Road surface material silt loading, g/m^2
W = Average weight of the vehicles traveling the road, tons
P = Number of days per N days with at least 0.01 inch of precipitation

VMT = (Round-trip distance) x (Total weight hauled) / (Weight hauled per trip)

The sL value was taken from AP-42 Section 13.2.1 as the typical silt loading for a quarry (8.2 g/m^2).

Sample Calculation – Pre-Ground Limestone Truck Hauling Paved Road at Entrance (Source 9B)

$$E_{TSP} = 0.011 \text{ x } (8.2)^{0.91} \text{ x } (27)^{1.02} \text{ x } (1 - \frac{126.6}{4 \text{ x } 365}) = 1.97 \text{ lb/VMT}$$

Uncontrolled Emissions:

$$\text{ANNUAL} = \frac{1.97 \text{ lb}}{\text{VMT}} \text{ x } \frac{18{,}109 \text{ ton}}{\text{yr}} \text{ x } \frac{0.16 \text{ mi}}{\text{trip}} \text{ x } \frac{\text{trip}}{26 \text{ tons}} \text{ x } \frac{\text{ton}}{2000 \text{ lb}} = 0.110 \text{ tons/yr}$$

$$\text{HOURLY} = \frac{1.97 \text{ lb}}{\text{VMT}} \text{ x } \frac{120 \text{ ton}}{\text{hr}} \text{ x } \frac{0.16 \text{ mi}}{\text{trip}} \text{ x } \frac{\text{trip}}{26 \text{ tons}} = 1.45 \text{ lb/hr}$$

Controlled Emissions:

Controlled Emissions are the same as Uncontrolled Emissions because no fugitive dust suppression measures are used for the paved roads at BRF.

(3) Bin Vent Filter Emissions

The following approach was used to estimate the particulate matter (PM) emissions from the bin vent filter at the Pre-Ground Limestone Storage Silo A. PM emissions are assumed to consist entirely of particles with an aerodynamic diameter less than 10 micrometers (PM_{10}).

Sample Calculation – Pre-Ground Limestone Storage Silo Bin Vent Filter (Source 10)

Source: Manufacturer's Information:

Controlled emissions (maximum) = 0.02 grain/standard ft^3 (gr/scf)

From the maximum outlet grain loading, the controlled PM emissions can be determined using the design bin vent filter flow rate. Annual controlled PM emissions from the bin vent filter are estimated assuming that the bin vent filter operates continuously.

$$\text{Annual Emissions} = \frac{0.02\ \text{gr}}{\text{scf}} \text{ x } \frac{3{,}421\ \text{scf}}{\text{min}} \text{ x } \frac{60\ \text{min}}{\text{hr}} \text{ x } \frac{8{,}760\ \text{hr}}{\text{yr}} \text{ x } \frac{\text{lb}}{7{,}000\ \text{gr}} \text{ x } \frac{\text{ton}}{2{,}000\ \text{lb}} = 2.57\ \text{ton /yr}$$

$$\text{Hourly Emissions} = \frac{0.02\ \text{gr}}{\text{scf}} \text{ x } \frac{3{,}421\ \text{scf}}{\text{min}} \text{ x } \frac{60\ \text{min}}{\text{hr}} \text{ x } \frac{\text{lb}}{7{,}000\ \text{gr}} = 0.586\ \text{lb /hr}$$

Since the manufacturer's information indicated that the bin vent filter provides a design control efficiency of at least 99 percent, the uncontrolled emissions can be determined as:

Uncontrolled Emissions:

$$\text{Annual Uncontrolled Emissions} = \frac{\text{Controlled Emissions}}{1 - \text{Control Efficiency}/100}$$

$$= \frac{2.57\ \text{ton/yr controlled}}{(1 - \frac{99}{100})}$$

$$= 257\ \text{ton/yr uncontrolled}$$

$$\text{Hourly Uncontrolled Emissions} = \frac{\text{Controlled Emissions}}{1 - \text{Control Efficiency}/100}$$

$$= \frac{0.586 \text{ lb/hr controlled}}{(1 - \frac{99}{100})}$$

$$= 58.6 \text{ lb/hr uncontrolled}$$

ATTACHMENT 8

Hydrated Lime Injection System Process Description
Operational and Calculation Methodology

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243 – 1531

APC V.10

MAJOR SOURCE OPERATING PERMIT APPLICATION
MISCELLANEOUS PROCESSES

1. FACILITY NAME:

Tennessee Valley Authority – Bull Run Fossil Plant

2. PROCESS IDENTIFICATION NUMBER:

Hydrated Lime Injection System and Handling Process

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

Emission Unit	Description
12	Hydrated Lime Haul Road
13, 15, 17, 19	Hydrated Lime Loading – Storage Silo Dust Collector
14, 16, 18, 20	Feed Hopper Loading – Feed Hopper Dust Filter

IF EMISSIONS ARE CONTROLLED FOR COMPLIANCE, ATTACH THE APPROPRIATE AIR POLLUTION CONTROL SYSTEM FORM.

4. NORMAL OPERATING SCHEDULE:

24 HRS/DAY 7 DAYS/WK 365 DAYS/YR

5. YEAR OF CONSTRUCTION OR LAST MODIFICATION:

2012

6. DESCRIBE THIS PROCESS (PLEASE ATTACH A FLOW DIAGRAM OF THIS PROCESS) AND CHECK ONE OF THE FOLLOWING:

_____ BATCH X CONTINUOUS

7. LIST THE TYPES AND AMOUNTS OF RAW MATERIALS INPUT TO THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS)
Hydrated Lime	Silos, dust collectors / filters, feed hoppers,	4,000 lbs/hr	6,000 lbs/hr
	pneumatic conveying lines, and blowers		

8. LIST THE TYPES AND AMOUNTS OF PRIMARY PRODUCTS PRODUCED BY THIS PROCESS:

MATERIAL	STORAGE/MATERIAL HANDLING PROCESS	AVERAGE AMOUNT PRODUCED (UNITS)	MAXIMUM AMOUNT PRODUCED (UNITS)
N/A			

9. PROCESS FUEL USAGE:

TYPE OF FUEL	MAX HEAT INPUT (10^6 BTU/HR)	AVERAGE USAGE (UNITS)	MAXIMUM USAGE (UNITS)
N/A			

10. LIST ANY SOLVENTS, CLEANERS, ETC., ASSOCIATED WITH THIS PROCESS:

Small amount of nonhazardous solvents and cleaners are used in maintenance activities.

IF THE EMISSIONS AND/OR OPERATIONS OF THIS PROCESS ARE MONITORED FOR COMPLIANCE, PLEASE ATTACH THE APPROPRIATE COMPLIANCE DEMONSTRATION FORM.

11. DESCRIBE ANY FUGITIVE EMISSIONS ASSOCIATED WITH THIS PROCESS, SUCH AS OUTDOOR STORAGE PILES, OPEN CONVEYORS, OPEN AIR SAND BLASTING, MATERIAL HANDLING OPERATIONS, ETC. (PLEASE ATTACH A SEPARATE SHEET IF NECESSARY).
Paved road / unpaved road fugitive emissions occur as hydrated lime is delivered. The summary table in the Sample Calculations describes the emission points and gives estimated emission quantities.

12. LOCATION OF THIS PROCESS EMISSION SOURCE IN UTM COORDINATES:

UTM VERTICAL: See Table 8-1 on page 8-2 UTM HORIZONTAL: See Table 8-1 on page 8-2

13. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION

HYDRATED LIME INJECTION SYSTEM PROCESS DESCRIPTION
BULL RUN FOSSIL PLANT

The Bull Run Fossil Plant (BRF) hydrated lime injection system (HLI system) aids in the removal of sulfuric acid particulate to reduce the stack opacity (Figure 8-1). The HLI system consists of hydrated lime being transferred from pneumatic bulk delivery trucks to storage silos and transferred from the storage silos to flue-gas-duct injections ports by dilute phase positive pressure pneumatic conveying.

A total of four (4) silos are used to store the hydrated lime. Silo location coordinates are provided in the following table.

TABLE 8-1
HYDRATED LIME STORAGE SILO COORIDNATES

Silo	Latitude	Longitude	UTM N (km)	UTM E (km)
1	36.021651	-84.156298	3989.891	756.2648
2	36.021617	-84.156266	3989.887	756.2678
3	36.021681	-84.156249	3989.895	756.2691
4	36.021647	-84.156218	3989.891	756.2721

The four silos' maximum throughput is 6,000 pounds per hour (or 26,280 tons per year operating at 8,760 hours per year) and provide approximately five (5) days capacity. Each silo is 14 feet in diameter, approximately 67 feet tall, and has a usable capacity of approximately 5,760 cubic feet of hydrated lime.

On top of each silo is a dust collector. The dust collectors operate during the pneumatic filling of the silos and are designed to capture dust generated during the filling operation. All of the dust collectors have an access door and an air manifold with valves for reverse pulse cleaning. Each dust collector contains 25 filter cartridges, and each cartridge contains 30 square feet of filter media providing 99.9 percent capture efficiency at operating conditions along with a three-horsepower, 750 cubic feet per minute exhauster.

Each silo provides hydrated lime to a single loss-in-weight feeder located under the silo. The loss-in-weight feeders facilitate continuous flow of the lime material to the pneumatic injection system. A rotary valve is mounted at the feed-hopper discharge and serves as the metering device. A variable frequency drive linked to the control system regulates the rotary valve, which discharges to a small, vented surge hopper. Discharge from the small, vented surge hopper passes to a blow-thru rotary airlock running at a constant speed.

Each loss-in-weight feed hopper has a reverse jet pulse dust filter system. The dust filter system is designed to trap and return to the process the nuisance dust that is generated during feeder refilling. The dust filter allows for displacement of air in the hopper as material is metered out

or replenished. Each hopper has two (2) dust filter cartridges mounted directly to the hopper top with each cartridge containing 30 square feet of filter media providing 99.9 percent capture efficiency at operating conditions. Each dust collector exhausts at 15 standard cubic feet per minute. The feed hoppers will be mounted on load cells that will be linked to a control system.

The feed hopper, the two (2) dust filter cartridges, and the load cells reside in an enclosure at the base of the silo. This enclosure is vented to the outside by an 18-inch, 1/3-horsepower exhaust fan located approximately 17 feet above grade. The exhaust fan has the capability to exhaust 2,441 standard cubic feet per minute to the atmosphere.

The blow-thru rotary airlock will discharge to a conveying piping system. There will be four (4) conveying lines – one from each silo to one of the four (4) outlet ducts. Each conveying line has a 40-horsepower, positive displacement blower (four [4] blowers total). The four (4) blower packages are equipped with a single, desiccant-type air dryer to ensure the air used to convey the hydrated lime remains dry. Each blower is also equipped with flow meters and variable frequency drive controls.

Each of the pneumatic conveying lines terminates at a line splitter. The splitter distributes the conveyed hydrated lime to six (6) duct injection lances at each outlet duct. The injection lances are individually supplied with a manual maintenance valve, a pressure transmitter, an automatic pinch valve, and an automatic solenoid valve for injecting purge air. Each injection lance can be analyzed for blockage and purged with air automatically if needed. Hydrated lime injection ports are installed in the ductwork downstream of the air preheaters and prior to the inlets of the existing electrostatic precipitators (ESP).

The fluidizing air used for the silos, feed hoppers, control air, and purging is supplied by an air compressor. The air compressor will be rotary screw type and will include a receiver tank and a twin tower desiccant air dryer to ensure the air is dry. A backup source of air will be provided from the plant control air from a source near the SCR ash hoppers.

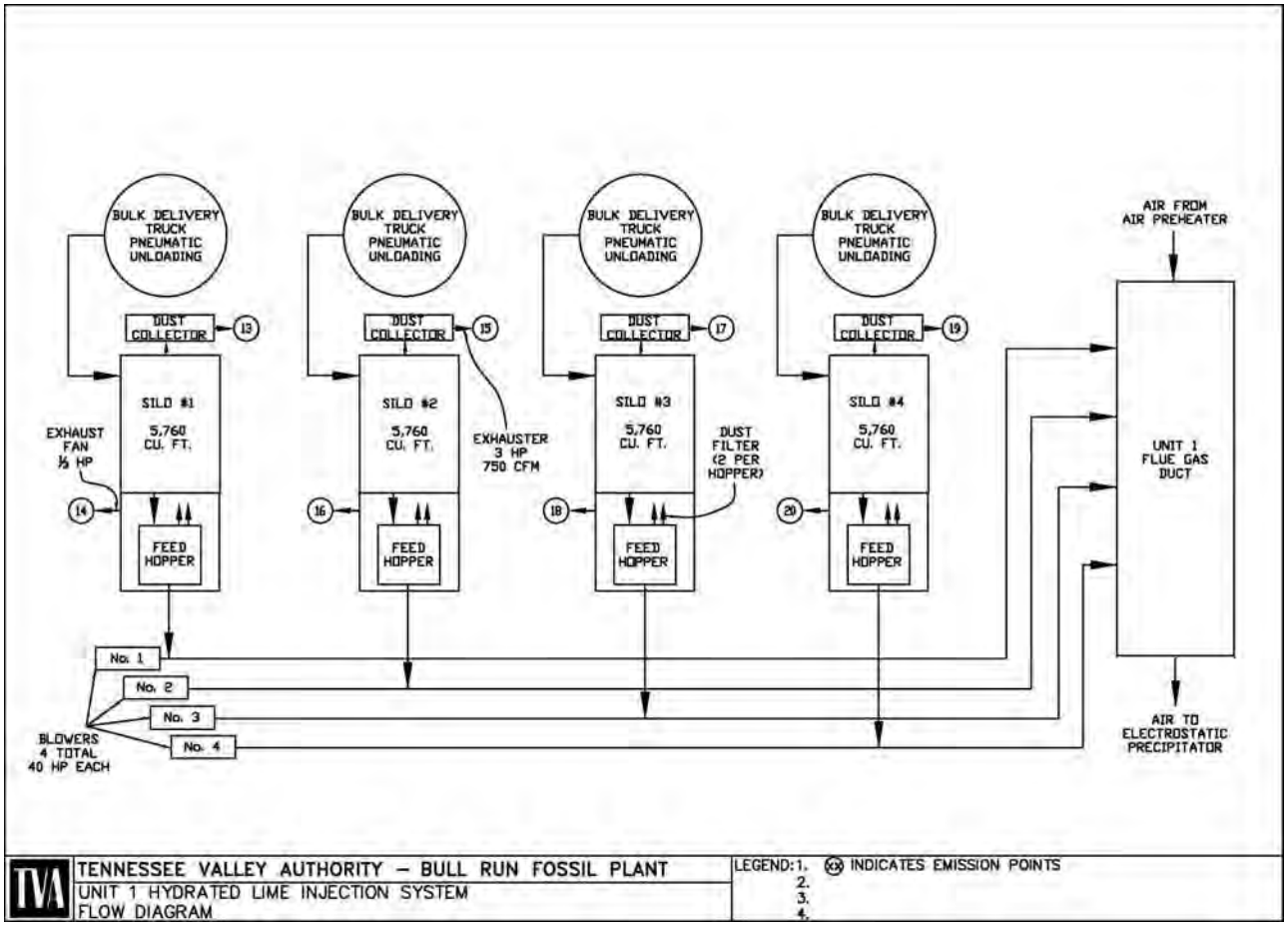
BULK DELIVERY TRUCK PNEUMATIC UNLOADING
BULK DELIVERY TRUCK PNEUMATIC UNLOADING
BULK DELIVERY TRUCK PNEUMATIC UNLOADING
BULK DELIVERY TRUCK PNEUMATIC UNLOADING
AIR FROM AIR PREHEATER
DUST COLLECTOR
13
DUST COLLECTOR
15
DUST COLLECTOR
17
DUST COLLECTOR
19
SILO #1
5,760 CU. FT.
SILO #2
5,760 CU. FT.
SILO #3
5,760 CU. FT.
SILO #4
5,760 CU. FT.
EXHAUST FAN ½ HP
EXHAUSTER 3 HP 750 CFM
DUST FILTER (2 PER HOPPER)
UNIT 1 FLUE GAS DUCT
14
16
18
20
FEED HOPPER
FEED HOPPER
FEED HOPPER
FEED HOPPER
No. 1
No. 2
No. 3
No. 4
BLOWERS 4 TOTAL 40 HP EACH
AIR TO ELECTROSTATIC PRECIPITATOR
TENNESSEE VALLEY AUTHORITY – BULL RUN FOSSIL PLANT
UNIT 1 HYDRATED LIME INJECTION SYSTEM
FLOW DIAGRAM
LEGEND: 1. ⊗ INDICATES EMISSION POINTS
2.
3.
4.

FIGURE 8-1

OPERATIONAL AND CALCULATION METHODOLOGY
BULL RUN FOSSIL PLANT
HYDRATED LIME INJECTION SYSTEM AND HANDLING PROCESS

Maximum hydrated lime usage is 6,000 pounds per hour-silo and 8,760 hours per year. The maximum annual usage of hydrated lime is 26,280 tons per year for the six silos. There was no hydrated lime received in AY 2012, however, maximum emissions are calculated and shown on all forms and in the sample calculations.

The haul roads used by the bulk delivery trucks are both paved and unpaved. Fugitive air emissions are estimated using EPA AP-42, 5th Edition, Section 13.2.1, Paved Roads, January 2011 and EPA AP-42, 5th Edition, Section 13.2.2, Unpaved Roads, November 2006.

Particulate matter (PM) emission estimates for all silo dust collectors and feed-hopper dust filters are based on manufacturer's guarantee of PM collection efficiency of 99.9 percent and an inlet PM concentration of 10 grains per dry standard cubic foot (gr/dscf). The operation for each dust collector / filter is 8,760 hours per year.

No emissions estimates are prepared for hazardous air pollutants (HAPs) contained in the dust collectors / filters' emissions or the haul roads' fugitive emissions. Although TVA recognizes that several trace element HAPs are contained in the particulate matter emissions, no generally recognized emission factors are found for HAP emissions from hydrated lime handling or haul road utilization.

Data used to estimate the emissions from the hydrated lime handling process are summarized in Table 8-2.

TABLE 8-2
HYDRATED LIME HANDLING INPUT DATA

Category / Description	Value	Units
Hydrated Lime Process Throughput:		
Maximum Hourly	6,000	lb/hr
Maximum Annual	26,280	tons/yr
Actual AY 2012	0.0	tons/yr
Storage Silo Dust Collector:		
Number of Silos	4	
Dust Collectors per Silo	1	
Air Flow per Dust Collector	750	ft^3/min
Filter Exhaust Concentration	10	gr/dscf
Filter Control Efficiency	99.9	%
Annual Operation	8,760	hrs/yr
Feed Hopper Dust Filters:		
Number of Feed Hoppers	4	
Dust Filters per Feed Hopper	2	
Air Flow per Dust Filter	15	ft^3/min
Filter Exhaust Concentration	10	gr/dscf
Filter Control Efficiency	99.9	%
Annual Operation	8,760	hrs/yr
Hydrated Lime Delivery Truck:		
Unloaded Weight	18	tons
Loaded Weight	40	tons
Capacity	22	tons
Haul Road Distances:		
Delivery Paved Road:	0.322	miles
Delivery Unpaved Road:	0.833	miles
Exiting Paved Road:	0.341	miles
Meteorological Conditions:		
Wet Days per Year	126.6	

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243 – 1531

APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant	FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Emission Unit 13, 15, 17, 19 (Emission Units are identical)		LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):

Unloading to Storage Silo – Dust Collector Emissions

4. STACK HEIGHT ABOVE GRADE IN FEET:

67.2

5. VELOCITY (DATA AT EXIT CONDITIONS): 65.6 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 0.5
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 773	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 750
9. EXHAUST TEMPERATURE: Ambient DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 3 PERCENT 10.1 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (E.G., OPACITY, SO_2, NO_X, ETC.)?

N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

____ YES X NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

14. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

CN - 1007 RDA 1298

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243 – 1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - BAGHOUSES/FABRIC FILTERS

1. FACILITY NAME:
Tennessee Valley Authority – Bull Run Fossil Plant

2. EMISSION SOURCE (IDENTIFY):
Unloading to Storage Silo – Dust Collector Emissions

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Emission Unit 13, 15, 17, 19
(Emission Units are identical)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

The dust collectors operate during the pneumatic filling of the hydrated lime silos and are designed to capture nuisance dust generated during the filling operation. The outlet is located 67 feet above grade. The dust collectors are supplied with an access door and an air manifold and valves for reverse pulse cleaning. Each dust collector contains 25 filter cartridges, and each cartridge contains 30 square feet of filter media providing 99.9 percent capture efficiency at operating conditions along with a three (3) horsepower, 750 cubic feet per minute exhauster.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
Manufacturer: Nol–Tec Systems, Inc.

6. YEAR OF INSTALLATION:
2012

7. LIST OF POLLUTANT(S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT (SEE INSTRUCTIONS).

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulate Matter (TSP, PM_{10}, $PM_{2.5}$)	99.9	Vendor Data

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

Hydrated lime captured by the bin vent dust collector is deposited into the storage silo.

9. IF THE BAGS ARE COATED, SPECIFY THE MATERIAL USED FOR COATING AND FREQUENCY OF COATING.

N/A

10. DOES THE BAGHOUSE COLLECT ASBESTOS CONTAINING MATERIAL?

YES _____ NO X

IF "YES", PROVIDE DATA AS OUTLINED IN ITEM 10, INSTRUCTIONS FOR THIS FORM.

11. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

N/A

12. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION:

CN-1007 RDA 1298

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243 – 1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant	FOR APC	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): Emission Unit 14, 16, 18, 20 (Emission Units are identical)	USE ONLY	LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):

Feed Hopper Loading – Dust Filter Emissions

4. STACK HEIGHT ABOVE GRADE IN FEET:

17

5. VELOCITY (DATA AT EXIT CONDITIONS): 23.7 (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 1.5
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): 2,516	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): 2,441
9. EXHAUST TEMPERATURE: Ambient DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): 3 PERCENT 10.1 GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):

N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (E.G., OPACITY, SO_2, NO_X, ETC.)?

N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?

____ YES X NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
CONTROL EQUIPMENT - BAGHOUSES/FABRIC FILTERS

1. FACILITY NAME:
   Tennessee Valley Authority – Bull Run Fossil Plant

2. EMISSION SOURCE (IDENTIFY):
   Feed Hopper Loading – Dust Filter Emissions

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
   Emission Unit 14, 16, 18, 20
   (Emission Units are identical)

4. DESCRIBE THE DEVICE IN USE. LIST THE KEY OPERATING PARAMETERS OF THIS DEVICE AND THEIR NORMAL OPERATING RANGE.

   Each hydrated lime storage silo has a loss-in-weight feed hopper, which has its own reverse jet pulse dust filter system. The dust filter system is designed to trap, and return to the process, the nuisance dust that is generated during feeder refilling. The dust filter will also allow for displacement of air in the hopper as material is metered out or replenished. Each hopper has two (2) dust filter cartridges mounted directly to the hopper top; each dust filter cartridge contains 30 square feet of filter media providing 99.9 percent capture efficiency at operating conditions. Each dust collector exhausts at 15 standard cubic feet per minute. The feed hoppers will be mounted on load cells that will be linked to the control system.

   The feed hopper, the two (2) dust filter cartridges, and the load cells reside in an enclosure at the base of the silo. This enclosure is vented to the outside by an 18-inch, 1/3-horsepower exhaust fan located approximately 17 feet above grade with the capability to exhaust 2,441 standard cubic feet per minute to the atmosphere.

5. MANUFACTURER AND MODEL NUMBER (IF AVAILABLE):
   Manufacturer: Nol–Tec Systems, Inc.

6. YEAR OF INSTALLATION:
   2012

7. LIST OF POLLUTANT(S) TO BE CONTROLLED AND THE EXPECTED CONTROL EFFICIENCY FOR EACH POLLUTANT (SEE INSTRUCTIONS).

POLLUTANT	EFFICIENCY (%)	SOURCE OF DATA
Particulate Matter (TSP, PM_{10}, $PM_{2.5}$)	99.9	Vendor Data

8. DISCUSS HOW COLLECTED MATERIAL IS HANDLED FOR REUSE OR DISPOSAL.

   Hydrated lime collected by the feed hopper dust filters is deposited into feed hopper.

9. IF THE BAGS ARE COATED, SPECIFY THE MATERIAL USED FOR COATING AND FREQUENCY OF COATING.

   N/A

10. DOES THE BAGHOUSE COLLECT ASBESTOS CONTAINING MATERIAL?

    YES _____ NO X

    IF "YES", PROVIDE DATA AS OUTLINED IN ITEM 10, INSTRUCTIONS FOR THIS FORM.

11. IF THIS CONTROL EQUIPMENT IS IN SERIES WITH SOME OTHER CONTROL EQUIPMENT, STATE AND SPECIFY THE OVERALL EFFICIENCY.

    N/A

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MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Tennessee Valley Authority – Bull Run Fossil Plant	Emission Units 12-20

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):

Hydrated Lime Injection System and Handling Process

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (Maximum Emissions)*	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)
PARTICULATES (TSP)	N/A		1.17	0.267
(FUGITIVE EMISSIONS)	N/A		4.78	4.59
SULFUR DIOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VOLATILE ORGANIC COMPOUNDS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
CARBON MONOXIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
LEAD	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
NITROGEN OXIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
TOTAL REDUCED SULFUR	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
MERCURY	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

(CONTINUED ON NEXT PAGE)

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*Maximum emissions are shown since there was no hydrated lime delivered or used during AY 2012.

(CONTINUED FROM LAST PAGE)				
	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (Maximum Emissions)*	
AIR POLLUTANT	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)
ASBESTOS	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
BERYLLIUM	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
VINYL CHLORIDE	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	
GASEOUS FLUORIDES	N/A		N/A	
(FUGITIVE EMISSIONS)	N/A		N/A	

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT(S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. N/A

	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS (Maximum Emissions)*	
AIR POLLUTANT & CAS	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR-ITEM 8, APC V.30)

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*Maximum emissions are shown since there was no hydrated lime delivered or used during AY 2012.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME: Tennessee Valley Authority – Bull Run Fossil Plant			2. EMISSION SOURCE NUMBER Emission Units 12-20		
3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR. Hydrated Lime Handling Process / Injection System – paved and unpaved haul roads, storage silo pneumatic filling (silo dust collector), feed hopper loading (feed hopper dust filters)					
4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
12	Particulates	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit #556854 - Condition SM-2 E10-3 and E10-4: Maximum annual throughput of hydrated lime handling trucks weighed and data recorded monthly.	Maximum annual throughput 26,280 tons per year. Log recording amount delivered retained for at least 5 years.		IN
12	Particulates	TAPCR 1200-3-5-.01; 40 CFR 51.110(a); Permit #556854 - Condition SM-2 E10-7: Visible Emission Standard	No visible emissions >10% opacity as determined by TVEE Method 1		IN
13-20	Particulates	TAPCR 1200-3-7-.01(5); 40 CFR 51.110(a); Permit #556854 - Condition SM-2 E10-1: Maximum hourly throughput capacity of each hydrated lime silos (input rate for silo loading from bulk delivery truck may be higher).	Maximum hourly throughput of each silo 1,500 lbs/hr		IN
13, 15, 17, 19 Silo Dust Collector	Particulates	TAPCR 1200-3-7-.04(2); 40 CFR 51.110(a): Process Emission Standards	0.25 grains / standard ft^3	0.010 grains / standard ft^3	IN
13, 15, 17, 19 Silo Dust Collector	Particulates	Permit #556854 – Condition SM-2 E10-2(a): Particulate Matter Limit	0.064 lb/hr (each)	0.064 lb/hr (each)	IN
14, 16, 18, 20 Feed Hopper Dust Filters	Particulates	TAPCR 1200-3-7-.04(2); 40 CFR 51.110(a): Process Emission Standards	0.25 grains / standard ft^3	0.010 grains / standard ft^3	IN
14, 16, 18, 20 Feed Hopper Dust Filters	Particulates	Permit #556854 – Condition SM-2 E10-2(b): Particulate Matter Limit	0.0026 lb/hr (per filter pair)	0.0026 lb/hr (per filter pair)	IN
13-20	Particulates	Permit #556854 – Condition SM-2 E10-2(c): Particulate Matter Limit	0.27 lb/hr total for all four silos and four feed hoppers	0.27 lb/hr total for all four silos and four feed hoppers	IN
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4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
13-20	Particulates	TAPCR 1200-3-5.01(1); TAPCR 1200-3-5.03(6); 40 CFR 51.110(a); Permit #556854 - Condition SM-2 E10-5: Visible Emission Standard	No visible emissions >10% opacity (6-min avg.) except for one 6-min period in any one hour, but no more than four 6-min periods in any 24 hours.		IN
13-20	Particulates	TAPCR 1200-3-8-.01; 40 CFR 51.110(a); TAPCB Permit #556854 - Condition SM-2 E10-6: Fugitive dust	No visible emissions beyond the property line for more than 5 min per hour or 20 min per day excluding equipment		IN
	Particulates / Opacity	TAPCR 1200-3-20-.03 & .04; 40 CFR 51.211; TAPCB Permit #556854 - Condition B8: Excess Emissions Reporting Exemption - Visible emission standard violations occurring less than 20 minutes in one day need not be reported.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03 & .04; 40 CFR 51.211; TAPCB Permit #556854 - Condition B8: Excess Emissions Reporting - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03 & .04; 40 CFR 51.211; TAPCB Permit #556854 - Condition B8: Logs and Reports - Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211; TAPCB Permit #556854 - Condition B9: Reasonable Measures Required - All sources must take all reasonable measures to keep emissions to a minimum during startups, shutdowns, and malfunctions.			IN

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4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT(S): TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211; TAPCB Permit #556854 - Condition B11: Report Required Upon the Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1). A report must be submitted within 20 days after receipt of the notice of violation.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii); 40 CFR 70.6(a)(3); TAPCB Permit #556854 - Conditions B1, B2, & B3: Monitoring and Related Recordkeeping and Reporting Requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3); TAPCB Permit #556854 - Condition B7: Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Technical Secretary, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04: Sampling, Recording, and Reporting Required for Major Stationary Sources - Technical Secretary may require periodic or enhanced monitoring, recording, and reporting that he deems necessary for the verification of a source's compliance with applicable requirements.			IN
10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)					

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DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
   Tennessee Valley Authority – Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):

   Hydrated Lime Injection System / Handling Process

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

   Emission Units 12-20

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4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

_____ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
POLLUTANT(S): _____

_____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
POLLUTANT(S): _____

_____ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
POLLUTANT(S): _____

X MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
POLLUTANT(S): Particulate Matter

_____ STACK TESTING - APC FORM V.24
POLLUTANT(S): _____

_____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
POLLUTANT(S): _____

X RECORDKEEPING - APC FORM V.26
POLLUTANT(S): Particulate Matter

X OTHER (PLEASE DESCRIBE) - APC FORM V.27
POLLUTANT(S): Opacity (Particulate Matter)

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.

START DATE: Within 60 days after June 30 and December 31 of each year.

AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:

START DATE: Within 60 days after June 30 and December 31 of each year.

AND EVERY N/A DAYS THEREAFTER.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES

THE MONITORING OF A MAINTENANCE PROCEDURE SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT IS ESTABLISHED.

1. FACILITY NAME:

   Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):

   Emission Units 13-20

3. EMISSION SOURCE (IDENTIFY):

   Hydrated Lime Injection System – Storage Silos Dust Collector; Feed Hopper Dust Filters

4. POLLUTANT(S) BEING MONITORED:

   Particulate Matter

5. PROCEDURE BEING MONITORED:

   Maintenance and Inspection Procedures

6. DESCRIPTION OF THE METHOD OF MONITORING AND ESTABLISHMENT OF CORRELATION BETWEEN THE PROCEDURE AND THE EMISSION RATE OF A PARTICULAR POLLUTANT:

   Each dust collector / dust filter will be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

   Compliance the standard outlined in line item 6 will be performed semiannually.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED

1. FACILITY NAME:

   Tennessee Valley Authority – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):

   Emission Units 12-20

3. EMISSION SOURCE (IDENTIFY):

   Hydrated Lime Injection System / Handling Process

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

   Hydrated Lime Delivery Amounts
   Hydrated Lime Injection System Maintenance

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:

   Hydrated Lime and Injection System Maintenance

6. METHOD OF MONITORING AND RECORDING:

1. Hydrated Lime Deliveries: A log of the hydrated lime delivered (which cannot exceed 26,280 tons in any 12-month period) in a form that readily shows compliance must be maintained at the source location and kept available for inspection by the Technical Secretary or his representative. This log must be retained for a period of not less than five (5) years. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required.

2. Silo Dust Collector: Each dust collector will be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required.

3. Feed Hopper Dust Filters: Dust filters will be maintained, kept in good operating condition, and inspected semiannually to ensure compliance with the applicable particulate matter limits. Documentation of the semiannual inspections and any maintenance performed will be kept on site for a period of not less than five (5) years. All data, including all required calculations, must be entered in the log no later than 30 days from the end of the month for which the data is required.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

   Compliance frequency for each method is provided in line item 6.

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MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY OTHER METHOD(S)

1. FACILITY NAME:	2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Tennessee Valley Authority – Bull Run Fossil Plant	Emission Units 12-20

3. EMISSION SOURCE (IDENTIFY):

Hydrated Lime Haul Route (EU 12)
Hydrated Lime Injection System (EU 13-20)

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Opacity (Particulates)

5. DESCRIPTION OF THE METHOD OF MONITORING:

EU 12: Visible emissions from roads and parking areas shall not exhibit greater than 10 percent opacity as determined by Tennessee Visible Emission Evaluation (TVEE) Method 1, as adopted by the Tennessee Air Pollution Control Board on April 29, 1982, as amended on September 15, 1982 and August 24, 1984.

EU 13-20: A. Visible emissions from this source shall not exhibit greater than 10 percent opacity, except for one (1) six-minute period in any one (1) hour period, and for no more than four (4) six-minute periods in any twenty-four (24) hour period. Visible emissions from this source shall be determined by EPA Permit Method 9, as published in the current 40 CFR 60, Appendix A (six-minute average).

B. Specifically, no person shall cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment. Fugitive emissions from this source shall be determined by Tennessee Visible Emissions Evaluation Method 4 as adopted by the Tennessee Air Pollution Control Board on April 16, 1986.

6. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance with the opacity standards as determined by visible emissions evaluations will be demonstrated as stated above and submitted as part of the annual certification report.

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DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 8-3. BULL RUN FOSSIL PLANT (BRF): MAXIMUM HYDRATED LIME-HANDLING PARTICULATE-MATTER (PM) [TOTAL SUSPENDED PARTICULATES (TSP)] EMISSION ESTIMATES

EMISSION UNIT NUMBER	EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	VALUE	PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS T/YR	UNCONTROLLED PM (TSP) EMISSIONS LB/HR	CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS T/YR	CONTROLLED PM (TSP) EMISSIONS LB/HR
12	HYDRATED LIME TRUCK HAULING	FULL TRUCK (ONE-WAY)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.3 40 126.6	7.93 LB/VMT	12.6 T/HR 26,280 T/YR 22 T/TRIP 0.833 MI/TRIP	3.95	3.80	NONE	0	3.95	3.80
		FULL TRUCK (ONE-WAY)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 40 126.6	2.94 LB/VMT	12.6 T/HR 26,280 T/YR 22 T/TRIP 0.322 MI/TRIP	0.564	0.543	NONE	0	0.564	0.543
		EMPTY TRUCK (ONE-WAY)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 18 126.6	1.30 LB/VMT	12.6 T/HR 26,280 T/YR 22 T/TRIP 0.341 MI/TRIP	0.265	0.255	NONE	0	0.265	0.255
		EMISSIONS SUB-TOTAL						4.78	4.59		0.00	4.78	4.59
13	HYDRATED-LIME STORAGE SILO #1	STORAGE SILO #1 BIN-VENT DUST COLLECTOR	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	750 SCF/MIN 1 COLLECTR 8760 HR/YR	282	64.3	FILTER	99.9	0.282	0.0643
14	HYDRATED-LIME STORAGE SILO #1	STORAGE SILO #1 FEED-HOPPER DUST FILTERS	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	15 SCF/MIN 2 COLLECTR 8760 HR/YR	11.3	2.57	FILTER	99.9	0.0113	0.00257
15	HYDRATED-LIME STORAGE SILO #2	STORAGE SILO #2 BIN-VENT DUST COLLECTOR	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	750 SCF/MIN 1 COLLECTR 8760 HR/YR	282	64.3	FILTER	99.9	0.282	0.0643
16	HYDRATED-LIME STORAGE SILO #2	STORAGE SILO #2 FEED-HOPPER DUST FILTERS	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	15 SCF/MIN 2 COLLECTR 8760 HR/YR	11.3	2.57	FILTER	99.9	0.0113	0.00257
17	HYDRATED-LIME STORAGE SILO #3	STORAGE SILO #3 BIN-VENT DUST COLLECTOR	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	750 SCF/MIN 1 COLLECTR 8760 HR/YR	282	64.3	FILTER	99.9	0.282	0.0643
18	HYDRATED-LIME STORAGE SILO #3	STORAGE SILO #3 FEED-HOPPER DUST FILTERS	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	15 SCF/MIN 2 COLLECTR 8760 HR/YR	11.3	2.57	FILTER	99.9	0.0113	0.00257
19	HYDRATED-LIME STORAGE SILO #4	STORAGE SILO #4 BIN-VENT DUST COLLECTOR	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	750 SCF/MIN 1 COLLECTR 8760 HR/YR	282	64.3	FILTER	99.9	0.282	0.0643
20	HYDRATED-LIME STORAGE SILO #4	STORAGE SILO #4 FEED-HOPPER DUST FILTERS	FILTER EXHAUST	DESIGN MAX INLET GRAIN LOADING	---	10 GR/SCF	15 SCF/MIN 2 COLLECTR 8760 HR/YR	11.3	2.57	FILTER	99.9	0.0113	0.00257

BRF HYDRATED-LIME-HANDLING PARTICULATE-MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP T/YR	UNCONTROLLED TSP LB/HR	CONTROLLED TSP T/YR	CONTROLLED TSP LB/HR
POINT-SOURCE	1171	267	1.17	0.267
FUGITIVES	4.78	4.59	4.78	4.59
TOTAL	1176	272	5.95	4.86

Notes

(1) The sources of emission equations/factors are:
- (a) Unpaved roads — EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
- (b) Paved roads — EPA, AP-42, 5th Edition, Section 13.2.1, January 2011
- (c) Bin-vent & feed-hopper filter design maximum inlet grain loading — Per "Significant Modification to the [Bull Run Fossil Plant] Title V Permit Renewal Application," September 2012

(2) The sources for meteorological input parameters are:
- (a) Number of wet days per year (126.6) — National Weather Service, Knoxville, Tennessee Data, 1942-94 Average

(3) The sources of control efficiencies are:
- (a) Bin vent filter — 99.9% (Manufacturer's Guarantee)

SAMPLE CALCULATIONS FOR THE HYDRATED LIME INJECTION SYSTEM AND HANDLING PROCESS BULL RUN FOSSIL PLANT

PARTICULATE MATTER EMISSIONS

The proposed particulate matter (PM) annual emissions are determined from good engineering judgments, manufacture's guarantees, and AP-42 emission factors.

The hydrated lime injection system consists of four (4) silos with each silo having a dust collector and two dust filters. The dust collector is a 750-cubic foot per minute exhauster with filter media, and the dust filters trap nuisance dust generated during feed hopper filling.

The maximum hydrated lime feed rate to the BRF pre-scrubber flue is 6,000 pounds per hour. The maximum possible operating schedule for the system is 8,760 hours per year, which requires a maximum annual total of 26,280 tons of hydrated lime from all four silos. There was no hydrated lime received in AY 2012, however, maximum emissions are calculated and shown on all forms and in the sample calculations.

A manufacturer's guarantee is utilized for the control efficiency of the dust collectors and the dust filters.

Hydrated Lime Delivery

Bulk delivery trucks provide the transportation of the hydrated lime to BRF. Each truck provides hydrated lime to one of the four (4) silos via a pneumatic line.

The loaded trucks will travel approximately 4400 feet (0.833 miles) of unpaved road and about 1700 feet (0.322 miles) of paved road. After they are emptied, they will travel approximately 1800 feet (0.341 miles) of paved road.

(1) UNPAVED ROAD

AP-42 provides the following equation that estimates particulate emissions (TSP, PM_{10}, and $PM_{2.5}$) from vehicles traveling on unpaved roads:

$$E = \left[k \times \left(\frac{s}{12}\right)^a \times \left(\frac{W}{3}\right)^b\right] \times \frac{365 - P}{365}$$

The equation's variables are as followed:

- *E* denotes emission factor of pounds of particulate per vehicle mile traveled (VMT);
- *k* denotes particle size multiplier (e.g., 4.9 lb TSP per VMT, 1.5 for PM_{10}, and 0.15 for $PM_{2.5}$);

- *s* denotes the road surface silt content (e.g., 8.3 percent; mean value for stone quarrying and processing – haul road);
- *W* denotes the average vehicle weight (e.g., 40 tons for a full delivery truck);
- *P* denotes the number of wet days per year (e.g., 126.6 days).

The constants *a* and *b* used to complete the unpaved road equation are provided as followed:

Constant	TSP	PM_{10}	$PM_{2.5}$
a	0.7	0.9	0.9
b	0.45	0.45	0.45

For a full truck traveling on an unpaved road, results as followed:

$$E = \left[4.9 \times \left(\frac{8.3}{12}\right)^{0.7} \times \left(\frac{40}{3}\right)^{0.45}\right] \times \frac{365 - 126.6}{365} = 7.93 \text{ lb TSP/VMT}$$

The same methodology is used to estimate PM_{10} and $PM_{2.5}$ emissions.

There are approximately 0.574 delivery trucks per hour (i.e., approximately 4.6 trucks per day based on an eight [8] hour work day), and each delivery truck can carry 22 tons. The unpaved haul-road distance each truck travels is approximately 0.833 miles. The uncontrolled pound per hour and the annual TSP emissions is as followed:

$$\frac{7.93 \text{ lb TSP}}{\text{VMT}} \times \frac{0.833 \text{ miles}}{1 \text{ truck}} \times \frac{0.574 \text{ trucks}}{1 \text{ hr}} = 3.80 \frac{\text{lb TSP}}{\text{hr}}$$

$$\frac{7.93 \text{ lb TSP}}{\text{VMT}} \times \frac{0.833 \text{ miles}}{1 \text{ truck}} \times \frac{1 \text{ truck}}{22 \text{ tons}} \times \frac{26,280 \text{ tons}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 3.95 \frac{\text{ton TSP}}{\text{year}}$$

(2) PAVED ROAD

For delivery trucks travelling paved roads, AP-42 provides the following equation that estimates daily particulate emissions (TSP, PM_{10}, and $PM_{2.5}$) from vehicles:

$$E = [k \times sL^{0.91} \times W^{1.02}] \times \left(1 - \frac{P}{4N}\right)$$

The variables are as followed:

- *E* denotes emission factor of pounds of particulate per vehicle mile traveled (VMT);
- *k* denotes particle size multiplier (e.g., 0.011 lb TSP per VMT, 0.0022 for PM_{10}, and 0.00054 for $PM_{2.5}$);
- *sL* denotes the road surface silt content in grams per meter square (g/m^2) (e.g., assumed 8.2 g/m^2; see Table 13.2.1-3);
- *W* denotes the average vehicle weight (e.g., 40 tons for a full delivery truck);
- *P* denotes the number of wet days per year (e.g., 126.6 days);
-

- *N* denotes the number of days per year (i.e., 365 days).

The TSP emission factor (pound [lb] per VMT) is as followed:

$$E = [0.011 \times 8.2^{0.91} \times 40^{1.02}] \times \left(1 - \frac{126.6}{4 \times 365}\right) = 2.94 \text{ lb TSP/VMT}$$

The same methodology is used to estimate PM_{10} and $PM_{2.5}$ emissions.

There are approximately 0.574 delivery trucks per hour (i.e., approximately 4.6 trucks per day based on an eight [8] hour work day), and each delivery truck can carry 22 tons. The paved haul-road distance each full delivery truck travels is approximately 0.322 miles. The uncontrolled pound per hour and the annual TSP emissions is as followed:

$$\frac{2.94 \text{ lb TSP}}{\text{VMT}} \times \frac{0.322 \text{ miles}}{1 \text{ truck}} \times \frac{0.574 \text{ trucks}}{1 \text{ hr}} = 0.543 \frac{\text{lb TSP}}{\text{hr}}$$

$$\frac{2.94 \text{ lb TSP}}{\text{VMT}} \times \frac{0.322 \text{ miles}}{1 \text{ truck}} \times \frac{1 \text{ truck}}{22 \text{ tons}} \times \frac{26,280 \text{ tons}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.564 \frac{\text{ton TSP}}{\text{year}}$$

Pneumatic Transfer

During the pneumatic transfer of hydrated lime from bulk delivery trucks to one of the storage silos, a dust collector atop of the silo operates. The dust collector collects hydrated lime dust generated as a result silo filling operations. The manufacturer guarantees that the grain loading into the dust collector is not to exceed 10 grains of PM per standard cubic foot.

Each dust collector exhausts at a manufacturer's guarantee 750 dry standard cubic feet per minute and is equipped with filter media providing a manufacture's guarantee of 99.9 percent capture efficiency. The pound per hour and annual TSP emissions for the pneumatic transfer operation is as followed:

$$\frac{10 \text{ gr TSP}}{\text{scf-silo}} \times \frac{750 \text{ dscf}}{\text{min}} \times \frac{1 \text{ lb TSP}}{7000 \text{ gr TSP}} \times \frac{60 \text{ min}}{\text{hr}} \times \left(1 - \frac{99.9}{100}\right) = 0.0643 \frac{\text{lb TSP}}{\text{hr-silo}}$$

$$\frac{6.43 \times 10^{-3} \text{ lb TSP}}{\text{hr-silo}} \times \frac{8760 \text{ hr}}{\text{yr}} \times \frac{1 \text{ ton TSP}}{2,000 \text{ lb TSP}} = 0.282 \frac{\text{ton TSP}}{\text{year}}$$

Feed Hopper Loading

Each hydrated lime silo is equipped with a feed hopper. The feed hopper is designed to provide continuous flow of the hydrated lime into the pneumatic delivery system.

Two dust filters are located atop each feed hopper and allow the hopper to breathe as it is being filled. The manufacturer guarantees the grain loading into each dust filter is not to exceed 10 grains of PM per standard cubic foot. Each dust collector exhausts at 15 standard cubic feet per

minute (based on vendor information) and is equipped with filter media providing a manufacture's guarantee of 99.9 percent capture efficiency. The pound per hour and annual TSP emissions for each silo's feed hopper are calculated as followed:

$$\frac{10\ \text{gr TSP}}{\text{acf-filter}} \times \frac{18\ \text{dacf}}{\text{min}} \times \frac{1\ \text{lb TSP}}{7000\ \text{gr TSP}} \times \frac{60\ \text{min}}{\text{hr}} \times \frac{2\ \text{filters}}{\text{fd hppr}} \times \left(1 - \frac{99.9}{100}\right) = 0.00257 \frac{\text{lb TSP}}{\text{hr-fd hppr}}$$

$$\frac{2.57 \times 10^{-3}\ \text{lb TSP}}{\text{hr-silo}} \times \frac{8760\ \text{hr}}{\text{yr}} \times \frac{1\ \text{ton TSP}}{2{,}000\ \text{lb TSP}} = 0.0113 \frac{\text{ton TSP}}{\text{year}}$$

ATTACHMENT 9

Emergency Diesel Engines Process Description
Data and Sample Emission Calculations

EMERGENCY DIESEL ENGINES PROCESS DESCRIPTION

BULL RUN FOSSIL PLANT

Bull Run Fossil Plant has three emergency diesel engines. Two of the engines power water pumps for fire emergencies. The fire pump engines, installed in 2011, are identical compression ignition diesel engines rated at 180 horsepower. The fire pumps are located west of the plant switch yard which is west of the powerhouse. The heat input rating for the fire pump engines are 1.26 MM Btu/hr based on diesel fuel input of 9.03 gallons per hour and diesel fuel heat content of 139,500 Btu/gallon. The third diesel engine, installed in 1984, powers an emergency sump pump in the powerhouse and is rated at 72 horsepower. The heat input rating for the sump pump is 0.504 MM Btu/hr based on diesel fuel input of 3.61 gallons per hour and diesel fuel heat content of 139,500 Btu/gallon. The engines are fueled with ultra-low sulfur (0.0015% sulfur maximum) distillate (No. 2) fuel oil. The engines are each limited to 500 hours of operation during any twelve consecutive months. Combustion gases from each engine discharge to the atmosphere through their own individual stacks.

OPERATIONAL AND CALCULATION METHODOLOGY

Maximum hourly emissions are calculated using the heat input ratings for each diesel engine and the emission factor for each pollutant. Most emission factors are from AP-42, 5th Edition, Sections 3.1 and 3.3. Potential annual emissions are based on 500 hours per year operation for each engine. Actual emissions would be much less since for a typical year the engines are operated 13 hours per year (15 minutes per week for 52 weeks) for readiness testing.

Inputs to calculate the diesel engines emissions are shown below.

Table 9-1. Inputs to Calculate Emergency Diesel Engines Emissions

Fire Pump Engine 1 Heat Input, MM Btu/hr	1.26
Fire Pump Engine 2 Heat Input, MM Btu/hr	1.26
Snake Pit Sump Pump Engine Heat Input, MM Btu/hr	0.504
Diesel Fuel Heat Content, Btu/gal	139,500
Diesel Fuel Density, lb/gal	7.05
Filterable Particulate Emission Factor, lb/MM Btu	0.31
Nitrogen Oxides Emission Factor, lb/MM Btu	4.41
Carbon Monoxide Emission Factor, lb/MM Btu	0.95
Volatile Organic Compounds Emission Factor, lb/MM Btu	0.36
Condensable Particulate Emission Factor	5% of VOC plus H_2SO_4
Sulfur Content in Diesel Fuel, % S	0.0015
Combustion Conversion of Sulfur to SO_3, %	5
Potential Hours of Operation for Each Engine, hours	500
Actual Hours of Operation for Each Engine, hours	13

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MAJOR SOURCE OPERATING PERMIT APPLICATION
STATIONARY GAS TURBINE OR INTERNAL COMBUSTION ENGINE

1. FACILITY NAME:

Tennessee Valley Authority (TVA) – Bull Run Fossil Plant

2. LIST ALL GAS TURBINES AND INTERNAL COMBUSTION ENGINES AT THIS FACILITY ON A SEPARATE SHEET, AND PLEASE COMPLETE AN APC V.5 FORM FOR EACH PIECE OF EQUIPMENT.

Emergency Diesel Engine Fire Pumps 1 and 2 (identical)

3. MANUFACTURER AND MODEL NUMBER:	4. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
John Deere Industrial Engine Model 6068HFC28	

5. EQUIPMENT DESCRIPTION:

The emergency diesel engine fire pumps are utilized in case of fire and tested periodically for readiness. The John Deere engine is 6-cylinder with an output of 180 horsepower. The heat input rating for the fire pump engine is 1.26 MM Btu/hr based on diesel fuel input of 9.03 gallons per hour and diesel fuel heat content of 139,500 Btu/gallon. The engine will be fueled with ultra-low sulfur (0.0015% sulfur maximum) distillate (No. 2) fuel oil. The fire pump engine is limited to 500 hours of operation during any twelve consecutive months. Combustion gases from the fire pump engines discharge to the atmosphere through their own individual stacks.

6. DATE OF INSTALLATION OR LAST MODIFICATION OF EQUIPMENT:
2011

7. RATED HEAT INPUT CAPACITY (IN MILLION BTU/HOUR) AND HORSE POWER:	8. IF EQUIPMENT IS GAS TURBINE, LIST TYPE. NA
1.26 MM Btu/hr and 180 brake horsepower	_____ SIMPLE CYCLE
STATE WHICH HEATING VALUE WAS UTILIZED:	_____ REGENERATIVE CYCLE

9. FUELS:	PRIMARY FUEL	BACKUP FUEL #1	BACKUP FUEL #2	BACKUP FUEL #3
FUEL NAME	No. 2 Fuel Oil ultra-low sulfur			
ACTUAL YEARLY	Potential 4,515 gallons Actual 117 gallons			

10. (FOR NSPS TURBINES ONLY) MANUFACTURER'S RATED HEAT RATE AT MANUFACTURER'S RATED PEAK LOAD (KILOJOULES PER WATT HOUR), OR ACTUAL MEASURED HEAT RATE BASED ON LOWER HEATING VALUE OF FUEL AS MEASURED AT ACTUAL PEAK LOAD FOR THE UNIT:
NA

11. LOCATION OF THIS FUEL BURNING INSTALLATION IN UTM COORDINATES:

UTM VERTICAL: 3989.83 km UTM HORIZONTAL:

12. NORMAL OPERATING SCHEDULE: Operated for emergency situations and readiness testing. Each engine is limited to 500 hours per 12 consecutive months.

13. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority (TVA) – Bull Run Fossil Plant		FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): 27 and 28			LOG/PERMIT NO.
3. EMISSION SOURCE (IDENTIFY): Emergency Diesel Engine Fire Pumps 1 and 2 (identical)			
4. STACK HEIGHT ABOVE GRADE IN FEET: 6			
5. VELOCITY (DATA AT EXIT CONDITIONS): N/A (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 0.33		
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): N/A	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): N/A		
9. EXHAUST TEMPERATURE: N/A DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): N/A PERCENT N/A GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)		
11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY): N/A (°F)			
12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2 , NO_X , etc.)? N/A			
COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.			
13. DO YOU HAVE A BYPASS STACK? ___ YES X NO IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.			
14. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION	

APC V.5

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MAJOR SOURCE OPERATING PERMIT APPLICATION
STATIONARY GAS TURBINE OR INTERNAL COMBUSTION ENGINE

1. FACILITY NAME:

Tennessee Valley Authority (TVA) – Bull Run Fossil Plant

2. LIST ALL GAS TURBINES AND INTERNAL COMBUSTION ENGINES AT THIS FACILITY ON A SEPARATE SHEET, AND PLEASE COMPLETE AN APC V.5 FORM FOR EACH PIECE OF EQUIPMENT.

Snake Pit Emergency Sump Pump

3. MANUFACTURER AND MODEL NUMBER:	4. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION(S):
Deutz Model F4L912	29

5. EQUIPMENT DESCRIPTION:

The snake pit sump pump is utilized in case of emergencies and tested periodically for readiness. The Deutz engine is 4-cylinder with an output of 72 horsepower. The heat input rating for the sump pump engine is 0.504 MM Btu/hr based on diesel fuel input of 3.61 gallons per hour and diesel fuel heat content of 139,500 Btu/gallon. The engine will be fueled with ultra-low sulfur (0.0015% sulfur maximum) distillate (No. 2) fuel oil. The emergency sump pump engine is limited to 500 hours of operation during any twelve consecutive months. Combustion gases from the sump pump engine discharges to the atmosphere through its own stack.

6. DATE OF INSTALLATION OR LAST MODIFICATION OF EQUIPMENT:
1984

7. RATED HEAT INPUT CAPACITY (IN MILLION BTU/HOUR) AND HORSE POWER:	8. IF EQUIPMENT IS GAS TURBINE, LIST TYPE. NA
0.504 MM Btu/hr and 72 brake horsepower	_____ SIMPLE CYCLE
STATE WHICH HEATING VALUE WAS UTILIZED:	_____ REGENERATIVE CYCLE
X HIGHER HEATING VALUE	_____ COMBINED CYCLE
_____ LOWER HEATING VALUE	

9. FUELS:	PRIMARY FUEL	BACKUP FUEL #1	BACKUP FUEL #2	BACKUP FUEL #3
FUEL NAME	No. 2 Fuel Oil ultra-low sulfur			
ACTUAL YEARLY CONSUMPTION	Potential 1,805 gallons Actual 47 gallons			

10. (FOR NSPS TURBINES ONLY) MANUFACTURER'S RATED HEAT RATE AT MANUFACTURER'S RATED PEAK LOAD (KILOJOULES PER WATT HOUR), OR ACTUAL MEASURED HEAT RATE BASED ON LOWER HEATING VALUE OF FUEL AS MEASURED AT ACTUAL PEAK LOAD FOR THE UNIT:
NA

11. LOCATION OF THIS FUEL BURNING INSTALLATION IN UTM COORDINATES:

UTM VERTICAL: 3990.04 km UTM HORIZONTAL: 756.22 km

12. NORMAL OPERATING SCHEDULE: Operated for emergency situations and readiness testing. The engine is limited to 500 hours per 12 consecutive months.

_____ HRS/DAY _____ DAYS/WK _____ DAYS/YR

13. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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APC V.3

MAJOR SOURCE OPERATING PERMIT APPLICATION
STACK IDENTIFICATION

1. FACILITY NAME: Tennessee Valley Authority (TVA) – Bull Run Fossil Plant	FOR APC USE ONLY	APC COMPANY NO.
2. STACK ID (OR FLOW DIAGRAM POINT IDENTIFICATION): 29		LOG/PERMIT NO.

3. EMISSION SOURCE (IDENTIFY):
Snake Pit Emergency Sump Pump

4. STACK HEIGHT ABOVE GRADE IN FEET:
2

5. VELOCITY (DATA AT EXIT CONDITIONS): N/A (ACTUAL FEET PER SECOND)	6. INSIDE DIMENSIONS AT OUTLET IN FEET: 0.1875
7. EXHAUST FLOW RATE AT EXIT CONDITIONS (ACFM): N/A	8. FLOW RATE AT STANDARD CONDITIONS (DSCFM): N/A
9. EXHAUST TEMPERATURE: N/A DEGREES FAHRENHEIT (°F)	10. MOISTURE CONTENT (DATA AT EXIT CONDITIONS): N/A PERCENT N/A GRAINS PER DRY STANDARD CUBIC FOOT (gr/dscf)

11. EXHAUST TEMPERATURE THAT IS EQUALED OR EXCEEDED DURING NINETY (90) PERCENT OR MORE OF THE OPERATING TIME (FOR STACKS SUBJECT TO DIFFUSION EQUATION ONLY):
N/A (°F)

12. IF THIS STACK IS EQUIPPED WITH CONTINUOUS POLLUTANT MONITORING EQUIPMENT REQUIRED FOR COMPLIANCE, WHAT POLLUTANT(S) DOES THIS EQUIPMENT MONITOR (e.g., OPACITY, SO_2 , NO_X , etc.)?
N/A

COMPLETE THE APPROPRIATE APC FORM(S) V.4, V.5, V.7, V.8, V.9, OR V.10 FOR EACH SOURCE EXHAUSTING THROUGH THIS STACK.

13. DO YOU HAVE A BYPASS STACK?
_____ YES X NO

IF YES, DESCRIBE THE CONDITIONS WHICH REQUIRE ITS USE & COMPLETE APC FORM V.3 FOR THE BYPASS STACK. PLEASE IDENTIFY THE STACK NUMBER(S) OR FLOW DIAGRAM POINT NUMBER(S) EXHAUSTING THROUGH THIS BYPASS STACK.

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APC V.28

MAJOR SOURCE OPERATING PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

1. FACILITY NAME:
Tennessee Valley Authority (TVA) – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
27, 28, 29

3. PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR (IDENTIFY):

Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump

4. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS. FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES. See Data and Sample Emission Calculations

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS*	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
FILTERABLE PARTICULATES (TSP)	N/A		0.234	
FILTERABLE PARTICULATES (PM 10)	N/A		0.234	
FILTERABLE PARTICULATES (PM 2.5)	N/A		0.234	
CONDENSABLE PARTICULATES	N/A		0.0137	
NITROGEN OXIDES	N/A		3.33	
CARBON MONOXIDE	N/A		0.718	
VOLATILE ORGANIC COMPOUNDS	N/A		0.272	
SULFUR DIOXIDE	N/A		1.09E-03	
SULFURIC ACID MIST	N/A		8.77E-05	
LEAD	N/A		1.06E-05	
BERYLLIUM	N/A		2.34E-07	
MERCURY	N/A		9.07E-07	
CARBON DIOXIDE EQUIVALENT	N/A		124	

(CONTINUED ON NEXT PAGE)

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*These are potential emissions based on 500 hours of operation per year for each engine.

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(CONTINUED FROM LAST PAGE)

AIR POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS*	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)

5. COMPLETE THE FOLLOWING EMISSIONS SUMMARY FOR REGULATED AIR POLLUTANTS THAT ARE HAZARDOUS AIR POLLUTANT (S). FUGITIVE EMISSIONS SHALL BE INCLUDED. ATTACH CALCULATIONS AND EMISSION FACTOR REFERENCES.

AIR POLLUTANT & CAS	MAXIMUM ALLOWABLE EMISSIONS		ACTUAL EMISSIONS*	
	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 7, APC V.30)	TONS PER YEAR	RESERVED FOR STATE USE (POUNDS PER HOUR- ITEM 8, APC V.30)
LEAD	N/A		1.06E-05	
BERYLLIUM	N/A		2.34E-07	
MERCURY	N/A		9.07E-07	
PARTICULATE HAP TOTAL**	N/A		1.34E-04	
VOC HAP TOTAL***	N/A		2.93E-03	
NON-VOC GASEOUS HAP TOTAL****	N/A		2.55E-04	

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*These are potential emissions based on 500 hours of operation per year for each engine.
**Includes antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.
***Includes 1,3-butadiene, acetaldehyde, acrolein, benzene, formaldehyde, toluene, xylenes, and total POMs.
**** Includes mercury, selenium, and hydrogen chloride.

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L&C ANNEX
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NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

1. FACILITY NAME:	2. EMISSION SOURCE NUMBER
Tennessee Valley Authority (TVA) – Bull Run Fossil Plant	27, 28, 29

3. DESCRIBE THE PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR.

Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Sulfur Dioxide	TAPCR 1200-3-14-.01(3)	Only distillate No. 2 fuel oil with a sulfur content not to exceed 0.0015 % S shall be used as fuel.		IN
Snake Pit Emergency Sump Pump	Hazardous Air Pollutants	40 CFR Part 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE). Specifies work practice, operation, maintenance, and record keeping for existing fire pump and sump stationary compression ignition RICE located at major sources.			IN
Emergency Diesel Engine Fire Pumps 1 and 2	NMHC, NO_X, PM	40 CFR Part 60 Subpart IIII – Standards for Performance of Stationary Compression Ignition Combustion Engines. Specifies Emission Standards for Stationary Fire Pump Engines. New engines meet requirements of Part 63 Subpart ZZZZ by meeting requirements of Part 60 Subpart IIII.	NMOC + NO_X–3.0 g/HP-hr CO – 2.6 g/HP-hr PM – 0.15 g/HP-hr If rated speed >2,650 rpm NMOC + NO_X–7.8 g/HP-hr CO – 2.6 g/HP-hr PM – 0.40 g/HP-hr		IN
	Opacity	TAPCR 1200-3-5-.01(3)	10 % opacity (6 minute average)	10 % opacity (6 minute average), except allowed exclusions	IN

	Opacity	TAPCR 1200-3-5-.02(1); Exceptions to opacity limit during startup and shutdown	Take reasonable precaution to minimize emissions.	10 % opacity, except allowed exclusions	IN

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	Particulates	TAPCR 1200-3-8-.01; 40 CFR 51.110(a): Fugitive Dust – Take reasonable precautions to prevent particulate matter from becoming airborne.	No visible emission beyond the property line for more than 5 minutes per hour or 20 minutes per day.	No visible emission at property line.	
	All Regulated Pollutants	TAPCR 1200-3-20-.02; 40 CFR 51.211: Reasonable Measures Required - All sources must take all reasonable precautions to minimize emissions during malfunctions, startups, and shutdowns.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.03; 40 CFR 51.211 : Notice Required When Malfunction Occurs - Malfunction of equipment resulting in emissions in excess of permissible levels for more than 24 hours must be reported within 24 hours.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.04(1); 40 CFR 51.211: Logs and Reports – Log containing specified information of all malfunctions, startups, and shutdowns resulting in excess emissions kept at the facility.			IN
	All Regulated Pollutants	TAPCR 1200-3-20-.06; 40 CFR 51.211: Report Required Upon the Issuance of a Notice of Violation - A notice of violation shall be automatically issued for excess emissions except for visible emission levels included as a startup and/or shutdown permit condition under Paragraph 1200-3-5-.02(1) or emissions determined to be de minimis under Rule 1200-3-20-.06. A report must be submitted within 20 days after the receipt of the notice of violation.			IN
	All Regulated Pollutants	TAPCR 1200-3-10-.04 : Sampling, Recording, and Reporting Required for Major Stationary Sources - Technical Secretary may require periodic or enhanced monitoring, recording, and reporting that he deems necessary for the verification of a source's compliance with applicable requirements.			IN

4. IDENTIFY IF ONLY A PART OF THE SOURCE IS SUBJECT TO THIS REQUIREMENT	5. POLLUTANT	6. APPLICABLE REQUIREMENT (S) : TN AIR POLLUTION CONTROL REGULATIONS, 40 CFR, PERMIT RESTRICTIONS, AIR QUALITY BASED STANDARDS	7. LIMITATION	8. MAXIMUM ACTUAL EMISSIONS	9. COMPLIANCE STATUS (IN/OUT)
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)1(iii); 40 CFR 70.6(a)(3) : Monitoring and related recordkeeping and reporting requirements - Specifies requirements for monitoring and related recordkeeping and reporting and the maintenance of records of all required monitoring data and support information for a period of at least 5 years.			IN
	All Regulated Pollutants	TAPCR 1200-3-9-.02(11)(e)7(iii); 40 CFR 70.6(g)(3) : Emergency Provisions - Requires the maintenance of operating logs containing specified information, prompt submittal of information to the Technical Secretary, and taking all reasonable steps to minimize emissions in order for an emergency to be used as an affirmative defense to an enforcement action.	Take all reasonable steps to minimize levels of emissions that exceed an emission standard or other permit requirements		IN

10. OTHER APPLICABLE REQUIREMENTS (NEW REQUIREMENTS THAT APPLY TO THIS SOURCE DURING THE TERM OF THIS PERMIT)

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APC V.19

COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

ALL SOURCES THAT ARE SUBJECT TO 1200-3-9-.02(11) OF TENNESSEE AIR POLLUTION CONTROL REGULATIONS ARE REQUIRED TO CERTIFY COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS BY INCLUDING A STATEMENT WITHIN THE PERMIT APPLICATION OF THE METHODS USED FOR DETERMINING COMPLIANCE. THIS STATEMENT MUST INCLUDE A DESCRIPTION OF THE MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS AND TEST METHODS. IN ADDITION, THE APPLICATION MUST INCLUDE A SCHEDULE FOR COMPLIANCE CERTIFICATION SUBMITTALS DURING THE PERMIT TERM. THESE SUBMITTALS MUST BE NO LESS FREQUENT THAN ANNUALLY AND MAY NEED TO BE MORE FREQUENT IF SPECIFIED BY THE UNDERLYING APPLICABLE REQUIREMENT OR THE TECHNICAL SECRETARY.

1. FACILITY NAME:
   Tennessee Valley Authority (TVA) – Bull Run Fossil Plant

2. PROCESS EMISSION SOURCE, FUEL BURNING INSTALLATION, OR INCINERATOR (IDENTIFY):
   Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump

3. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
   27, 28, 29

4. THIS SOURCE AS DESCRIBED UNDER ITEM #2 OF THIS APPLICATION WILL USE THE FOLLOWING METHOD(S) FOR DETERMINING COMPLIANCE WITH APPLICABLE REQUIREMENTS (AND SPECIAL OPERATING CONDITIONS FROM AN EXISTING PERMIT). CHECK ALL THAT APPLY AND ATTACH THE APPROPRIATE FORM(S).

   _____ CONTINUOUS EMISSIONS MONITORING (CEM) - APC FORM V.20
   POLLUTANT(S):

   _____ EMISSION MONITORING USING PORTABLE MONITORS - APC FORM V.21
   POLLUTANT(S):

   _____ MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS - APC FORM V.22
   POLLUTANT(S):

   _____ MONITORING MAINTENANCE PROCEDURES - APC FORM V.23
   POLLUTANT(S):

   _____ STACK TESTING - APC FORM V.24
   POLLUTANT(S):

   _____ FUEL SAMPLING & ANALYSIS (FSA) - APC FORM V.25
   POLLUTANT(S):

   __X__ RECORDKEEPING - APC FORM V.26
   POLLUTANT(S):
   Particulates, Sulfur Dioxide, Nitrogen Oxides, Carbon Monoxide, Volatile Organic Compounds

   _____ OTHER (PLEASE DESCRIBE) - APC FORM V.27
   POLLUTANT(S):

5. COMPLIANCE CERTIFICATION REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE.

   START DATE: Within 60 days after June 30 and December 31 of each year.

   AND EVERY N/A DAYS THEREAFTER.

6. COMPLIANCE MONITORING REPORTS WILL BE SUBMITTED TO THE DIVISION ACCORDING TO THE FOLLOWING SCHEDULE:

   START DATE: Within 60 days after June 30 and December 31 of each year.

   AND EVERY N/A DAYS THEREAFTER.

7. PAGE NUMBER:	REVISION NUMBER:	DATE OF REVISION:

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NASHVILLE, TN 37243-1531

MAJOR SOURCE OPERATING PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

RECORDKEEPING SHALL BE ACCEPTABLE AS A COMPLIANCE DEMONSTRATION METHOD PROVIDED THAT A CORRELATION BETWEEN THE PARAMETER VALUE RECORDED AND THE APPLICABLE REQUIREMENT IS ESTABLISHED

1. FACILITY NAME:
Tennessee Valley Authority (TVA) – Bull Run Fossil Plant

2. STACK ID OR FLOW DIAGRAM POINT IDENTIFICATION (S):
27, 28, 29

3. EMISSION SOURCE (IDENTIFY):

Emergency Diesel Engine Fire Pumps 1 and 2 and Snake Pit Emergency Sump Pump

4. POLLUTANT(S) OR PARAMETER BEING MONITORED:

Particulate Matter (PM), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx), Sulfur Dioxide (SO_2)

5. MATERIAL OR PARAMETER BEING MONITORED AND RECORDED:

Fuel consumption and/or hours of testing operation. Vendor sulfur analysis for each fuel oil shipment.

6. METHOD OF MONITORING AND RECORDING:

A monthly log of the diesel fuel usage and/or hours of operation will be maintained at the source location and kept available for inspection by the Technical Secretary or his representative. Also fuel sulfur analyses provided by the vendor for each fuel oil shipment will be available. This log will be retained for five years. Required reports submitted every six months.

7. COMPLIANCE DEMONSTRATION FREQUENCY (SPECIFY THE FREQUENCY WITH WHICH COMPLIANCE WILL BE DEMONSTRATED):

Compliance by recording fuel usage and/or hours of operation of the fire pump engine will be documented and submitted as part of the annual compliance report. Fuel sulfur analyses provided by the vendor will also be submitted as part of the annual compliance report.

8. PAGE NUMBER: REVISION NUMBER: DATE OF REVISION

DATA AND SAMPLE EMISSION CALCULATIONS

TABLE 9-2. EMERGENCY FIRE PUMPS 1 AND 2 AND SNAKE PIT EMERGENCY SUMP PUMP EMISSIONS

	Fire Pumps	Sump Pump
Engine output, hp	180	72
Maximum diesel fuel input, gal/hr	9.03	3.61
Diesel fuel heat content, Btu/gal	139,500	139,500
Diesel fuel density, lb/gal	7.05	7.05
Heat input, MMBtu/hr*	1.26	0.504
Diesel fuel sulfur content, %	0.0015	0.0015
Diesel fuel sulfur to SO_3 conversion, %	5	5
Actual Annual Hours of Operation, hrs**	13	13
Potential Annual Hours of Operation, hrs***	500	500

Pollutant	Emission Factor lb/MMBtu	Hourly Emissions**** lb/hr	Potential Annual Emissions All Three Engines ton/yr at 500 hr/yr
PM filterable [1]	0.31	0.937	0.234
PM condensable [2]	0.0181	0.0548	0.0137
Nitrogen Oxides (NOx) [1]	4.41	13.3	3.33
Carbon Monoxide (CO) [1]	0.95	2.87	0.718
Volatile Organic Compounds (VOC) [1]	0.36	1.09	0.272
Sulfur Dioxide (SO_2) [3]	1.44E-03	4.35E-03	1.09E-03
Sulfuric Acid (H2SO4) [3]	1.16E-04	3.51E-04	8.77E-05
Carbon Dioxide Equivalent [4]	163.6	495	124
Antimony (Sb) [5]	2.20E-05	6.65E-05	1.66E-05
Arsenic (As) [6]	1.10E-05	3.33E-05	8.32E-06
Beryllium (Be) [6]	3.10E-07	9.37E-07	2.34E-07
Cadmium (Cd) [6]	4.80E-06	1.45E-05	3.63E-06
Hydrogen Chloride (HCl) [7]	3.11E-04	9.40E-04	2.35E-04
Chromium (Cr) [6]	1.10E-05	3.33E-05	8.32E-06
Cobalt (Co) [5]	9.10E-06	2.75E-05	6.88E-06
Lead (Pb) [6]	1.40E-05	4.23E-05	1.06E-05
Manganese (Mn) [7]	1.01E-04	3.05E-04	7.64E-05
Mercury (Hg) [6]	1.20E-06	3.63E-06	9.07E-07
Nickel (Ni) [6]	4.60E-06	1.39E-05	3.48E-06
Selenium (Se) [6]	2.50E-05	7.56E-05	1.89E-05
Particulate HAP Total*****	1.78E-04	5.38E-04	1.34E-04
Non-VOC Gaseous HAP Total******	3.37E-04	1.02E-03	2.55E-04
Benzene [1]	9.33E-04	2.82E-03	7.05E-04
Toluene [1]	4.09E-04	1.24E-03	3.09E-04
Xylenes [1]	2.85E-04	8.62E-04	2.15E-04
1,3-Butadiene [1]	3.91E-05	1.18E-04	2.96E-05
Formaldehyde [1]	1.18E-03	3.57E-03	8.92E-04
Acetaldehyde [1]	7.67E-04	2.32E-03	5.80E-04
Acrolein [1]	9.25E-05	2.80E-04	6.99E-05
Total POMs [1]	1.68E-04	5.08E-04	1.27E-04
VOC HAP Total	3.87E-03	1.17E-02	2.93E-03

TABLE 9-2. EMERGENCY FIRE PUMPS 1 AND 2 AND SNAKE PIT EMERGENCY SUMP PUMP EMISSIONS (CONTINUED)

* Heat input is assumed to 7000 Btu/hp-hr.
** For a normal year the emergency engines operate 15 minutes per week for 52 weeks or 13 hours per year.
*** Potential emissions are based on 500 annual hours of operation based on EPA's standard accepted run time for emergency equipment.
**** Emission rate in lbs per engine hour is for all three engines.
***** Includes antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel.
****** Includes hydrogen chloride, mercury, and selenium.
References for Emission Factors

(1) US EPA, Compilation of Air Pollutant Emission Factors (AP-42), 5th Edition, Section 3.3, 10/1996.
(2) Estimated as 5% of VOC plus sulfuric acid.
(3) Mass balance emission factor based on diesel fuel sulfur content and 95% conversion to SO_2 and 5% conversion to SO_3.
(4) 40 CFR Part 98
(5) US EPA, Compilation of Air Pollutant Emission Factors (AP-42), 5th Edition, Supplement B, Section 3.1, 10/1996.
(6) US EPA, Compilation of Air Pollutant Emission Factors (AP-42), 5th Edition, Supplement F, Section 3.1, 4/2000.
(7) TVA combustion turbine fuel oil specifications.

DATA AND SAMPLE EMISSION CALCULATIONS
POTENTIAL EMISSIONS FOR THE
EMERGENCY DIESEL ENGINES

PM FILTERABLE

The PM filterable emission factor is from AP-42: 0.31 lb/MM Btu

Hourly emissions are calculated from the emission factor and the heat input ratings of the three engines (1.26 MM Btu/hr for each fire pump engine and 0.504 MM Btu/hr for the sump pump engine).

$$\frac{0.31\ lb}{10^6\ Btu} \times \frac{2.024\times10^6\ Btu}{hr} = \frac{0.627\ lb}{hr}$$

Potential annual emissions are calculated from 500 hours per year operation for each engine.

$$\frac{0.627\ lb}{hr} \times \frac{500\ hr}{yr} \times \frac{ton}{2000\ lb} = 0.234\ ton/yr$$

PM CONDENSABLE

The PM condensable emission factor is calculated as 5% of the VOC emission factor plus the sulfuric acid emission factor.

$$0.05 \times 0.36\ lb/10^6\ Btu + 1.16E\text{-}04\ lb/10^6\ Btu = 0.0181\ lb/10^6\ Btu$$

SULFUR DIOXIDE

The sulfur dioxide emission factor is calculated from the sulfur concentration in the diesel fuel (0.0015 % S), diesel fuel density (7.05 lb/gal), diesel fuel heat content (139,500 Btu/gal) and assuming 95% conversion of fuel sulfur goes to sulfur dioxide.

$$0.0015/100 \times 7.05\ lb/gal \times gal/139{,}500\ Btu \times 64/32 \times 0.95 \times 1{,}000{,}000 = 1.44E\text{-}03\ lb/10^6\ Btu$$

SULFURIC ACID

The sulfuric acid emission factor is calculated from the sulfur concentration in the diesel fuel (0.0015 % S), diesel fuel density (7.05 lb/gal), diesel fuel heat content (139,500 Btu/gal) and assuming 5% conversion of fuel sulfur goes to sulfur trioxide.

$$0.0015/100 \times 7.05\ lb/gal \times gal/139{,}500\ Btu \times 98/32 \times 0.05 \times 1{,}000{,}000 = 1.16E\text{-}04\ lb/10^6\ Btu$$

CARBON DIOXIDE EQUIVALENT

The carbon dioxide equivalent emission factor is determined from 40 CFR Part 98.

$$\left[\frac{73.96\ kg\ CO_2}{MMBtu} + \frac{0.003\ kg\ CH_4}{MMBtu} \times \frac{21\ kg\ CO_2 equiv}{kg\ CH_4} + \frac{0.0006\ kg\ N_2O}{MMBtu} \times \frac{310\ kg\ CO_2 equiv}{kg\ N_2O}\right] \times \frac{2.20462\ lb}{1\ kg} =$$

$$168.6 \frac{\text{lb } CO_2 \text{ equiv}}{10^6 \text{ Btu}}$$

ATTACHMENT 10

STACK TEST RESULTS SUMMARY

STACK TEST RESULTS SUMMARY

TABLE A-1. LOG OF STACK TESTING RESULTS

Bull Run Fossil Plant - Unit 1

Testing Date(s)	Run #1 Particulates (Lbs/MMBtu)	Run #1 Load (MW)	Run #2 Particulates (Lbs/MMBtu)	Run #2 Load (MW)	Run #3 Particulates (Lbs/MMBtu)	Run #3 Load (MW)	Average Particulates (Lbs/MMBtu)	Comments
07/03/12	0.01	821	0.004	821	0.003	820	0.005	Filterable
07/03/12	0.008	821	0.007	821	0.008	820	0.008	Condensable
07/07/11	0.005	829	0.003	831	0.003	835	0.004	Filterable PM
07/07/11	0.017	829	0.020	831	0.020	835	0.019	Condensable PM
08/17/10	0.028	818	0.005	821	0.006	821	0.013	
09/03/08	0.012	900	0.017	898	0.012	898	0.014	
10/12-13/06	0.014	913	0.012	914.5	0.013	914.9	0.013	
10/07-10/08/04	0.008	916	0.009	914	0.010	914	0.009	
12/14-12/15/02	0.006	900.7	0.004	901.5	0.003	900.2	0.004	
12/12-12/13/00	0.005	901.4	0.010	852.3	0.011	850.5	0.009	
12/06/98	0.012	878	0.011	872	0.016	849	0.013	
12/03/96	0.015	895	0.009	897	0.006	896	0.010	
04/19/94	0.014	903	0.023	897	0.012	862	0.016	
08/04/92	0.004	910	0.004	910	0.004	908	0.004	

ATTACHMENT 11

DOCUMENTATION OF INSIGNIFICANT ACTIVITIES

DOCUMENTATION OF INSIGNIFICANT ACTIVITIES

DOCUMENTATION OF INSIGNIFICANT ACTIVITIES BASED ON THE POTENTIAL TO EMIT

This appendix documents the emission calculations for those sources at Bull Run Fossil Plant (BRF) that are considered insignificant because their potential to emit is below the regulatory threshold provided by TAPC Rule 1200-3-9-.04(5)(a)4(I). Emission estimates are presented for the maximum capacity of the sources to emit under their physical and operational design.

The solid-fuel handling process and the ash handling process contain the only activities at BRF that were determined to be insignificant based on the potential to emit. All of the other emission sources were evaluated as significant sources unless they were deemed to be insignificant because of regulatory exemption as detailed in Section 2.

Documentation of Insignificant Activities in the Solid-Fuel Handling Process

Total suspended particulates (TSP) emission estimates were performed for the potential emissions at each emission point identified in the solid-fuel handling process as noted in Table B-1. Sample calculations presented in Section 5 for the solid-fuel handling process are relevant to these emission estimates. The only differences relate to the determination of the maximum potential solid-fuel handling rates. Potential emission estimates were based on a maximum coal handling rate of 3.82 million tons per year, as explained below.

It is not possible to operate the solid-fuel handling process at maximum capacity for the entire year; the boiler cannot burn this much fuel. At the maximum heat input capacity, the boiler at BRF can burn 8,871 million Btu/hr. Assuming 11,000 Btu/lb for a worse-case bituminous coal, BRF can burn no more than 403 tons/hr. Allowing for the possibility of building a 30-day stockpile, the maximum amount of coal that could be handled annually at BRF is determined as:

$$\frac{8{,}871 \times 10^6 \text{ Btu}}{\text{hr}} \times \frac{\text{lb coal}}{11{,}000 \text{ Btu}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} \times \frac{(8{,}760 + 30 \times 24) \text{ hr}}{\text{yr}} = 3.82 \text{ million ton/yr}$$

Stockout and reclaim tonnages are estimated as 20% of the maximum amount of coal handled annually. The emission estimates in Table B-1 were conservatively evaluated for coal handling at the maximum rate.

TABLE B-1. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE SOLID-FUEL HANDLING PROCESS

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
			PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
BREAKER BUILDING	COAL DISCHG FROM CONV. BC-3 TO SCREENS FOR BREAKERS NO. 1 & 3	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	NONE	0	3.16E-01	3.97E-01
	BREAKERS No. 1 & 3	PRIMARY CRUSHER (AP-42, SEC. 11.24)	---	---	0.02 LB/T	1200 T/HR 477,824 T/YR	4.78	24.0	ENCLOSURE	70	1.43	7.20
	COAL DISCHG FROM BREAKERS No. 1 & 3 TO CONV. BC-5	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	WATER SPRAY	80	6.33E-02	7.95E-02
	COAL DISCHG FROM CONV. BC-4 TO SCREENS FOR BREAKERS NO. 2 & 4	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	NONE	0	3.16E-01	3.97E-01
	BREAKERS No. 2 & 4	PRIMARY CRUSHER (AP-42, SEC. 11.24)	---	---	0.02 LB/T	1200 T/HR 477,824 T/YR	4.78	24.0	ENCLOSURE	70	1.43	7.20
	COAL DISCHG FROM BREAKERS No. 2 & 4 TO CONV. BC-6	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	WATER SPRAY	80	6.33E-02	7.95E-02
	COAL DISCHG FROM BREAKERS No. 1 - 4 TO REFUSE CONV. RC-1 & 2	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	4.22E-02 T/HR 246 T/YR	4.08E-05	1.40E-05	ENCLOSURE	70	1.22E-05	4.19E-06
	COAL DISCHG FROM REFUSE CONV. RC-1 & 2 TO GROUND	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	4.22E-02 T/HR 246 T/YR	4.08E-05	1.40E-05	ENCLOSURE	70	1.22E-05	4.19E-06
	EMISSIONS SUB-TOTAL						**10.8**	**49.6**		66.49	**3.63**	**15.4**
COAL STORAGE YARD	OPEN STORAGE	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MPH, %	4 126.6 1.2	0.368 LB/ACRE-D	13.2 ACRE	8.87E-01	2.03E-01	NONE	0	8.87E-01	2.03E-01
	STORAGE PILE MAINTENANCE BULLDOZERS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 4 18.6 4 126.6	3.37 LB/VMT	150 HR/YR 600 VMT/YR	1.01	13.5	NONE	0	1.01	13.5
	PAN SCRAPERS STOCKOUT HAULING, ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 127.9 4 126.6	8.03 LB/VMT	2400 T/HR 764,519 T/YR 52 T/TRIP 1000 FT/TRIP	11.18	70.2	WET SUPPRESSION	75	2.79	17.5
	PAN SCRAPERS STOCKOUT HAULING, ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 75.9 4 126.6	6.35 LB/VMT	2400 T/HR 764,519 T/YR 52 T/TRIP 1000 FT/TRIP	8.84	55.5	WET SUPPRESSION	75	2.21	13.9
	PAN SCRAPERS DISCHG COAL TO STORAGE PILE	STORAGE PILE BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2400 T/HR 764,519 T/YR	1.27E-01	7.95E-01	NONE	0	1.27E-01	7.95E-01
	PAN SCRAPERS RECLAIM HAULING, ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 127.9 4 126.6	8.03 LB/VMT	2000 T/HR 764,519 T/YR 52 T/TRIP 1000 FT/TRIP	11.18	58.5	WET SUPPRESSION	75	2.79	14.6

TABLE B-1. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE SOLID-FUEL HANDLING PROCESS

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
			PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
COAL STORAGE YARD (CONTINUED)	PAN SCRAPERS RECLAIM HAULING, ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MPH VEHICLE WEIGHT, T NO. OF WHEELS WET DAYS/YR	4 15 75.9 4 126.6	6.35 LB/VMT	2000 T/HR 764,519 T/YR 52 T/TRIP 1000 FT/TRIP	8.84	46.2	WET SUPPRESSION	75	2.21	11.6
	PILE WATERING DUST SUPPRESSION ON HAUL ROADS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHIC. SPEED, MI/HR GVW EMPTY, TONS MAX VEHICLE WEIGHT, T CAPACITY, T AVG. HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	4 4 45 86.7 41.7 65.9 4 126.6	5.95 LB/VMT	4 VMT/HR 520 HR/YR	6.19	23.8	WET SUPPRESSION	75	1.55	5.95
	EMISSIONS SUB-TOTAL						**48.2**	**269**		71.85	**13.6**	**78.0**
RAILCAR UNLOADING SYSTEM	BOTTOM DUMP OF COAL TO HOPPERS	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2400 T/HR 3,822,595 T/YR	6.33E-01	7.95E-01	NONE	0	6.33E-01	7.95E-01
	COAL DISCHARGE FROM HOPPERS TO BC-1	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	ENCLOSURE	70	9.49E-02	1.19E-01
	COAL DISCHARGE FROM HOPPERS TO BC-2	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	ENCLOSURE	70	9.49E-02	1.19E-01
	COAL DISCHARGE FROM - BC--1 TO BC-3	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	ENCLOSURE	70	9.49E-02	1.19E-01
	COAL DISCHARGE FROM - BC--2 TO BC-4	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	ENCLOSURE	70	9.49E-02	1.19E-01
	EMISSIONS SUB-TOTAL						**1.90**	**2.38**		46.67	**1.01**	**1.27**
TRANSFER STATION A	COAL DISCHG FROM CONV. BC-5 TO CONV. BC-7	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	NONE	0	3.16E-01	3.97E-01
	COAL DISCHG FROM CONV. BC-6 TO CONV. BC-7	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	1200 T/HR 1,911,297 T/YR	3.16E-01	3.97E-01	NONE	0	3.16E-01	3.97E-01
	COAL DISCHG FROM CONV. BC-5 & 6 TO STOCKOUT (BC--14)	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2400 T/HR 764,519 T/YR	1.27E-01	7.95E-01	NONE	0	1.27E-01	7.95E-01
	EMISSIONS SUB-TOTAL						**7.59E-01**	**1.59**		0.00	**7.59E-01**	**1.59**
LIVE SILO	COAL DISCHG FROM BC-7 TO LIVE SILOS	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2400 T/HR 3,822,595 T/YR	6.33E-01	7.95E-01	ENCLOSURE	70	1.90E-01	2.38E-01
	COAL DISCHG FROM LIVE SILOS TO BC-8	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 3,822,595 T/YR	6.33E-01	6.62E-01	ENCLOSURE	70	1.90E-01	1.99E-01
	EMISSIONS SUB-TOTAL						**1.27**	**1.46**		70.00	**3.80E-01**	**4.37E-01**

TABLE B-1. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE SOLID-FUEL HANDLING PROCESS

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2)		PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS		CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS	
			PARAMETER	VALUE			T/YR	LB/HR			T/YR	LB/HR
RECLAIM HOPPER	PAN SCRAPER DISCHG COAL TO UNDERGROUND RECLAIM HOPPER	STORAGE PILE LOAD-IN/LOAD-OUT BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 764,519 T/YR	1.27E-01	6.62E-01	ENCLOSURE	70	3.80E-02	1.99E-01
	COAL DISCHG FROM RECLAIM HOPPER TO CONV. BC-13	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 764,519 T/YR	1.27E-01	6.62E-01	ENCLOSURE	70	3.80E-02	1.99E-01
	EMISSIONS SUB-TOTAL						**2.53E-01**	**1.32**		70.00	**7.59E-02**	**3.97E-01**
TRANSFER STATION B	COAL DISCHG FROM CONV. BC-8 TO CONV. BC-9 AND BC-10	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 3,532,271 T/YR	5.85E-01	6.62E-01	NONE	0	5.85E-01	6.62E-01
	COAL DISCHG FROM RECLAIM (BC-13) TO BC-9 AND BC-10	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 764,519 T/YR	1.27E-01	6.62E-01	NONE	0	1.27E-01	6.62E-01
	EMISSIONS SUB-TOTAL						**7.11E-01**	**1.32**		0.00	**7.11E-01**	**1.32**
TRANSFER STN C	COAL DISCHG FROM CONV BC-9 AND BC-10 TO CONV BC-11 AND BC-12	DROP OPERATIONS (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 3,532,271 T/YR	5.85E-01	6.62E-01	ENCLOSURE	70	1.75E-01	1.99E-01
BUNKER DISTRIBUTION	COAL DISCHG FR TRIPPR ON CONV. BC-11 & BC-12 TO UNIT 1 BUNKER	CONT. DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MPH	7.21 4.38	3.31E-04 LB/T	2000 T/HR 3,532,271 T/YR	5.85E-01	6.62E-01	ENCLOSURE	70	1.75E-01	1.99E-01

BRF SOLID-FUEL-HANDLING POTENTIAL EMISSION TOTALS:

	UNCONTROLLED TSP T/YR	UNCONTROLLED TSP LB/HR	CONTROLLED TSP T/YR	CONTROLLED TSP LB/HR
POINT-SOURCE	3.37	5.30	2.86	4.66
FUGITIVE	61.8	322	17.6	94.1
TOTAL	**65.1**	**328**	**20.5**	**98.8**

NOTES:

	References
(1) The sources of emission equations/factors are:	
(a) Material drop operations (continuous and batch)	EPA, AP-42, 5th Edition, Section 13.2.4, November 2006
(b) Unpaved roads fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
(c) Coal crushers, primary and secondary (high moisture material)	EPA, AP-42, 5th Edition, Section 11.24.2, August 1982 (reformatted 1-1995)
(d) Wind erosion from active (frequently disturbed) piles	EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, Sept. 1992.
(2) The sources for meteorological input parameters are:	
(a) Average wind speed (4.38 mph) and frequency of winds greater than 12 mph (1.2 %)	Bull Run Fossil Plant Meteorological Tower, 1986-87 data base
(b) Number of wet days per year (126.6)	National Weather Service, Knoxville, Tennessee, 1942-94 Average.
(3) The sources of control efficiencies are:	
(a) Enclosures of conveyors and transfer points	70 % (AWMA, Air Pollution Engineering Manual, p. 794, 1992)
(b) Wet suppression (for stockout/reclaim haul roads)	75 % (AWMA, Air Pollution Engineering Manual, p. 143-144, 1992)
(c) Water Spray (for discharge from breakers)	80 % (DOE/RG/10312-1 (Vol. 2), Technical Guide for Estimating Fugitive Dust Impacts from Coal Handling Operations, p. 4-3, 1984)

Documentation of Insignificant Activities in the Ash Handling Process

Total suspended particulates (TSP) emission estimates were performed for the potential emissions at each emission point identified in the ash handling process as noted in Table B-2. Sample calculations presented in Section 6 for the ash handling process are relevant to these emission estimates. The only differences relate to the determination of the maximum potential ash handling rates. Potential emission estimates for the ash handling system were based on a maximum ash handling rate of 5.30 x 10^5 tons per year, as derived from the maximum coal burn rate of 3.53 million tons per year and a maximum ash content of 15%. The maximum coal burn rate was estimated from the boiler maximum heat input capacity (8,871 million Btu/hr), minimum coal heat content (11,000 Btu/lb), and 8,760 hr/yr operation.

The maximum amount of total ash that could be handled annually at BRF is:

$$\frac{3.53 \times 10^6 \text{ tons coal}}{\text{yr}} \times \frac{15 \text{ tons ash}}{100 \text{ tons coal}} = 5.30 \times 10^5 \text{ ton/yr}$$

The emission estimates in Table B-2 were conservatively evaluated for ash handling at the maximum annual rate.

From this total ash quantity, the maximum potential conditioned fly ash quantity that could be handled at BRF is estimated based on the assumptions given in Table 6-1 (80/20 fly ash/bottom ash split, 90/10 ESP/economizer fly ash split, 15% moisture):

$$5.30 \times 10^5 \text{ tpy total ash} \times \frac{0.8 \text{ ton fly ash}}{\text{ton total ash}} \times \frac{0.9 \text{ ton ESP ash}}{\text{ton fly ash}} \times \frac{\text{ton moist ash}}{0.85 \text{ ton dry ash}}$$

$$= 4.49 \times 10^5 \text{ tpy conditioned fly ash}$$

The maximum potential bottom ash/economizer ash quantity reclaimed to the dewatering area (2.97 x 10^5 tpy wet basis) is calculated in an analogous fashion, but with 50% moisture content as reclaimed.

TABLE B-2. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE ASH HANDLING PROCESS

DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	VALUE	PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS T/YR	UNCONTROLLED PM (TSP) EMISSIONS LB/HR	CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS T/YR	CONTROLLED PM (TSP) EMISSIONS LB/HR
DRY FLY ASH STORAGE SILO #1 AND UNLOADING	DRY FLY ASH SALES: ENCLOSED FLUIDIZED CONVEYOR TO DRY UNLOADING SPOUT INTO CLOSED TANK TRUCK-- VENTS BACK TO SILO	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	2 4.38	1.99E-03 LB/T	150 T/HR 42,500 T/YR	4.24E-02	0.299	COLLAR SUCTION TO SILO	90 (CAPTURE EFFICIENCY)	4.24E-03	2.99E-02
	CONDITIONED FLY ASH LOADOUT TO HOPPER TRUCKS (PIN MIXER ASH UNLOADER)-- FUGITIVE DUST	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 224,403 T/YR	1.33E-02	2.97E-02	NONE	0	1.33E-02	2.97E-02
	SILO W/ BIN VENT FILTER (BAGHOUSE VENT)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	3264 DSCF/MIN 4217 ACF/MIN 1 BAGFILTER 8760 HR/YR	613	140	BAG FILTER	99.9	0.613	0.140
	EMISSIONS SUB-TOTAL						**613**	**140**		99.90	**0.630**	**0.199**
CONDITIONED FLY ASH DISPOSAL	HAUL ROAD FOR TRACTOR TRAILER TRUCKS ONE-WAY EMPTY (COND. ASH OFFSITE DISPOSAL)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 15 126.6	1.08 LB/VMT	250 T/HR 448,806 T/YR 25 T/TRIP 0.35 MI/TRIP	3.39	3.78	NONE	0	3.39	3.78
	HAUL ROAD FOR TRACTOR TRAILER TRUCKS ONE-WAY FULL (COND. ASH OFFSITE DISPOSAL)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 40 126.6	2.94 LB/VMT	250 T/HR 448,806 T/YR 25 T/TRIP 0.35 MI/TRIP	9.22	10.3	NONE	0	9.22	10.3
	ASH HAULING FROM SILO TO DRY ASH STACKING AREA ONE-WAY FULL (HOPPER TRUCKS) (PAVED PORTION)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 50.0 126.6	3.69 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.35 MI/TRIP	9.65	10.7	WET SUPPRESSION	95	0.482	0.537
	ASH HAULING FROM DRY ASH STACKING AREA TO SILO - RETURN TRIP EMPTY (HOPPER TRUCKS) (PAVED PORTION)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 20.0 126.6	1.45 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.35 MI/TRIP	3.79	4.22	WET SUPPRESSION	95	0.189	0.211
	ASH HAULING FROM SILO TO DRY ASH STACKING AREA ONE-WAY FULL (HOPPER TRUCKS) (UNPAVED PORTION)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 50.0 4 126.6	8.84 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.35 MI/TRIP	23.2	25.8	WET SUPPRESSION	95	1.16	1.29
	ASH HAULING FROM DRY ASH STACKING AREA TO SILO - RETURN TRIP EMPTY (HOPPER TRUCKS) (UNPAVED PORTION)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 20.0 4 126.6	5.86 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.35 MI/TRIP	15.3	17.1	WET SUPPRESSION	95	0.766	0.854
	COND ASH HAULING ON ASH PILE ONE-WAY FULL (HOPPER TRUCKS)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 50.0 4 126.6	50.1 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.25 MI/TRIP	93.6	104	WET SUPPRESSION	95	4.68	5.22
	COND ASH HAULING ON ASH PILE ONE-WAY EMPTY (HOPPER TRUCKS)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 20.0 4 126.6	33.2 LB/VMT	250 T/HR 448,806 T/YR 30.0 T/TRIP 0.25 MI/TRIP	62.0	69.1	WET SUPPRESSION	95	3.10	3.45

TABLE B-2. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE ASH HANDLING PROCESS

DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	VALUE	PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS T/YR	LB/HR	CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS T/YR	LB/HR
CONDITIONED FLY ASH DISPOSAL (CONTINUED)	DUMPING OF CONDITIONED FLY ASH AT DRY STACK	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 448,806 T/YR	2.66E-02	2.97E-02	NONE	0	2.66E-02	2.97E-02
	OPEN STORAGE OF FLY ASH	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	100.0 126.6 1.2	9.21 LB/ACRE-D	20 ACRE OF DISTURBED PILE AREA	33.6	7.67	WET SUPPRESSION COMPACTION CRUSTOVER	95	1.68	0.384
	PILE WATERING DUST SUPPRESSION (FLY ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE EMPTY WT , T VEHICLE FULL WT, T CAPACITY, T AVERAGE HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 4 48.5 90.2 41.7 69.4 4 126.6	58.0 LB/VMT	4 VMT/HR 1560 HR/YR	181	232	WET SUPPRESSION	95	9.05	11.6
	PILE MAINTENANCE--GRADING, COMPACTING (COMPACTOR)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 2 12.25 2 126.6	26.6 LB/VMT	2 VMT/HR 520 HR/YR	13.8	53.2	WET SUPPRESSION	95	0.691	2.66
	PILE MAINTENANCE--DOZER GRADING, COMPACTING PILE SLOPE SHAPING (CONDITIONED ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	100.0 5 38.19 4 126.6	44.4 LB/VMT	5 VMT/HR 700 HR/YR	77.6	222	WET SUPPRESSION	95	3.88	11.1
	EMISSIONS SUB-TOTAL						**526**	**760**		92.72	**38.3**	**51.4**
BOTTOM ASH RECLAIM AND ONSITE DISPOSAL	DOZER CLEAN BOTTOM ASH CHANNEL FOR RECLAIM BY PAN SCRAPERS	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 5 38.19 4 126.6	6.83 LB/VMT	5 VMT/HR 150 HR/YR	2.56	34.1	WET SUPPRESSION	95	0.128	1.71
	BOTTOM ASH RECLAIM FROM ASH POND AND HAUL TO DEWATERING AREA (PAN SCRAPER) ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 107.0 4 126.6	10.9 LB/VMT	204 T/HR 296,711 T/YR 51.0 T/TRIP 0.165 MI/TRIP 4 TRIPS/HR	5.21	7.16	WET SUPPRESSION	95	2.60E-01	0.358
	DUMPING OF BOTTOM ASH AT DEWATERING AREA	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	50 4.38	2.20E-05 LB/T	204 T/HR 296,711 T/YR	3.26E-03	4.49E-03	NONE	0	3.26E-03	4.49E-03
	BOTTOM ASH HAULING RETURN TRIP TO ASH POND FROM DEWATERING AREA (PAN SCRAPER) ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 56.0 4 126.6	8.11 LB/VMT	204 T/HR 296,711 T/YR 51.0 T/TRIP 0.165 MI/TRIP 4 TRIPS/HR	3.89	5.35	WET SUPPRESSION	95	1.95E-01	0.268
	DEWATERING AREA OPEN STORAGE (BOTTOM ASH/ECON. ASH)	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	6.9 126.6 1.2	0.635 LB/ACRE-D	1.5 ACRE OF DISTURBED PILE AREA	0.174	3.97E-02	WET SUPPRESSION COMPACTION CRUSTOVER	95	8.69E-03	1.98E-03
	BOTTOM ASH DISPOSAL HAULING FROM DEWATERED ASH RECLAIM AREA TO DRY STACK (PAN SCRAPER, GRAVEL RD) ONE-WAY FULL	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 107.0 4 126.6	12.5 LB/VMT	204 T/HR 174,536 T/YR 51.0 T/TRIP 0.35 MI/TRIP 4 TRIPS/HR	7.46	17.4	WET SUPPRESSION	95	3.73E-01	0.872
	BOTTOM ASH DISPOSAL HAULING FROM DRY STACK TO DEWATERED ASH RECLAIM AREA (PAN SCRAPER, GRAVEL RD) ONE-WAY EMPTY	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	8.4 15 56.0 4 126.6	9.31 LB/VMT	204 T/HR 174,536 T/YR 51.0 T/TRIP 0.35 MI/TRIP 4 TRIPS/HR	5.58	13.0	WET SUPPRESSION	95	2.79E-01	0.652

TABLE B-2. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE ASH HANDLING PROCESS

DESCRIPTION	EMISSION UNIT COMPONENT	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	VALUE	PM (TSP) EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM (TSP) EMISSIONS T/YR	UNCONTROLLED PM (TSP) EMISSIONS LB/HR	CONTROLS	% CONTROL EFFICIENCY(3)	CONTROLLED PM (TSP) EMISSIONS T/YR	CONTROLLED PM (TSP) EMISSIONS LB/HR
BOTTOM ASH RECLAIM AND ONSITE DISPOSAL (CONTINUED)	BOTTOM ASH HAULING ON ASH PILE ONE-WAY FULL (PAN SCRAPER)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 107.0 4 126.6	10.9 LB/VMT	204 T/HR 174,536 T/YR 51.0 T/TRIP 0.15 MI/TRIP 4 TRIPS/HR	2.79	6.51	WET SUPPRESSION	95	1.39E-01	0.326
	BOTTOM ASH HAULING ON ASH PILE ONE-WAY EMPTY (PAN SCRAPER)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 15 56.0 4 126.6	8.11 LB/VMT	204 T/HR 174,536 T/YR 51.0 T/TRIP 0.15 MI/TRIP 4 TRIPS/HR	2.08	4.87	WET SUPPRESSION	95	1.04E-01	0.243
	DUMPING OF BOTTOM ASH AT DRY STACK	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	204 T/HR 174,536 T/YR	1.04E-02	2.42E-02	NONE	0	1.04E-02	2.42E-02
	OPEN STORAGE (BOTTOM ASH/ECON. ASH)	WIND EROSION OF FREQ-DISTURBD PILE (EPA, 1992, SEC. 2.3.1.3.3)	SILT CONTENT, % WET DAYS/YR WIND FREQ > 12 MI/HR, %	6.9 126.6 1.2	0.635 LB/ACRE-D	56 ACRE OF DISTURBED PILE AREA	6.49	1.48	WET SUPPRESSION COMPACTION CRUSTOVER	95	0.325	7.41E-02
	PILE WATERING DUST SUPPRESSION (BOTTOM ASH/ ECON. ASH)	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % VEHICLE SPEED, MI/HR VEHICLE EMPTY WT , T VEHICLE FULL WT, T CAPACITY, T AVERAGE HAUL WEIGHT, T NUMBER OF WHEELS WET DAYS/YR	6.9 4 48.5 90.2 41.7 69.4 4 126.6	8.93 LB/VMT	4 VMT/HR 150 HR/YR	2.68	35.7	WET SUPPRESSION	95	0.134	1.79
	EMISSIONS SUB-TOTAL						**38.9**	**126**		94.97	**1.96**	**6.32**
DRY FLY ASH STORAGE SILO #2 AND UNLOADING	DRY FLY ASH SALES: ENCLOSED FLUIDIZED CONVEYOR TO DRY UNLOADING SPOUT INTO CLOSED TANK TRUCK-- VENTS BACK TO SILO	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	2 4.38	1.99E-03 LB/T	150 T/HR 42,500 T/YR	4.24E-02	0.299	COLLAR SUCTION TO SILO	90 (CAPTURE EFFICIENCY)	4.24E-03	2.99E-02
	CONDITIONED FLY ASH LOADOUT TO HOPPER TRUCKS (PIN MIXER ASH UNLOADER)-- FUGITIVE DUST	BATCH DROP (AP-42, SEC 13.2.4)	H2O CONTENT, % AVG WIND SPEED, MI/HR	15 4.38	1.19E-04 LB/T	250 T/HR 224,403 T/YR	1.33E-02	2.97E-02	NONE	0	1.33E-02	2.97E-02
	SILO W/ BIN VENT FILTER (BAGHOUSE VENT)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	3264 DSCF/MIN 4217 ACF/MIN 1 BAGFILTER 8760 HR/YR	613	140	BAG FILTER	99.9	0.613	0.140
	EMISSIONS SUB-TOTAL						**613**	**140**		99.90	**0.630**	**0.199**
FLY ASH LIQUID-RING VACUUM-PUMP FILTER SYSTEMS	4 LIQUID-RING VACUUM PUMPS (& 1 SPARE) W/ 4 BAGFILTERS (& 4 STANDBY)		VENDOR ESTIMATE: BAGFILTER INLET GRAIN LOADING		5.00 GR/DSCF	735 DSCF/MIN 775 ACF/MIN 4 BAGFILTER 8760 HR/YR	552	126	BAG FILTER	99.9	0.552	0.126
DRY ASH SALES HAULING	HAUL ROAD FOR TANK TRUCKS- ONE WAY EMPTY (DRY FLY ASH SALES)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 15 126.6	1.08 LB/VMT	300 T/HR 85,000 T/YR 25 T/TRIP 0.35 MI/TRIP	0.642	4.53	NONE	0	0.642	4.53
	HAUL ROAD FOR TANK TRUCKS- ONE WAY FULL (DRY FLY ASH SALES)	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 VEHICLE SPEED, MPH VEHICLE WEIGHT, TONS WET DAYS/YR	8.2 15 40 126.6	2.94 LB/VMT	300 T/HR 85,000 T/YR 25 T/TRIP 0.35 MI/TRIP	1.75	12.3	NONE	0	1.75	12.3
	EMISSIONS SUB-TOTAL						**2.39**	**16.9**		0.00	**2.39**	**16.9**

TABLE B-2. BULL RUN FOSSIL PLANT (BRF): POTENTIAL PARTICULATE (TSP) EMISSIONS FROM THE ASH HANDLING PROCESS

BRF ASH-HANDLING PARTICULATE-MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP		CONTROLLED TSP	
	T/YR	LB/HR	T/YR	LB/HR
POINT-SOURCE	1777	406	1.78	0.406
FUGITIVE	568	903	42.7	74.7
TOTAL	**2345**	**1309**	**44.5**	**75.1**

NOTES:

		References
(1)	The sources of emission equations/factors are:	
	(a) Material drop operations (continuous and batch)	EPA, AP-42, 5th Edition, Section 13.2.4, November 2006
	(b) Unpaved roads, fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.2, November 2006
	(c) Bin vent bagfilter outlet grain loading	Design criteria
	(d) Paved roads, fugitive dust	EPA, AP-42, 5th Edition, Section 13.2.1, January 2011
	(e) Wind erosion from active (frequently disturbed) piles	EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, EPA-450/2-92-004, Sept. 1992.
(2)	The sources for meteorological input parameters are:	
	(a) Average wind speed (4.38 mph) and frequency of winds greater than 12 mph (1.2 %)	Bull Run Fossil Plant Meteorological Tower, 1986-87 data base
	(b) Number of wet days per year (126.6)	National Weather Service, Knoxville, Tennessee, 1942-94 Average
(3)	The sources of control efficiencies are:	
	(a) Capture efficiency for telescopic chute with connecting collar for tank truck	90 % (Engineering estimate)
	(b) Bin vent bagfilter	99.9 % (Design criteria)
	(c) Wet suppression for haul roads	95% (AWMA, Air Pollution Engineering Manual, p. 143-144, 1992)
	(d) Wet suppression, compaction, crustover for ash pile	95 % Engineering Estimate

Tennessee Valley Authority, Bull Run Fossil Plant, 1285 Edgemoor Road, Clinton, Tennessee 37716-6270

December 16, 2014

Mr. Barry Stephens, P.E. Director
Division of Air Pollution Control
Tennessee Department of Environment
and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, Tennessee 37243

Dear Mr. Stephens:

TENNESSEE VALLEY AUTHORITY (TVA) – BULL RUN FOSSIL PLANT (BRF) – SOURCE NO. 01-0009 – SECTION 502(b)(10) CHANGE NOTICE– TITLE V RENEWAL APPLICATION UPDATE

This letter serves as notification to a change in operation of TVA BRF and fulfils the notification requirements of Section 502(b)(10). This notice replaces a similar notice that was made to the Division, and dated July 14, 2014.

In order to provided greater flexibility in coal deliveries to the plant, the facility plans to have supplemental coal delivered on site by truck. Up to 200 trucks per day, five days per week, will bring coal to the plant's coal yard. The resulting potential annual TSP emissions, if performed year round, will be 4.72 tons per year and thus qualifies as an insignificant activity. This change is not a Title I modification and will not exceed allowable emissions under the permit. This change does not affect the applicability of any permit term or condition.

Also, because of this change we are including forms to supplement our July 2013 Title V permit renewal application.

If you have any questions or comments concerning this request, please contact Jack Byars at (423) 751-2666 in Chattanooga

Sincerely,

Brian D. Keeling
Plant Manager
Bull Run Fossil Plant\

Enclosures

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
INDEX OF AIR POLLUTION PERMIT APPLICATION FORMS

Section 1: Identification and Diagrams	
This application contains the following forms:	APC Form 1, Facility Identification
	APC Form 2, Operations and Flow Diagrams

Section 2: Emission Source Description Forms		
		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 3, Stack Identification	
	APC Form 4, Fuel Burning Non-Process Equipment	
	APC Form 5, Stationary Gas Turbines or Internal Combustion Engines	
	APC Form 6, Storage Tanks	
	APC Form 7, Incinerators	
	APC Form 8, Printing Operations	
	APC Form 9, Painting and Coating Operations	
	APC Form 10, Miscellaneous Processes	
	APC Form 33, Stage I and Stage II Vapor Recovery Equipment	
	APC Form 34, Open Burning	

Section 3: Air Pollution Control System Forms		
		Total number of this form
This application contains the following forms (one form for each control system in use at the facility):	APC Form 11, Control Equipment - Miscellaneous	
	APC Form 13, Adsorbers	
	APC Form 14, Catalytic or Thermal Oxidation Equipment	
	APC Form 15, Cyclones/Settling Chambers	
	APC Form 17, Wet Collection Systems	
	APC Form 18, Baghouse/Fabric Filters	

(OVER)

Section 4: Compliance Demonstration Forms		
		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 19, Compliance Certification - Monitoring and Reporting - Description of Methods for Determining Compliance	
	APC Form 20, Continuous Emissions Monitoring	
	APC Form 21, Portable Monitors	
	APC Form 22, Control System Parameters or Operating Parameters of a Process	
	APC Form 23, Monitoring Maintenance Procedures	
	APC Form 24, Stack Testing	
	APC Form 25, Fuel Sampling and Analysis	
	APC Form 26, Record Keeping	
	APC Form 27, Other Methods	
	APC Form 28, Emissions from Process Emissions Sources / Fuel Burning Installations / Incinerators	
	APC Form 29, Emissions Summary for the Facility or for the Source Contained in This Application	
	APC Form 30, Current Emissions Requirements and Status	
	APC Form 31, Compliance Plan and Compliance Certification	
	APC Form 32, Air Monitoring Network	

Section 5: Statement of Completeness and Certification of Compliance

I have reviewed this application in its entirety and to the best of my knowledge, and based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete. I have provided all the information that is necessary for compliance purposes and this application consists of 7 pages and they are numbered from page 1 to 7. The status of this facility's compliance with all applicable air pollution control requirements, including the enhanced monitoring and compliance certification requirements of the Federal Clean Air Act, is reported in this application along with the methods to be used for compliance demonstration.

Name and Title of Responsible Official	Telephone Number with Area Code
B. Doug Keeling	(256) 386-3569
Signature of Responsible Official	**Date of Application**
B Doug Keeling	12-16-2014

For definition of responsible official, see instructions for APC Form 1)

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION

SITE INFORMATION			
1. Organization's legal name Tennessee Valley Authority - Bull Run Fossil Plant			For APC Use Only: APC company point no.
2. Site name (if different from legal name)			For APC Use Only: APC Log/Permit no.
3. Site address (St./Rd./Hwy.) 1265 Edgemoor Road			NAICS or SIC Code 4911
City or distance to nearest town Clinton		Zip code 37716-6270	County name Anderson
4. Site location (in Lat./Long)	Latitude 36.02111		Longitude -84.154522
CONTACT INFORMATION (RESPONSIBLE OFFICIAL)			
5. Responsible official contact B. Doug Keeling			Phone number with area code (256) 386-3569
6. Mailing address (St./Rd./Hwy.) 1265 Edgemoor Road			Fax number with area code
City Clinton	State TN	Zip code 37716-6270	Email address bdkeelin@tva.gov
CONTACT INFORMATION (TECHNICAL)			
7. Principal technical contact Steed Stagnolia			Phone number with area code (865) 945-7290
8. Mailing address (St./Rd./Hwy.) 1265 Edgemoor Road			Fax number with area code
City Clinton	State	Zip code 37716-6270	Email address skstagnolia@tva.gov
CONTACT INFORMATION (BILLING)			
11. Billing contact Jack Byars			Phone number with area code (423) 751-2666
12. Mailing address (St./Rd./Hwy.) 1101 Market Street, BR 4A			Fax number with area code
City Chattanooga	State TN	Zip code 37402-2801	Email address jgbyars@tva.gov

TYPE OF PERMIT REQUESTED

13. Permit requested for:

Initial application to operate:		Minor permit modification:	
Permit renewal to operate:	✓	Significant modification:	
Administrative permit amendment:		Construction permit:	

(OVER)

APC 1

HAZARDOUS AIR POLLUTANTS, DESIGNATIONS, AND OTHER PERMITS ASSOCIATED WITH FACILITY

14. Is this facility subject to the provisions governing prevention of accidental releases of hazardous air contaminants contained in Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations? ✓ Yes ☐ No

If the answer is Yes, are you in compliance with the provisions of Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations? ✓ Yes ☐ No

15. If facility is located in an area designated as "Non-Attainment" or "Additional Control", indicate the pollutant(s) for the designation.

Bull Run Additional Control Area - Particulate Matter

16. List all valid Air Pollution permits issued to the sources contained in this application [identify all permits with most recent permit numbers and emission source reference numbers listed on the permit(s)].

Permit No.556854, Source Reference No. 01-0009

17. Page number: Revision number: Date of revision:

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

APC 2

TITLE V PERMIT APPLICATION
OPERATIONS AND FLOW DIAGRAMS

1. Please list, identify, and describe briefly process emission sources, fuel burning installations, and incinerators that are contained in this application. Please attach a flow diagram for this application.

See the insignificant activity described below.

2. List all insignificant activities which are exempted because of size or production rate and cite the applicable regulations.

In addition to the insignificant activities listed in the original July 2013 Title V permit renewal application, TVA will conduct the following activity:

The facility, at times, will receive supplemental coal delivered on site by truck. Up to 200 trucks per day, five days per week, would bring coal to the coal yard. The trucks would travel 0.27 miles on unpaved surfaces and 0.85 miles on paved surfaces. Theses surfaces are already controlled with wet suppression. The resulting potential annual TSP emissions will be 4.72 tons per year and thus qualify as an insignificant activity. See the attached PM emission estimates for details regarding the emission factors and input parameters used to calculated these emissions.

3. Are there any storage piles?

YES _____ NO _____

4. List the states that are within 50 miles of your facility.

Kentucky, North Carolina, and Virginia

5. Page number: Revision Number: Date of Revision:

Bull Run Fossil Plant (BRF) Coal Hauling Particulate Matter (PM) Emission Estimates

INPUT PARAMETERS	VALUES	Reference
Unpaved road silt content, %	10	(EPA, AP-42, Vol. I, 5th Edition, Section 13.2.2 "Unpaved Roads," Table 13.2.2-1, 11/2006, chemical/physical & accounting procedures/unpaved roads/coal hauling)
Coal Haul Truck empty weight, tons	17	
Coal Haul Truck GB weight, tons	42	
Coal Haul Truck carrying capacity, tons	25	
Weighted Average Vehicle Weight, mfc (paved roads)	29.5 (0.25 mi. - 4x9, 0.59 mi. - empty)	
Weighted Average Vehicle Weight, mfm (unpaved roads)	30.6 (0.15 mi. - 4x9, 0.12 mi. - empty)	
Wet Days Per Year	129.5	(National Weather Service, Knoxville, Tennessee Data, 1987-94 Average)
Paved road surface silt loading, g/m²	9.2	(EPA, AP-42, Vol. I, 5th Edition, Section 13.2.1 "Paved Roads," Table 13.2.1-4, 12/2011, Quarry paved haul roads)
Coal Haul Truck delivery rate, trucks	333	(200 deliveries per 15 hour day)
Maximum Actual (Estimated) Coal Receipts, tons per year (tpy)	1298700	(333 tons per hr, 10 hours per day, 3 days per week for 52 weeks)
Unpaved road round-trip haul truck distance on TVA property, mi	0.21	
Paved road round-trip haul truck distance on TVA property, mi	0.85	
Total hours of operation	2000	(52 weeks, 15 hours per day, 3 days per week)

Parameters for unpaved road emission estimate equation:

	K	A	B	Reference
PM (TSP)	4.9	0.7	0.45	EPA, AP-42, 5th EDITION, SECTION 13.2.2, November 2006
PM-10	1.5	0.9	0.45	
PM-2.5	0.15	0.9	0.45	

Parameters for paved road emission estimate equation:

	K	A	B	Reference
PM (TSP)	0.011	0.91	1.02	EPA, AP-42, 5th EDITION, SECTION 13.2.1, January 2011
PM-10	0.002	0.91	1.02	
PM-2.5	0.00054	0.91	1.02	

Table 1. BULL RUN FOSSIL PLANT (BRF): MAXIMUM COAL HAULING PARTICULATE MATTER (PM) EMISSION ESTIMATES

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT ID	EMISSION UNIT COMPONENT DESCRIPTION	APPLICABLE EMISSION EQUATION (1):	INPUT PARAMETERS (2): PARAMETER	VALUE	EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM EMISSIONS: TPYR	LBHR	CONTROLS	% CONTROL EFFICIENCY (3)	CONTROLLED PM EMISSIONS: TPYR	LBHR
COAL HAULING USING TRUCKS	A	COAL TRUCK HAULING UNPAVED ROAD	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, %	10	7.44E+00 LB/VMT	333 TPHR 1298700 TYR 25 T/TRIP 0.21 MI/TRIP	4.23E+01	7.84E+01	WET SUPPRESSION	95	2.62E+00	1.73E+00
				AVG. VEHICLE WEIGHT, T	29.5								
				WET DAYS/YR	129.5								
	B	COAL TRUCK HAULING PAVED ROAD	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2	9.2	1.95E+00 LB/VMT	333 TPHR 1298700 TYR 25 T/TRIP 0.85 MI/TRIP	4.20E+01	2.15E+01	WET SUPPRESSION	93	2.72E+00	1.50E+00
				AVG. VEHICLE WEIGHT, T	29.53								
				WET DAYS/YR	129.5								
		EMISSION UNIT TOTAL						8.44E+01	4.84E+01			4.72E+00	3.42E+00

BIT COAL HAULING PARTICULATE MATTER (TSP) EMISSION TOTALS:

	UNCONTROLLED TSP TYR	UNCONTROLLED TSP LB/HR	CONTROLLED TSP TYR	CONTROLLED TSP LB/HR
TOTAL	8.44E+01	4.84E+01	4.72	3.42

		Reference
(1)	The source of AP-42 or other emission factor is:	
	(i) Bituminous coal	EPA, AP-42, 5th EDITION, SECTION 13.2.2, November 2006
	(ii) Mixed coal	EPA, AP-42, 5th EDITION, SECTION 13.2.1, January 2011
(2)	The source for meteorological input parameters is:	
	(i) Number of dry days per year (125.8)	National Weather Service, Knoxville, Tennessee Data 1963-94 Average
(3)	The source of control efficiencies is:	
	(i) Wet suppression on haul roads	50 % (AWMA, Air Pollution Engineering Manual, p. 340-344, 1992)

Table 2. BULL RUN FOSSIL PLANT (BRF): MAXIMUM COAL HAULIONG PARTICULATE MATTER (PM) < 10 MICROMETERS (PM-10) EMISSION ESTIMATES

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT ID	EMISSION UNIT COMPONENT DESCRIPTION	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	INPUT PARAMETERS (2) VALUE	EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM EMISSIONS TPY	UNCONTROLLED PM EMISSIONS LB/HR	CONTROLS	% CONTROL EFFICIENCY (3)	CONTROLLED PM EMISSIONS TPY	CONTROLLED PM EMISSIONS LB/HR
COAL HAULING USING TRUCKS	A.	COAL TRUCK HAULING UNPAVED ROAD	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % AVG. VEHICLE WEIGHT, T WET DAYS/YR	10 25.15 126.8	2.20E+00 LB/VMT	230 TPHR 1269959 TPR 25 T/TRIP 0.27 MI/TRIP	1.15E+02	2.62E+02	WET SUPPRESSION	50	5.74E-01	1.31E-01
	B.	COAL TRUCK HAULING PAVED ROAD	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 25.15 126.8	3.46E-01 LB/VMT	230 TPHR 1269959 TPR 25 T/TRIP 0.85 MI/TRIP	3.62E+00	2.94E+00	WET SUPPRESSION	50	1.81E-01	1.47E-01
		EMISSIONS TOTAL						1.18E+02	1.55E+02			5.76E-01	5.77E-01

BRF COAL HAULING PARTICULATE MATTER (PM-10) EMISSION TOTALS:

	UNCONTROLLED TSP TPY	UNCONTROLLED TSP LB/HR	CONTROLLED TSP TPY	CONTROLLED TSP LB/HR
TOTAL:	1.18E+02	1.16E+03	0.58	0.58

Table 3. BULL RUN FOSSIL PLANT (BRF): MAXIMUM COAL HAULIONG PARTICULATE MATTER (PM) < 2.5 MICROMETERS (PM-2.5) EMISSION ESTIMATES

EMISSION UNIT DESCRIPTION	EMISSION UNIT COMPONENT ID	EMISSION UNIT COMPONENT DESCRIPTION	APPLICABLE EMISSION EQUATION (1)	INPUT PARAMETERS (2) PARAMETER	INPUT PARAMETERS (2) VALUE	EMISSION FACTOR	SCALING FACTOR (PROCESS MEASURE)	UNCONTROLLED PM EMISSIONS TPY	UNCONTROLLED PM EMISSIONS LB/HR	CONTROLS	% CONTROL EFFICIENCY (3)	CONTROLLED PM EMISSIONS TPY	CONTROLLED PM EMISSIONS LB/HR
COAL HAULING USING TRUCKS	A.	COAL TRUCK HAULING UNPAVED ROAD	UNPAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.2)	SILT CONTENT, % AVG. VEHICLE WEIGHT, T WET DAYS/YR	10 25.15 126.8	2.20E-01 LB/VMT	230 TPHR 1269959 TPR 25 T/TRIP 0.27 MI/TRIP	1.15E+02	2.47E-01	WET SUPPRESSION	50	5.74E-02	2.74E-02
	B.	COAL TRUCK HAULING PAVED ROAD	PAVED ROAD FUGITIVE DUST (AP-42, SEC. 13.2.1)	SILT LOADING, G/M^2 AVG. VEHICLE WEIGHT, T WET DAYS/YR	8.2 25.15 126.8	3.46E-01 LB/VMT	230 TPHR 1269959 TPR 25 T/TRIP 0.85 MI/TRIP	2.94E+00	1.82E-01	WET SUPPRESSION	50	1.81E-01	9.08E-02
		EMISSIONS TOTAL						3.61E+00	1.08E+00			1.81E-01	9.35E-02

BRF COAL HAULING PARTICULATE MATTER (PM-10) EMISSION TOTALS:

	UNCONTROLLED TSP TPY	UNCONTROLLED TSP LB/HR	CONTROLLED TSP TPY	CONTROLLED TSP LB/HR
TOTAL:	3.61E+00	1.08E+03	0.181	0.094

ATTACHMENT 12

EMISSIONS SUMMARY FOR BULL RUN FOSSIL PLANT

EMISSIONS SUMMARY FOR BULL RUN FOSSIL PLANT

TABLE C-1. EMISSIONS SUMMARY FOR BULL RUN FOSSIL PLANT

	coal boiler ton/yr	auxiliary boilers ton/yr	coal handling ton/yr	ash handling ton/yr	limestone handling ton/yr	hydrated lime handling ton/yr	diesel engines ton/yr	all total ton/yr
Criteria/Non-HAP Pollutants								
Filterable particulate matter (PM_fil)	29.9	0.467	10.8	18.5	5.48	5.95	0.234	71.3
Condensable PM (PM_cond)	52.0	0.303					0.0137	52.3
Sulfur dioxide (SO2)	332	0.489					1.09E-03	333
Nitrogen oxides (NOx)	535	5.43					3.33	544
Carbon monoxide (CO)	151	1.17					0.718	153
Volatile organic compounds (VOC)	18.0	0.0467					0.272	18.4
Sulfuric acid (SO3/H2SO4) as H2SO4	22.3	0.0212					8.77E-05	22.3
Carbon Dioxide Equivalent	1,540,456	5,292					124	1,545,872
PM Trace-Element HAP								
Antimony (Sb)	1.13E-03	7.12E-04					1.66E-05	1.86E-03
Arsenic (As)	8.00E-03	1.29E-04					8.32E-06	8.14E-03
Beryllium (Be)	3.19E-04	9.70E-05					2.34E-07	4.17E-04
Cadmium (Cd)	2.28E-03	9.70E-05					3.63E-06	2.38E-03
Chromium (Cr)	1.85E-02	9.70E-05					8.32E-06	1.86E-02
Cobalt (Co)	4.24E-03	2.94E-04					6.88E-06	4.54E-03
Lead (Pb)	9.31E-03	2.91E-04					1.06E-05	9.62E-03
Manganese (Mn)	2.35E-02	1.94E-04					7.64E-05	2.37E-02
Nickel (Ni)	2.17E-02	9.70E-05					3.48E-06	2.18E-02
Particulate HAP Total	8.89E-02	2.01E-03					1.34E-04	9.10E-02
Gaseous Trace-Element HAP								
Hydrogen chloride (HCl)	14.3	1.01E-02					2.35E-04	14.3
Hydrogen fluoride (HF)	2.63							2.63
Mercury (Hg)	8.48E-03	9.70E-05					9.07E-07	8.57E-03
Selenium (Se)	0.182	4.85E-04					1.89E-05	0.183
Non-VOC Gaseous HAP Total	17.1	1.06E-02					2.55E-04	17.2
VOC HAP Total	0.484	1.50E-02					2.93E-03	0.502
	Ci/yr							Ci/yr
Radionuclides	1.43E-03							1.43E-03

Note:
Potential emissions are shown for hydrated lime (no hydrated lime used in AY 2012) and the diesel engines (500 hours per engine).
All other emissions are based on AY 2012 actual emissions.

ATTACHMENT 13

NONAPPLICABLE REQUIREMENTS

APPENDIX A
Applicable Regulations

APPENDIX A

TABLE OF CONTENTS

State of Tennessee
Division 68-201 Tennessee Air Quality Act

Citation	Title	Applicable Regulation	Comments
PART 1 - AIR QUALITY			
68-201-101	Short Title	No	Gives this part the title "Tennessee Air Quality Act." No Applicable Requirement
68-201-102	Definitions	Yes	Defines terms used in this part. No Applicable Requirement
68-201-103	Intent and Purpose	No	States intent and purpose of the Act. No Applicable Requirement
68-201-104	Creation of Air Pollution Control Board - Members - Meetings - Organization	No	Provides for creation of the Air Pollution Control Board, and its organization, members, and meetings. No Applicable Requirement
68-201-105	Powers and Duties of Board and Department	No	Establishes that the Board may require sources to furnish information required in order for it to perform its duties. Allows for inspections of sources. No Applicable Requirement
68-201-106	Matters to Be Considered in Exercising Powers	No	The Board has no jurisdiction with respect to air pollution existing solely within a facility. Specifies what must be considered by the Board in exercising its powers to prevent/abate/control air pollution. No Applicable Requirement
68-201-107	Powers and Duties of Technical Secretary	Yes	Establishes the powers and duties of the Technical Secretary which include declaring air pollution episodes, and holding hearings. Respondent/petitioner to a hearing may appeal any determination in writing within 15 days of receipt of any order. State Only Requirement
68-201-108	Conduct Hearings	Yes	A source may request a hearing before the Board regarding a decision/action of the Technical Secretary regarding a permit/order/assessment. Provides for public hearings. State Only Requirement

Citation	Title	Applicable Regulation	Comments
68-201-109	Emergency Stop Orders for Air Contaminant Sources- Hearings	Yes	A source must stop immediately or reduce emission of air contaminants if ordered by the Commissioner should he find that these emissions are causing imminent danger to human health/safety. A hearing on the matter is required within 24-hours. State Only Requirement
68-201-110	Judicial Review	Yes	Provides for appeals from any final order/determination by any person adversely affected by such. State Only Requirement
68-201-111	Right of Board or Commissioner to Injunctive Relief	No	Board/Commissioner may institute civil litigation to prevent violation of any board rule/regulation/order. No Applicable Requirement
68-201-112	Penalty for Violations - Duty of District Attorneys General - Abatement of Public Nuisance	Yes	Provides for fines for willful/knowing violations. Provides authority to the Board to abate public nuisances. State Only Requirements
68-201-113	Existing Civil or Criminal Remedies Not Impaired	No	Existing civil/criminal remedies for wrongful actions are not impaired by this part. No Applicable Requirement
68-201-114	Intent or Remedies - Rights of Action Unaffected	No	Remedies provided for in this part are to provide additional/cumulative remedies to prevent/abate/control air pollution and do not affect any other rights/actions. No Applicable Requirement
68-201-115	Local Pollution Control Programs. Exemption from State Supervision. Applicability Part to Air Contaminant Sources Burning Wood Waste	No	Provides for establishment of local air pollution control programs. Local entities must hold a certificate of exemption from state supervision. Part does not apply to burning of wood waste for disposition of such. No Applicable Requirement
68-201-116	Orders and Assessments of Damages and Civil Penalty Appeal	Yes	Upon order by the Technical Secretary, in response to a violation, a source must comply with the order within the time specified. Part provides for civil/criminal penalties. Approved local programs may issue an assessment against a violator. Anyone who receives an assessment may appeal by filing a petition for review within 30 days with the Technical Secretary. Provides for citizen intervention. State Only Requirement

Citation	Title	Applicable Regulation	Comments
68-201-117	Levy of Noncompliance and Non-payment Penalties - Suit for Collection or Assessment of Penalty	Yes	If found in violation, a source must pay any assessed non-compliance penalties authorized by the board/EPA/exempted local programs. Board/local programs are authorized to file suit for such. State Only Requirement
68-201-118	Variances	Yes	Allows for the filing of variances by a source. Hearings may be held, but are not required. Variances are for a 1-year period, but may be extended for 1 year at a time. Burden of proof is on the source. State Only Requirement
PART 2 - MISCELLANEOUS PROVISIONS			
68-201-201		No	Repealed No Applicable Requirement
68-201-202	Local Ordinances	No	Allows cities/towns/counties with a population >600,000 (1960 federal census) to enact ordinances/regulations no less stringent than the provisions of Part I. Violations are misdemeanors. No Applicable Requirement
68-201-203	Emissions from Light-duty Vehicles	No	Allows the State air pollution control board to initiate a voluntary inspection and maintenance program to study emissions from light-duty vehicles in the metropolitan area in and around Davidson County. No Applicable Requirement

State of Tennessee
Division 1200-3 Air Pollution Control Regulations

Citation	Title	Applicable Regulation	Comments
CHAPTER 1200-3-1 GENERAL PROVISIONS			
1200-3-1-.01	General Rules	No	Titles all Division 1200-3 regulations as ATennessee Air Pollution Control Regulations (APCR). Defines Aambient air standard≅ and intent of such standards. Pollutant limits must be effect-related. For multiple sources in an area, limitations must be on each source. Defines Aemission standard. No Applicable Requirement
1200-3-1-.02	Severability	No	If any portion of the APCR is adjudged to be invalid or unconstitutional, all other parts remain unaffected. No Applicable Requirement
CHAPTER 1200-3-2 DEFINITIONS			
1200-3-2-.01	General Definitions	Yes	Defines terms in the APCR not elsewhere defined. No Applicable Requirement
1200-3-2-.02	Abbreviations	Yes	Explains meanings of abbreviations used in the APCR, unless context clearly indicates otherwise. No Applicable Requirement
CHAPTER 1200-3-3 AMBIENT AIR QUALITY STANDARDS			
1200-3-3-.01	Primary Air Quality Standard	No	Explains what a primary ambient air quality standard is intended to do. No Applicable Requirement
1200-3-3-.02	Secondary Air Quality Standard	No	Explains what a secondary ambient air quality standard is intended to do. No Applicable Requirement
1200-3-3-.03	Tennessee's Ambient Standard Air Quality Standards	No	Presents, in tabular form, the primary and secondary ambient air quality standards (AAQS) for the State and specifies that all averaging periods are to be consecutive time periods. No Applicable Requirement
1200-3-3-.04	Nondegradation of standard	No	AAQS are not to allow any significant deterioration of air quality in the State. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-3-.05	Achievement	No	Establishes schedules of achievement with the AAQS for each pollutant for which a standard has been established. No Applicable Requirement
CHAPTER 1200-3-4 OPEN BURNING			
1200-3-4-.01	Purpose	No	States purpose of this chapter. No Applicable Requirement
1200-3-4-.02	Definitions	Yes	Defines terms used in this chapter. Terms not defined here have meaning given them in 1200-3-2. No Applicable Requirement
1200-3-4-.03	Open Burning Prohibited	Yes	Open burning is prohibited unless specifically exempted. Specifies material prohibited from being burned. Applicable Requirement
1200-3-4-.04	Exceptions to Open Burning	Yes	Specific exemptions which allow open burning are presented, including disposition of wood waste. Applicable Requirement
1200-3-4-.05	Repealed	No	No Applicable Requirement
CHAPTER 1200-3-5 VISIBLE EMISSION REGULATIONS			
1200-3-5-.01	General Standards	Yes	Opacity from any source is not to exceed 20% (aggregate of more than 5 minutes in any one hour or more than 20 minutes in any 24-hour period). For fuel burning installations with heat input >600 MMBtu/hr, opacity is not to exceed 20% (6-minute average), except for one six-minute period per hour of not more than 40%. Said standards apply unless otherwise specified in a subsequent rule. No Applicable Requirement
1200-3-5-.02	Exceptions	Yes	Opacity exceedances are allowed for routine startup/shutdown, and other temporary conditions. A log of these activities is required to be maintained, unless such activities are part of the permit conditions. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-5-.03	Methods of Evaluation and Recording	Yes	Opacity is to be determined by a certified evaluator pursuant to the rules of this chapter. Where the Technical Secretary has agreed in writing, an opacity monitor, which meets the criteria contained in 1200-3-10-.02, may be used to determine compliance. Monitor must meet operational availability/quality assurance requirements. Use of monitor must be included in the operating permit and SIP. These standards do not apply to NSPS sources (1200-3-16). Applicable Requirement
1200-3-5-.04	Exemption	Yes	For an existing source, in order to determine compliance with an opacity standard to which an identical new source must comply, the owner or operator must notify the Technical Secretary in writing that this is a revision to the existing source's requirement and an in-stack monitor must be installed in accordance with 1200-3-10-.02. Applicable Requirement
1200-3-5-.05	Standard for Certain Existing Sources	No	Existing sources which meet the criteria specified herein may elect to be subject to an opacity standard not to exceed 40%. No affected units at the facility. No Applicable Requirement
1200-3-5-.06	Large Wood-Fired Fuel Burning Equipment	No	No affected units on site. No Applicable Requirement
1200-3-5-.07		No	Repealed. No Applicable Requirement
1200-3-5-.08	Titanium Dioxide (TiO_2) Manufacturing	No	No affected units on site. No Applicable Requirement
1200-3-5-.09	Kraft Mill Recovery Furnaces	No	No affected unit on site. No Applicable Requirement
1200-3-5-.10	Choices of Visible Emission Standard for Certain Fuel Burning Equipment	Yes	Fuel burning equipment with heat input >50 MMBtu/hr and <600 MMBtu/hr in operation on July 31, 1981, and subject to 1200-3-5-.01 may opt for an opacity limit of 20%. All fuel-burning equipment at an installation will be subject. No Applicable Requirement
1200-3-5-.11	Soda Recovery Boilers	No	No affected unit on site. No Applicable Requirement
	Coke Battery Underfire (combustion)		No affected unit on site.

Citation	Title	Applicable Regulation	Comments
1200-3-5-.12	Stacks	No	No Applicable Requirement
	CHAPTER 1200-3-6 **NON-PROCESS EMISSION STANDARDS**		
1200-3-6-.01	General Non-Process Emissions	Yes	Owner or operator of an existing (under construction/in operation prior to April 3, 1972) fuel-burning installation proposing to modify, rebuild, or replace a source, may do so only if the source will meet the maximum allowable emission standards for a new installation. Other than for PSD affected units, a fuel change is not a modification. PSD non-process sources must comply with 1200-3-9, as do sources in or impacting nonattainment areas. Applicable Requirement
1200-3-6-.02	Non-Process Particulate Emission Standards	Yes	Procedures for determining non-process PM emission standards for existing and new fuel burning equipment, and incinerators are presented herein. Applicable Requirement
1200-3-6-.03	General Non-Process Gaseous Emissions	Yes	Stationary sources established after April 3, 1972, which emit gaseous contaminants must install and utilize BACT. Applicable Requirement
1200-3-6-.04	Nitrogen Oxides (Repealed)	No	No Applicable Requirement
1200-3-6-.05	Wood-Fired Fuel Burning Equipment	No	No affected unit on site No Applicable Requirement
1200-3-6-.06	Commercial and Industrial Solid Waste Incineration Units That Commenced Construction On or Before November 30, 1999	No	Specifies standards and requirements applicable to commercial and industrial solid waste incineration units and incorporates verbatim 40 CFR 60 subpart DDDD. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
CHAPTER 1200-3-7 PROCESS EMISSION STANDARDS			
1200-3-7-.01	General Process Particulate Emission Standards	Yes	Owner/operator of an existing process emission source, proposing to modify, rebuild or replace said source, may do so only if the source will meet the maximum allowable emission standard for a new process emission source. A change in fuels is not a modification. No Applicable Requirement
1200-3-7-.02	Choice of Particulate Emission Standards - Existing Process	Yes	Sources under construction/in operation prior to August 9, 1969, shall determine a PM standard from the diffusion equation or process weight tables specified herein if written notification is provided to the Technical Secretary prior to July 1, 1972. Otherwise the table 1 process weight standards apply. For sources under construction on or after August 9, 1972, and before July 7, 1974, the diffusion equation must be used to determine the standard, unless written notification to the Technical Secretary indicates that the tabulated process weight standard is preferred. Otherwise, the tabulated standard will apply. Applicable Requirement
1200-3-7-.03	New Processes	Yes	Allowable PM from process emission sources beginning operation on/after April 3, 1972, shall be determined from Process Weight Table 2. BACT may be required in nonattainment areas. Sources in/impacting nonattainment areas must comply with 1200-3-9-.01 (5) (nonattainment New Source Review). Applicable Requirement
1200-3-7-.04	Limiting Allowable Emissions	Yes	PM process emissions shall not be required to be <0.02 grains/dry scf corrected to 70 degrees F and 1 atm unless found necessary by the Board. Likewise, maximum allowable is 0.25 gr/dscf at 70 degrees F/1 atm. Does not apply to vents from liquid storage tanks. Applicable Requirement
1200-3-7-.05	Specific Process Emission Standards	Yes	Standards specified in 1200-3-7-.02 through -.04 apply if a standard for a specifically designated type of process emission source is contained in a subsequent rule of this chapter. No Applicable Requirement
1200-3-7-.06	Standards of Performance for New Stationary Sources	Yes	The State has adopted EPA's NSPS and will designate new standards as promulgated by EPA. State Only Requirement
1200-3-7-.07	General Provisions and Applicability for Process Gaseous Emission Standards	Yes	After April 3, 1972, any new/modified source of gaseous air contaminants must utilize equipment/technology deemed reasonable/proper by the Technical Secretary.

Citation	Title	Applicable Regulation	Comments
			Applicable Requirement
1200-3-7-.08	Specific Process Emission Standards	No	No affected units at the facility. No Applicable Requirement
1200-3-7-.09	Sulfuric Acid Mist	No	No affected unit on site. No Applicable Requirement
1200-3-7-.10	Grain Loading Limit for Certain Existing Sources	Yes	A certificate of validation for a PM limit of 1.0 gr/dscf at 70? F and 1 atm may be granted to a source in lieu of the standards of 1200-3-7-.04 (02) if the source commenced operation prior to April 3, 1972, and other specified criteria are met. No Applicable Requirement
1200-3-7-.11	Carbon Monoxide, Electric Arc Furnaces	No	No affected unit on site. No Applicable Requirement
1200-3-7-.12	Carbon Monoxide, Catalytic Cracking Units	No	No affected unit on site. No Applicable Requirement
CHAPTER 1200-3-8 FUGITIVE DUST			
1200-3-8-.01	Fugitive Dust	Yes	Reasonable precautions must be used to prevent airborne PM. A non-inclusive list of precautions is specified herein. Any visible emission beyond the property line in excess of 5 minutes/hour or 20 minutes/day (excluding those from malfunctions as specified in 1200-3-20) are prohibited. Compliance schedules are presented. Applicable Requirement
1200-3-8-.02	Special Additional Control Area Fugitive Dust Requirements	Yes	Bull Run Fossil Plant is located in the Bull Run Additional Control Area Applicable Requirement
1200-3-8-.03	New and/or Modified Source	Yes	Fugitive dust sources constructed or modified after November 6, 1988, must meet emission standards specified in their construction and subsequent operating permits. Standards will be visible emission standards to be read by technique specified in said permit(s). Applicable Requirement
CHAPTER 1200-3-9 CONSTRUCTION AND OPERATING PERMITS			

Citation	Title	Applicable Regulation	Comments
1200-3-9-.01	Construction Permits	Yes	Requires a person to apply for and obtain a permit from the Technical Secretary to construct or modify an air contaminant source prior to construction or modification. Specifies requirements for applying for and obtaining a construction permit, including PSD and nonattainment New Source Review, for construction of a new or modification of an existing air contaminant source. Applicable Requirements
1200-3-9-.02	Operating Permits	Yes	Requires a person operating an air contaminant source to obtain an operating permit from the Technical Secretary within specified time frames and specifies certain procedures for obtaining a permit. Also specifies requirements in accordance with Title V of the federal Clean Air Act for operating permit applications and for operating permit issued under the Title V permit regulations. Applicable Requirements
1200-3-9-.03	General Provisions	Yes	Specifies generally applicable provisions including requirement to comply with all regulations at the earliest practicable time, prohibits circumvention of the regulations, prohibits emissions from causing a traffic hazard, limits transferability of a construction or operating permit, and provides authority to the Technical Secretary to suspend or revoke a permit adn directly impose all provisions applicable to sources that are necessary under the federal Clean Air Act and effective federal regulations pursuant to this act, as well as provisions necessary under Tenn. Code Ann. 68-201-101 et. seq. and rules of this Division 1200-3. Applicable Requirements
1200-3-9-.04	Exemptions	Yes	Specifies air contaminant sources that are exempt from permitting requirements. Specifies major source operating permit insignificant emission units and requirements applicable to those units. Applicable Requirements
1200-3-9-.05	Appeal of Permit Application Denials and Permit Conditions	Yes	Provides for appealing a permit denied by the Technical Secretary or the Department and specifies procedures for the appeal process. Applicable Requirements. State Only Requirement
CHAPTER 1200-3-10 REQUIRED SAMPLING, RECORDING, AND REPORTING			

Citation	Title	Applicable Regulation	Comments
1200-3-10-.01	Sampling Required to Establish Air Contaminant Emission Levels	Yes	Regulation requires new sources to provide adequate sampling ports, safe access thereto, and other sampling and testing facilities that may be required. Applicants for operating permits may be required to conduct performance test. Technical Secretary may conduct tests. For existing source, the Technical Secretary may require the sources to perform compliance testing. For existing sources, he may require performance test in support of an operating permit application. Source may test or Technical Secretary may test. Periodic tests may be required as a permit condition. Emission data may be required to be filed with the Technical Secretary for a minimum of one year. Applicable Requirement
1200-3-10-.02	Monitoring of Source Emissions, Recording, and Reporting of the Same are Required	Yes	Technical Secretary may require the source to install, calibrate, operate, and maintain prescribed sampling equipment; to sample in accordance with prescribed methods; to establish and maintain records; and to make periodic emission reports. Specific sources required to comply include fossil fuel-fired steam generators (construction commenced after April 3, 1972). All required monitoring equipment must meet the performance specifications given in Federal Register Volume 40, Number 194 and be installed, calibrated, operated, and maintained per these rules. Schedules for ordering, installing, testing, and operating equipment, and submitting detailed monitoring programs are presented. Allowance is made for failure to monitor as a result of approved monitoring system malfunctions. A log of malfunction must be maintained and must contain the data specified here. Written quarterly excess emission reports are required of specified sources. Requirements for completing this excess emissions summary are specified herein. Applicable Requirement
1200-3-10-.03	Malfunction of Equipment, Reports Required (Repealed)	No	No Applicable Requirements
1200-3-10-.04	Sampling, Reporting and Recording Required for Major Stationary Sources	Yes	Authorizes the Technical Secretary to require by permit condition any periodic or enhanced monitoring, recording or reporting deemed necessary for verification of a source's compliance with applicable requirements as specified in 1200-3-9-.02(11). Applicable Requirements
CHAPTER 1200-3-11 HAZARDOUS AIR CONTAMINANTS			

Citation	Title	Applicable Regulation	Comments
1200-3-11-.01	General Provisions	Yes	Lists designated hazardous air pollutants (HAPs) including asbestos. New/modified sources of HAPs require a construction permit. Information on the HAPs sources which must be filed with the Technical Secretary is specified per the schedules specified herein. Notification schedule for startups is given. Source changes, other than modifications, must be reported within 30 days after the change. Sources not previously required to have a construction or operating permit must do so within 90 days following the Board's determination that the sources= emissions are HAPs. Terms are defined herein. Existing sources of HAPs become new sources upon modification where an applicable standard applies. Methods of determining emission rates and their units are specified. Activities that do not constitute modifications are listed. Requirements for monitoring, recordkeeping, and reporting, where required by a rule, are specified. State Only Requirement
1200-3-11-.02	Asbestos	Yes	Demolition/renovation activities at this facility must meet the requirements specified herein. Requirements include determination of amount of material affected, written notification, prevention of atmospheric asbestos PM emissions. Sources subject to this rule are exempt from the General Provisions (1200-3-11-.01). State Only Requirement
1200-3-11-.03	Beryllium	No	No affected unit on site. No Applicable Requirement
1200-3-11-.04	Mercury	No	No affected unit on site. No Applicable Requirement
1200-3-11-.05	Vinyl Chloride	No	No affected unit on site. No Applicable Requirement
1200-3-11-.06	Equipment Leaks (Fugitive Emission Sources)	No	No affected unit on site. No Applicable Requirement
1200-3-11-.07	Equipment Leaks (Fugitive Emission Sources) of Benzene	No	No affected activities on site. No Applicable Requirement
1200-3-11-.08	Reserved	No	Reserved No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-11-.09	Inorganic Arsenic Emissions From Glass Manufacturing Plants	No	No affected unit on site. No Applicable Requirement
1200-3-11-.10	Inorganic Arsenic Emissions From Primary Copper Smelters	No	No affected unit on site. No Applicable Requirement
1200-3-11-.11	Inorganic Arsenic Emissions From Arsenic Trioxide and Metallic Arsenic Production Facilities	No	No affected unit on site. No Applicable Requirement
1200-3-11-.12 through 1200-3-11-16	Reserved	No	Reserved No Applicable Requirement
1200-3-11-.11	National Emission Standards for Radon Emissions From Department of Energy Facilities	No	Adopts by reference the Federal regulations 40 CFR 61 Subpart Q as published in the December 15, 1989 edition of the Federal Register. No Applicable Requirement
CHAPTER 1200-3-12 METHODS OF SAMPLING AND ANALYSIS			
1200-3-12-.01	General	Yes	Required samples are to be taken in such number, duration, and location as to be statistically significant and representative. Alternate materials, equipment, and procedures may be used in place of those specified upon reliable demonstration that results produced are comparable to those obtained from specified materials, equipment, and procedures. Applicable Requirement
1200-3-12-.02	Procedures for Ambient Air Sampling and Analysis	Yes	Should a source be required to perform ambient sampling and analysis of sulfur dioxide, ozone (O_3), PM_{10}, photochemical oxidants, carbon monoxide (CO), non-methane hydrocarbons (NMHC), nitrogen dioxide (NO_2), and fluorides, the procedures to be used are specified herein. Alternate/equivalent procedures may be approved. Applicable Requirement
1200-3-12-.03	Sources Sampling and Analysis	Yes	Procedures and equipment to be used in source sampling/analysis are specified herein. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-12-.04	Monitoring Required for Determining Compliance of Certain Large Sources	Yes	Provides sources a choice of methods for determining compliance with sulfur dioxide (SO_2) limitations based upon type of fuel burned. These include use of fuel analysis or in-stack continuous emissions monitors (CEMS). Applicable Requirement
CHAPTER 1200-3-13 VIOLATIONS			
1200-3-13-.01	Violation Statement	Yes	Failure to comply with any of these regulations is a violation subject to enforcement. Applicable Requirement
CHAPTER 1200-3-14 CONTROL OF SULFUR DIOXIDE EMISSIONS			
1200-3-14-.01	General Provisions	Yes	Establishes 8 categories for classifying counties based upon limits necessary to attain/maintain the SO_2 AAQS. Anderson County is classified as Class V. Regardless of limits specified herein, source must comply with PSD and NSR requirements. Fuel burning sources > 1000 MMBtu/hr must monitor SO_2 AAQ. Sources, upon approval of petition to Technical Secretary, may terminate sampling if data for 2 calendar years verifies compliance with Tennessee AAQS. Specific conditions that must be met for petition approval are stipulated. Applicable Requirement
1200-3-14-.02	Non-Process Emission Standards	Yes	Fuel burning installations in operation prior to April 3, 1972, with heat input >1 Billion Btu/hr and located in a Class V county must not exceed 4.0 lb SO_2/MMBtu (24-hr basis). If $\leq$ 600 MMBtu/hr, limit is determined on a 1-hr basis. Equipment constructed after April 3, 1972, with a rated capacity $\leq$ 250 MMBtu/hr is limited to 4.0 lb SO_2/MMBtu (1-hr average) in a Class V county. Sources constructed after April 3, 1972, with capacity > 250 MMBtu/hr are limited to 0.80 lb SO_2/MMBtu (maximum 1-hour average) when liquid fossil fuel is burned; to 1.2 lb SO_2/MMBtu (maximum 1-hour average) when solid fossil fuel is burned; or to the limit established by the equation herein specified when burning different fossil fuels simultaneously. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-14-.03	Process Emission Standards	No	No affected units at this facility. No Applicable Requirement
CHAPTER 1200-3-15 EMERGENCY EPISODE REQUIREMENTS			
1200-3-15-.01	Purpose	Yes	The purpose of this chapter is to establish criteria to prevent undesirable levels of air contaminants during adverse meteorological conditions. Primary responsibility to initiate activity required by this Chapter rests with the Technical Secretary. No specific requirements. No Applicable Requirement
1200-3-15-.02	Episode Criteria	Yes	Air pollution episode criteria are established. No specific regulatory requirement. No Applicable Requirement
1200-3-15.-03	Required Emissions Reduction	Yes	Upon declaration, by the Technical Secretary, of an air pollution alert, sources must follow the requirements for the corresponding episode level as tabulated herein, or follow the approved emissions reduction plan for the source or facility. Major sources significantly impacting a nonattainment area must submit an acceptable air pollution episode emissions reduction plan to the Technical Secretary. Major sources are specified herein. Plans may be required of non-major sources. The Technical Secretary may via a hearing establish a plan for a source that fails to submit an approved plan. Applicable Requirement
CHAPTER 1200-3-16 NEW SOURCE PERFORMANCE STANDARDS			
1200-3-16-.01	General Provisions	Yes	Visible emissions, PM, SO_2, and other pollutant standards specified for an affected facility herein, supersede standards in any other rule. Standards apply to any new or modified facility which commenced after the date specified in each rule. Limitations established pursuant to PSD and NSR requirements must comply with such regardless of the standards established herein. Terms used in this Chapter are defined. Performance test requirements and procedures are specified. Regulations specifying compliance with standards and maintenance requirements are presented. Notification, recordkeeping and monitoring requirements are established. Requirements regarding modifications are presented, as are those for reconstruction. General control device requirements and specifications are established. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-16-.02	Fossil Fuel-Fired Steam Generating Units for Which Construction is Commenced After April 3, 1972	Yes	Applies to units constructed after April 3, 1972. Construction commenced on the unit at this facility in 1962. No affected units at this facility. No Applicable Requirement
1200-3-16-.03	Electric Utility Steam Generating Units for Which Construction Commenced After September 18, 1978	Yes	Applies to units constructed after September 18, 1978. Construction commenced on the unit at this facility in 1962. No affected units at this facility. No Applicable Requirement
1200-3-16-.04	Incinerators	No	No affected unit on site No Applicable Requirement
1200-3-16-.10	Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After April 21, 1976, and Prior to May 19, 1978	No	No affected unit on site No Applicable Requirement
1200-3-16-.11	Standard of Performance for Storage Vessels for Petroleum Liquids Constructed After May 18, 1978	No	No affected unit on site No Applicable Requirement
1200-3-16-.22	Coal Preparation Plants	Yes	Applies only to facilities which “commenced” construction on or after February 9, 1977. Construction commenced on the unit at this facility in 1962. No affected sources at this facility. No Applicable Requirement
1200-3-16-.31	Stationary Gas Turbines	No	No affected units on site No Applicable Requirement
1200-3-16-.53	Non-Metallic Mineral Processing Plants	No	No affected units on site No Applicable Requirement
1200-3-16-.59	Industrial-Commercial-Institutional Steam Generating Units	No	Applies only to units constructed, modified, and reconstructed after November 6, 1988. Units at this facility were constructed prior to this date. No affected units at the site. No Applicable Requirement
1200-3-16-.61	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After June 2, 1990.	Yes	No affected unit on site No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
CHAPTER 1200-3-17 CONFLICT OF INTEREST			
1200-3-17-.01	Purpose and Intent	No	Describes the purpose and intent of the rule. No Applicable Requirement
1200-3-17-.02	Conflict of Interest on the Part of the Board and Technical Secretary	No	Defines what a conflict of interest is and describes requirements and procedures to be followed by the Technical Secretary or Board Member if a conflict of interest is determined. No Applicable Requirement
1200-3-17-.03	Conflict of Interest in the Permitting of Municipal Solid Waste Incineration Units.	No	Specifies requirements for the Technical Secretary or Board Member if a conflict of interest exists. No Applicable Requirement
CHAPTER 1200-3-18 VOLATILE ORGANIC COMPOUNDS			
1200-3-18-.01	Definitions	Yes	Provides definitions of terms used in this chapter. No Applicable Requirement
1200-3-18-.02	General Provisions and Applicability	Yes	Describes provisions that are generally applicable and the sources subject to the provisions. Applicable Requirement
1200-3-18-.03	Compliance Certification, Recordkeeping, and Reporting Requirements for Coating and Printing Sources	No	Specifies compliance certification, recordkeeping, and reporting requirements for coating and printing sources. No Applicable Requirement
1200-3-18-.04	Compliance Certification, Recordkeeping, and Reporting Requirements for Non-coating and Non-printing Sources	Yes	Specifies compliance certification, recordkeeping, and reporting requirements for non-coating and non-printing sources. Applicable Requirement
1200-3-18-.06	Handling, Storage, and Disposal of Volatile Organic Compounds (VOC)	No	Specifies requirements for facilities in Davidson, Rutherford, Sumner, Williamson, and Wilson County for the handling, storage, and disposal of volatile organic compounds. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-18-.07	Source-specific Compliance Schedules	Yes	Allows for existing sources to petition for a source-specific compliance schedule meeting certain criteria and containing specific information. Applicable Requirement
1200-3-18-.20	Coating of Miscellaneous Metal Parts	Yes	Specifies requirements for certain miscellaneous metal parts and products coating line. No Applicable Requirements
1200-3-18-.24	Gasoline Dispensing Facilities - Stage I and Stage II Vapor Recovery	No	Specifies requirements for gasoline dispensing facilities in Davidson, Rutherford, Shelby, Sumner, Williamson, and Wilson County meeting certain criteria. No Applicable Requirement
1200-3-18-.28	Petroleum Liquid Storage in External Floating Roof Tanks	Yes	Specifies requirements for floating roof tanks meeting certain criteria. No Applicable Requirement
1200-3-18-.29	Petroleum Liquid Storage in Fixed Roof Tanks	Yes	Specifies requirements for fixed roof tanks meeting certain criteria No Applicable Requirement
1200-3-18-.31	Solvent Metal Cleaning	Yes	Specifies requirements for solvent metal cleaning sources meeting certain criteria. No Applicable Requirement
1200-3-18-.79	Other Facilities That Emit Volatile Organic Compounds (VOC's)	No	Specifies requirements for facilities in Davidson, Rutherford, Sumner, Williamson, or Wilson County emitting volatile organic compounds meeting certain criteria. No Applicable Requirement
1200-3-18-.80	Test Methods and Compliance Procedures: General Provisions	Yes	Describes general provisions for test methods and compliance procedures for sources subject to this chapter. Applicable Requirement
1200-3-18-.83	Test Methods and Compliance Procedures: Emission Capture and Destruction or Removal Efficiency and Monitoring Requirements	Yes	Specifies test methods and compliance procedures for determining the efficiency of volatile organic compound capture systems. Applicable Requirement
1200-3-18-.84	Test Methods and Compliance Procedures: Determining the Destruction or Removal Efficiency of a Control Device	Yes	Specifies test methods to determine volatile organic compound concentrations in a gas stream. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-18-.86	Performance Specifications for Continuous Emissions Monitoring of Total Hydrocarbons	Yes	Provides performance specifications for continuous emission monitoring of total hydrocarbons. Applicable Requirement
1200-3-18-.87	Quality Control Procedures for Continuous Emission Monitoring Systems (CEMS)	Yes	Requires owner or operator of a CEMS to develop and implement a CEMS quality control program and specifies the minimum requirements for such a program. Applicable Requirement
CHAPTER 1200-3-19 EMISSION STANDARDS AND MONITORING REQUIREMENT FOR ADDITIONAL CONTROL AREAS			
1200-3-19-.01	Purpose	No	Establishes that the purpose of this Chapter is to establish specific emission standards for existing air contaminant sources located in or significantly impacting upon an additional control area. No specific regulatory requirements. No Applicable Requirement
1200-3-19-.02	General Requirements	Yes	Requirements apply only to sources which are located in or significantly impact on the areas specified in 1200-3-19. Applicable Requirement
1200-3-19-.03	Particulate and Sulfur Dioxide Additional Control Areas within Tennessee	Yes	Describes additional control areas for PM and SO_2. No specific regulatory requirements. No Applicable Requirement
1200-3-19-.04		No	Reserved. No Applicable Requirement
1200-3-19-.05	Operating Permits and Emission Limiting Conditions	Yes	Bull Run Additional Control Area is exempted No Applicable Requirement
1200-3-19-.06	Logs for Operating Hours	Yes	No affected units at the facility. No Applicable Requirement
1200-3-19-.07		No	Reserved. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-19-.08		No	Reserved. No Applicable Requirement
1200-3-19-.09		No	Reserved. No Applicable Requirement
1200-3-19-.10		No	Reserved. No Applicable Requirement
1200-3-19-.11	Particulate Matter Emission Regulations for the Bristol Additional Control Area	No	No affected units at the facility. No Applicable Requirement
1200-3-19-.12	Particulate Matter Emission Regulations for Air Contaminant Sources in or Significantly Impacting the Particulate Additional Control Areas in Campbell County	No	No affected units at the facility. No Applicable Requirement
1200-3-19-.13	Particulate Matter Emission Regulations for the Bull Run Additional Control Area and Odoms Bend Additional Control Area	Yes	Provides that sources in the Bull Run Additional Control Area are subject to general requirements for unclassified and attainment areas. Applicable Requirement
1200-3-19-.14	Sulfur Dioxide Emission Regulations for the New Johnsonville Additional Control Area	No	Specifies sulfur dioxide emission limits for coal fired fuel burning installations and for electric generating turbines. No Applicable Requirement
1200-3-19-.15		No	Reserved. No Applicable Requirement
1200-3-19-.16		No	Reserved. No Applicable Requirement
1200-3-19-.17		No	Reserved. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-19-.18		No	Reserved. No Applicable Requirement
1200-3-19-.19	Sulfur Dioxide Emission Standards for the Copper Basin Additional Control Area	No	No affected unit on the site. No Applicable Requirement
CHAPTER 1200-3-20 LIMITS ON EMISSION DUE TO MALFUNCTION, STARTUPS, AND SHUTDOWNS			
1200-3-20-.01	Purpose	No	The purpose of this Chapter is to place reasonable limits on emissions from fuel burning, process emission, and other sources which result from malfunctions, startups, or shutdowns. No specific regulatory requirements. No Applicable Requirement
1200-3-20-.02	Reasonable Measures Required	Yes	Reasonable measures are required to minimize emissions during startups/shutdowns/ malfunctions. Contains a non-inclusive list of minimization measures. Sources in or significantly affecting a nonattainment area and which have failures due to poor maintenance, careless operation, other preventable upset condition, or preventable equipment breakdown are not malfunctions and are considered violations. Applicable Requirement
1200-3-20-.03	Notice Required When Malfunction Occurs	Yes	Exceedances of emission standards or emissions of such quantity or duration that cause damage to property or public health must be reported along with pertinent information to the Technical Secretary. Opacity violations (excluding emissions caused by hazardous air pollutants) of < 20 minutes per day (midnight to midnight) need not be reported. Prompt notification by phone within 24 hours is required. When the condition causing the exceedance is corrected and equipment returns to operation, additional notification is required. No notification is required of sources in attainment or unclassified areas which do not significantly impact a nonattainment area and which will not or do not occur over more than a 24-hour period (or will not reoccur over more than a 24-hr period), provided no property or public health damage is anticipated. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-20-.04	Logs and Reports	Yes	Logs of all malfunctions, startups, shutdowns resulting in emissions exceedances must be kept at the plant. Specifications of data to be entered and schedule for data entry are specified. Sources located in or significantly impacting on a nonattainment area must submit a report within 30 days after the end of each calendar quarter. Data required in this report is specified. Emissions reported under 1200-3-10-.02 or 1200-3-16 are not required to be reported under this section. Applicable Requirement
1200-3-20-.05	Copies of Logs Required	Yes	Technical Secretary may require submittal of upset log within 10 days after receipt of request by the source. Applicable Requirement
1200-3-20-.06	Report Required Upon the Issuance of a Notice of Violation (NOV)	Yes	Excess emissions from units subject to regulation shall be automatically cited with an NOV (except for visible emission from startup or shutdown under 1200-3-5-.02(1) or de minimis under 1200-3-20-.06). Source is required to submit within 20 days, data specified herein, to be used by the Technical Secretary in determining whether to excuse or validate the NOV. Information not submitted in the required time is precluded from consideration for excusing an NOV. No NOV will be issued for units using properly certified/operated CEMS unless the de minimis levels specified herein are violated. Irrespective of startup and shutdown exemptions, no emission shall be allowed to cause or contribute to a violation of the Ambient Air Quality Standards (AAQS). Applicable Requirement
1200-3-20-.07	Special Reports Required	Yes	Technical Secretary may require of the source a quarterly report which contains at least the information specified herein. Said report must be submitted within 30 days after the end of each calendar quarter. Applicable Requirement
1200-3-20-.08	Rights Reserved	Yes	Nothing in this Chapter shall be construed to limit the obligation of the source to attain and maintain AAQS. No specific regulatory requirements. Applicable Requirement
1200-3-20-.09	Additional Sources Covered	Yes	Technical Secretary may require reporting in accordance with the provisions of this Chapter for sources in nonattainment areas or significantly impacting nonattainment areas, if there is reason to believe an AAQS may be violated in the general vicinity where the source is located. Criteria for determining “reason” are specified. No affected units at this facility. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
CHAPTER 1200-3-21 GENERAL ALTERNATE EMISSION STANDARDS			
1200-3-21-.01	General Alternate Emission Standard	Yes	Owner or operator of any PM, SO_2, CO, and /or NO_x source regulated by other rules in these regulations may apply to the Technical Secretary for a Certification of Alternate Control if the specifications presented here are met. Alternate emission standards and emissions shall be considered as an addition to existing standard, be subject to public hearing, and included in the SIP. GEP is required on all stacks. Certificate becomes void 90 days after the Board amends any rule or regulation listed on the certificate if said change reduces allowable emissions. Applicable Requirements
CHAPTER 1200-3-22 LEAD EMISSION STANDARDS			
1200-3-22-.01	Definitions	Yes	Terms used in this Chapter are defined here. No specific regulatory requirements. No Applicable Requirements
1200-3-22-.02	General Lead Emission Standards	No	No affected unit on the site. No Applicable Requirements
1200-3-22-.03	Specific Emission Standard for Existing Sources of Lead	No	No affected unit on the site. No Applicable Requirements
1200-3-22-.04	Standards for New or Modified Sources of Lead	No	No affected unit on the site. No Applicable Requirements
1200-3-22-.05	Source Sampling and Analysis	No	No affected unit on the site. No Applicable Requirements
1200-3-22-.06	Lead Ambient Monitoring Requirements	No	No affected unit on the site. No Applicable Requirements
CHAPTER 1200-3-23 VISIBILITY PROTECTION			

Citation	Title	Applicable Regulation	Comments
1200-3-23-.01	Purpose	No	Stated purpose of Chapter is to assure reasonable progress in preventing any future or remedying any existing visibility impairment in Class I Federal areas resulting from man-made sources. No specific regulatory requirements. No Applicable Requirements
1200-3-23-.02	Definitions	Yes	Terms used in this Chapter are defined here. No specific regulatory requirements. No Applicable Requirements
1200-3-23-.03	General Visibility Protection Standards	Yes	Sources are prohibited from producing emissions in excess of the standards in this Chapter. Permit conditions must be met. Applicable Requirement
1200-3-23-.04	Specific Emission Standards for Existing Stationary Facilities	Yes	Technical Secretary must specify BART (Best Available Retrofit Technology) as a permit condition for an existing stationary source that causes visibility impairment in any Class I Federal area. No affected units at the facility. No Applicable Requirement
1200-3-23-.05	Specific Emission Standards for Existing Sources	Yes	Technical Secretary may specify a limitation equivalent to BART as a permit condition for any source that causes visibility impairment in any Class I Federal area, except existing stationary sources. No affected units at the facility. No Applicable Requirement
1200-3-23-.06	Visibility Standards for New and Modified Sources	Yes	New major stationary sources or major modification in attainment/unclassifiable areas must meet PSD requirements. No affected units at the facility. No Applicable Requirement
1200-3-23-.07	Visibility Monitoring Requirements	Yes	Visibility monitoring may be required in the vicinity of a source regulated by this Chapter. No affected units at the facility. No Applicable Requirement
1200-3-23-.08	Exemptions from BART Requirements	Yes	Sources may apply for exemptions from BART. Fossil fuel-fired power plants with capacity $\geq$ 750 MWe must demonstrate that it is located at such a distance from all mandatory Class I Federal areas that it does or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to significant visibility impairment in said areas. Written notification to all Federal Land Managers is required. Opportunity for public hearing is required. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
CHAPTER 1200-3-24 STACK HEIGHT REGULATIONS GOOD ENGINEERING PRACTICE			
1200-3-24-.01	General Provisions	Yes	Good Engineering Practice (GEP) stack height is required of all sources constructed after December 31, 1970. Coal-fired steam electric generating units which commenced operation prior to July 1, 1957, whose stacks were constructed under contract awarded before February 8, 1974 are not subject to GEP. Applicable Requirement
1200-3-24-.02	Definitions	Yes	Terms used in this Chapter are defined here. No specific Regulatory requirements. No Applicable Requirement
1200-3-24-.03	Good Engineering Practice Stack Height Standards	Yes	Standards prescribed in this Chapter may not be exceeded. Applicable Requirement
1200-3-24-.04	Specific Emission Standards	Yes	For an affected source, the emission limit determined to be necessary under the provisions of this Chapter must be specified on the construction/operating permit which is subject to public hearing and included in the SIP. No Applicable Requirement.
CHAPTER 1200-3-25 STANDARD FOR INFECTIOUS WASTE INCINERATORS			
1200-3-25-.01	Purpose	No	No affected units on the site. No Applicable Requirement
1200-3-25-.02	General	No	No affected units on the site. No Applicable Requirement
1200-3-25-.03	Existing Source Compliance Demonstrations	No	No affected units on the site. No Applicable Requirement
1200-3-25-.04	Definitions	No	No affected units on the site. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-25-.05	Emission Standards	No	No affected units on the site. No Applicable Requirement
1200-3-25-.06	Performance Specifications	No	No affected units on the site. No Applicable Requirement
1200-3-25-.07	Monitoring Requirements	No	No affected units on the site. No Applicable Requirement
1200-3-25-.08	Testing Requirements	No	No affected units on the site. No Applicable Requirement
1200-3-25-.09	Record Keeping and Reporting Requirements	No	No affected units on the site. No Applicable Requirement
1200-3-25-.10	Inspection and Maintenance	No	No affected units on the site. No Applicable Requirement
CHAPTER 1200-3-26 ADMINISTRATIVE FEES SCHEDULE			
1200-3-26-.01	Tennessee Visible Emissions Evaluation Course Fees	Yes	Specifies fees for the Tennessee Visible Emissions Evaluation Course. Applicable Requirement
1200-3-26-.02	Construction, Modification, and Annual Emission Fees	Yes	Establishes fees for construction, modification, and annual emissions. Provides definitions used in this chapter, specifies fee schedules, required payment of fees, and late fees. Applicable Requirement
1200-3-26-.03	Repealed	No	Repealed
CHAPTER 1200-3-27 NITROGEN OXIDES			
1200-3-27-.01	Definitions	Yes	Provides definitions of terms used in this chapter. No Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-27-.02	General Provisions and Applicability	Yes	Specifies the general provisions applicable to sources subject to this chapter and specifies the applicability of this chapter. Applicable Requirement
1200-3-27-.03	Standards and Requirements	No	Specifies nitrogen oxide emission standards for certain sources in Davidson, Rutherford, Sumner, Williamson or Wilson County and specifies compliance schedules for meeting the emission standards. No Applicable Requirement
1200-3-27.04	Standards for Cement Kilns	No	Specifies NO_x emission control requirements for certain cement kilns and includes compliance certification and recording requirements. No Applicable Requirement
1200-3-27.05	Reserved	No	No Applicable Requirement
1200-3-27.06	NO_x Budget Trading Program for State Implementation Plans (40 CFR 96)	Yes	Establishes a NO_x Budget Trading Program applicable to electricity generating units. Specifies how NO_x allowances are established and allocated, how the allowances may be traded and banked, and recording and reporting requirements. Applicable Requirement
1200-3-27.07	Voluntary NOx Emissions Reduction Program	No	provides a method by which sources that emit NOx but are not subject to the requirements of Rule .06 of this chapter can voluntarily make emission reductions and thereby earn marketable NOx allowances for use in the EPA's NOx Budget Trading Program. No Applicable Requirement
CHAPTER 1200-3-29 LIGHT-DUTY MOTOR VEHICLE INSPECTION AND MAINTENANCE			
1200-3-29-.01	Purpose	No	Establishes that the purpose of this Chapter is to reduce the air pollution produced by the operation of light-duty motor vehicles. No Applicable Requirements
1200-3-29-.02	Definitions	No	Provides definitions of terms used in this chapter. No Applicable Requirements

Citation	Title	Applicable Regulation	Comments
1200-3-29-.03	Motor Vehicle Inspection Requirements	No	Specifies inspection requirements for all light-duty motor vehicles either registered in Rutherford, Sumner, Williamson or Wilson Counties, or directly with the motor vehicle division of the Tennessee Department of Revenue and used within these four counties and all light-duty vehicles operated on Federal installations located in these four counties. No Applicable Requirements
1200-3-29-.04	Exemption From Motor Vehicle Inspection Requirements	No	Specifies classes of vehicles exempt from the requirements of 1200-3-29-.03. No Applicable Requirements
1200-3-29-.05	Motor Vehicle Emission Performance Test Criteria	No	Specifies emission performance test criteria which must be met by motor vehicles. No Applicable Requirements
1200-3-29-.06	Motor Vehicle Anti-Tampering Test Criteria	No	Specifies minimum anti-tampering test criteria motor vehicles must meet. No Applicable Requirements
1200-3-29-.07	Motor Vehicle Emission Performance Test Methods	No	Specifies what motor vehicle emissions performance methods shall consist of. No Applicable Requirements
1200-3-29-.08	Motor Vehicle Anti-Tampering Test Method	No	Specifies the elements of motor vehicle anti-tampering test methods. No Applicable Requirements
1200-3-29-.09	Motor Vehicle Inspection Program	No	Specifies who shall conduct the motor vehicle inspection program and how the program is to be conducted. No Applicable Requirements
1200-3-29-.10	Motor Vehicle Inspection Fee	No	Specifies who shall set fees and the amount of the fees. No Applicable Requirements
1200-3-29-.10	Waiver Provisions	No	Allows a person to operate a motor vehicle that fails to meet the applicablemotor vehicle emission performance test criteria. No Applicable Requirements
1200-3-29-.10	Area of Applicability	No	Specifies what areas are subject to the requirements. No Applicable Requirements

Citation	Title	Applicable Regulation	Comments
	CHAPTER 1200-3-30 **ACID PRECIPITATION CONTROL**		
1200-3-30-.01	Acid Rain Program General Provisions	Yes	Describes the general provisions of the Acid Rain Program, specifies the definitions of terms and measurements, abbreviations, and acronyms to be used in the Chapter, the applicability of the regulations, exemption for new sources, exemption for retired units and standard requirements to be met by applicable units. Applicable Requirements
1200-3-30-.02	Designated Representative	Yes	Describes the requirement for and responsibilities of the designated representative. Applicable Requirements
1200-3-30-.03	Acid Rain Permit Application	Yes	Specifies the requirement for the designated representative of any source with an affected unit to submit an Acid Rain permit application by specific dates and describes the implications of submitting a complete application. Applicable Requirements
1200-3-30-.04	Acid Rain Compliance Plan and Compliance Options	Yes	Specifies the requirement for including a complete compliance plan with an Acid Rain permit application and describes the content of the compliance plan and options for conditional approval and repowering extensions Applicable Requirements
1200-3-30-.05	Acid Rain Permit	Yes	Specifies the contents of an Acid Rain permit and the implications of a permit shield. Applicable Requirements
1200-3-30-.06	Acid Rain Permit Issuance Procedures	No	Describes the procedures to be followed by the Technical Secretary in issuing an Acid Rain permit and the procedures to be followed in the event of an appeal of an Acid Rain permit. No Applicable Requirements
1200-3-30-.07	Permit Revisions	Yes	Describes the permit revision process, the types of permit modifications and what qualifies for each type. Applicable Requirements

Citation	Title	Applicable Regulation	Comments
1200-3-30-.08	Compliance Certification	Yes	Specifies the requirement for submittal of an annual compliance certification report by the designated representative. Applicable Requirements
1200-3-30-.09	Nitrogen Oxides Emissions Reduction Program	No	Reserved
1200-3-30-.10	Sulfur Dioxide Opt-Ins	No	Reserved
CHAPTER 1200-3-31 CASE-BY-CASE DETERMINATION OF HAZARDOUS AIR POLLUTANT CONTROL REQUIREMENTS			
1200-3-31-.01	General Provisions	No	Reserved
1200-3-31-.02	Definitions	Yes	Provides definitions used in the chapter including a list of hazardous air pollutants, including an exclusion of electric utility steam generating units until EPA decides that they should be regulated pursuant to Section 112(n) of the Clean Air Act. No Applicable Requirement
1200-3-31-.03	Intent of the Board	Yes	Describes the intent of the Board in implementing the chapter and instructing the Technical Secretary on things to consider and requirements in setting more stringent requirements than those set by EPA. No Applicable Requirement
1200-3-31-.04	Standard for Existing Sources	Yes	Describes emission requirements for existing sources. No Applicable Requirement
1200-3-31-.05	Standard for New Sources	Yes	Describes emission requirements for new sources. No Applicable Requirement
1200-3-31-.06	Opportunity for Early Reductions Schedule	Yes	Describes provisions to be met to allow for 6 additional years to comply with future MACT requirements by taking early reductions in emissions before a MACTis established. No Applicable Requirement
1200-3-31-.07	Residual Risk and Revisions to MACT	Yes	Specifies required action to be taken if the existing MACT standards are insufficient to protect the public pursuant to the residual risk provisions of Section 112(f) of the Clean Air Act. Applicable Requirement

Citation	Title	Applicable Regulation	Comments
1200-3-31-.08 through 1200-3-31-.12	Reserved		
1200-3-31-.07	Perchloroethylene Air Emission Standards for Dry Cleaning Facilities	No	Provisions apply to the owner or operator of each dry cleaning facility that uses perchloroethylene. No Applicable Requirement
CHAPTER 1200-3-32 PREVENTION OF ACCIDENTAL RELEASES			
1200-3-32-.01	Purpose and Intent	No	Describes the purpose and intent of the Chapter. No Applicable Requirement
12003-32-.02	Definitions	Yes	Provides definitions specific to the Chapter. No Applicable Requirement
1200-3-32-.03	Duty to File Accidental Release Plans	Yes	Requires sources subject to Section 112(r) of the Clean Air Act to file any plan or submittal required with the Technical Secretary, describes the responsibility and authority of the Technical Secretary, and requires annual certification of compliance with the plan. Applicable Requirement
CHAPTER 1200-3-33 REPEALED			
CHAPTER 1200-3-34 CONFORMITY			
1200-3-34-.01	Conformity of Transportation Plans, Programs, and Projects	No	Describes the procedures for interagency consultation and resolution of conflicts before making conformity determinations and developing applicable implementation plans, specifies roles and responsibilities of various participants in the interagency, definitions of terms used, applicability of the requirements, specifies conformity determination criteria and procedures, requirements for adoption or approval of projects by recipients of funds designated under title 23 U.S.C. or the Federal Transit Act, procedures for determining regional transportation-related emissions, procedures for determining localized CO and PM_{10} concentrations, using the motor vehicle emissions budget, enforceability of design concept and scope and project-level mitigation and control measures, and a list of types of projects exempt from the conformity determination

Citation	Title	Applicable Regulation	Comments
			requirements. No Applicable Requirements
1200-3-34-.02	Conformity of General Federal Actions	Yes	Prohibits any department, agency or instrumentality of the Federal Government from engaging in, supporting or financially assisting any activity which does not conform to an applicable implementation plan with specified exceptions, defines terms used in the regulations, specifies the applicability of the requirements, specifies the requirements for a conformity analysis, reporting, public participation, frequency of determinations, criteria for determining conformity of general Federal actions, procedures for conformity determinations of general Federal actions, and the requirements for mitigation of air quality impacts. Applicable Requirements
CHAPTER 1200-3-36 MOTOR VEHICLE TAMPERING			
1200-3-36-.01	Purpose	No	Describes the purpose and content of the regulations. No Applicable Requirements
1200-3-36-.02	Definitions	Yes	Provides the definition of terms used in the regulations. No Applicable Requirements
1200-3-36-.03	Motor Vehicle Tampering Prohibited	Yes	Prohibits any person from tampering with of a motor vehicle or motor vehicle engine that is in compliance with federal motor vehicle standards. Applicable Requirements
1200-3-36-.04	Record Keeping Requirements	Yes	Requires maintaining complete record of all emission repairs for a minimum one year.. Applicable Requirements
1200-3-36-.05	Exemptions	Yes	Permits the Technical Secretary to exempt motor vehicles or motor vehicle engines from the rule. Applicable Requirements

U.S. Environmental Protection Agency (EPA)
Code of Federal Regulations (CFR) Title 40

40 CFR 52 – Approval and Promulgation of Implementation Plans

Permit number 567519

Part	Title	Applicable Regulations	Comment
52.01	Definitions	No	Provides information not regulatory in nature. No Applicable Requirements
52.02	Introduction	No	Outlines contents of Part and Administrator's approval process. No Applicable Requirements
52.03	Extensions (Removed)		
52.04	Classification of Regions	No	States the location of criteria used for area classifications. No Applicable Requirements
52.05	Public Availability of Emission Data	No	Indicates that each subpart includes Administrator's disapproval of plans and procedures for making emissions data available to the public and that the Administrator has promulgated requirements. No Applicable Requirements
52.06	Legal Authority	No	Reviews Administrator's actions when a plan does not contain demonstration of adequate legal authority. No Applicable Requirements
52.07	Control Strategies	No	Outlines approval procedures for control strategies contained in Plans. No Applicable Requirements
52.08	Rules and Regulations	No	Indicates that each subpart will identify only those rules and regulations which have been disapproved. No Applicable Requirements
52.09	Compliance Schedules	No	Indicates that each subpart will identify those compliance schedules which have been disapproved. It is also noted that individual source plans have not been evaluated. Finally, if a source is operating under a compliance plan under review by the Administrator, it must comply with the plan regardless of the approval status. No applicable requirements unless a specific compliance plan has been submitted to the Administrator..
52.10	Review of New Sources and Modifications	No	States that if a state NSR program does not meet specific requirements the Administrator has the authority to prevent construction or modification. No Applicable Requirements

40 CFR 52 – Approval and Promulgation of Implementation Plans

Permit number 567519

Part	Title	Applicable Regulations	Comment
52.11	Prevention of Air Pollution Emergency Episodes	No	Indicates that each subpart will identify those portions of the contingency plans which are disapproved. No Applicable Requirements
52.12	Source Surveillance	No	Indicates that each subpart will identify those portions of the source surveillance program which are disapproved. No Applicable Requirements
52.13	Air Quality Surveillance; Resources; Intergovernmental Cooperation	No	Indicates that each subpart will identify those portions of the air quality surveillance program which are disapproved. No Applicable Requirements
52.14	State Ambient Air Quality Standards	No	States that any state standard less stringent than a national standard will not be considered part of the plan. No Applicable Requirements
52.15	Public Availability of Plans	No	States the Plan must be made available to the Public. No Applicable Requirements
52.16	Submission to Administrator	Yes	Identifies where requests and reports required by regulations must be submitted. Applicable requirement if dictated by other regulation, or due to a request by the USEPA.
52.18	Abbreviations	No	Abbreviations are those contained in 40 CFR 60.
52.20	Attainment Dates for National Standards	No	Attainment dates are contained in each subpart for the affected areas. No Applicable Requirements
52.21	Prevention of Significant Deterioration of Air Quality	Yes	Outlines the PSD program for any plan for which that section has not been approved. The regulations contained herein are applicable to a source located in an attainment area. The regulations do not contain applicable requirements with respect to Title V. However, the terms and conditions attached to any permit issued pursuant to these regulations do constitute applicable requirements.
52.23	Violation and Enforcement	Yes	States violation of an applicable Plan, approved regulatory provision or permit condition is subject to enforcement under Section 113. No Applicable Requirements

Part	Title	Applicable Regulations	Comment
52.24	Statutory Restriction on New Sources (NSR)	Yes	Outlines the NSR program for any plan for which that section has not been approved. The regulations contained herein are applicable to a source located in an nonattainment area. The regulations do not contain applicable requirements with respect to Title V. However, the terms and conditions attached to any permit issued pursuant to these regulations do constitute applicable requirements.
52.26	Visibility Monitoring Strategy	No	Provides regulations for plans whose general visibility provisions have been disapproved. No action required by a source. No Applicable Requirements
52.27	Protection of Visibility from Sources in Attainment Areas	No	Provides regulations for plans whose visibility provisions for attainment areas have been disapproved. No action required by a source. No Applicable Requirements
52.28	Protection of Visibility from Sources in Nonattainment Areas	No	Provides regulations for plans whose visibility provisions for nonattainment areas have been disapproved. No action required by a source. No Applicable Requirements
52.29	Visibility Long-term Strategies	No	Provides regulations for plans whose visibility provisions for Class I areas have been disapproved. No action required by a source. No Applicable Requirements
52.30	Criteria for Limiting Application of Sanctions Under Section 110(m) of the Clean Air Act on a Statewide Basis	No	Describes criteria EPA is to consider in determining whether to limit sanctions after a deficiency in a SIP has been identified. No Applicable Requirements
52.31	Selection of Sequence of Mandatory Sanctions for Findings Made Pursuant to Section 179 of the Clean Air Act	No	Provides schedule and criteria for invoking emission offset sanctions and highway funding sanctions in nonattainment areas for which the Part D implementation plan revision has not been approved. No Applicable Requirements
52.32	Sanctions Following Findings of SIP inadequacy	No	Provides that the Administrator may determine that a state implementation plan is inadequate and start the sanction process outlined in Section 52.31. No Applicable Requirements

Part	Title	Applicable Regulations	Comment
52.33	Compliance certifications	No	Permits the use of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed No Applicable Requirements
52.34	Action on petitions submitted under Section 126 relating to emissions of nitrogen oxides	No	Section sets forth the Administrator's findings with respect to the 1-hour NAAQS for ozone that certain new and existing sources of emissions of NOx in certain States emit or would emit NOx in violation of the prohibition in section 110(a)(2)(D)(i)of the Clean Air Act (CAA) on emissions in amounts that contribute significantly to nonattainment in certain States that submitted petitions in 1997-1998 addressing such NOX emissions under section 126 of the CAA. No Applicable Requirements
Subpart RR - Tennessee			
52.2219	Reserved	No	Reserved
52.2220	Identification of Plan	Yes	Sets forth the applicable Tennessee State Implementation Plan and incorporates all EPA approvals. Applicable Requirement
52.2221	Classification of Regions	No	Specifies the priority classifications for all areas of the state. No Applicable Requirements
52.2222	Approval Status	No	Lists the approval status of the plan. No Applicable Requirements
52.2223	Compliance Schedules	Yes	Compliance schedules for owners or operators of boilers >250 million Btu/hr heat input who elect to meet requirements of TAPCR 1200-3-14 by either low-sulfur fuel or stack gas desulfurization. Applicable Requirements
52.2224	Legal Authority	No	Identifies specific areas lacking specific legal authority. No Applicable Requirements
52.2225	VOC Rule Deficiency Correction	No	Approves revisions concerning RACT rules and identifies specific deficiencies in Tennessee's, Nashville's and Memphis' regulations. No Applicable Requirements
52.2226	Extensions	No	Identifies the NAAQS compliance extensions granted the state by the administrator. No Applicable Requirements

Part	Title	Applicable Regulations	Comment
52.2227	Prevention Of Air Pollution Emergency Episodes	No	Identifies a deficiency in the state plan concerning mobile sources. No Applicable Requirements
52.2228	Review of New Sources and Modifications	No	State did not submit a plan for review of new or modified sources. Conditional approval of Nashville-Davidson County regulations. No Applicable Requirements
52.2229	Rules And Regulations	No	Specific rules of Memphis-Shelby County and Knox County are disapproved for inconsistencies with EPA policy and requirements. No Applicable Requirements
52.2230	Attainment Dates for National Standards	No	Lists the dates by which the NAAQS are to be attained by region. No Applicable Requirements
52.2231	Control Strategy: Sulfur Oxides and Particulate Matter	No	Conditional approval of Chattanooga TSP plan. Certification of emission limits not being based on dispersion techniques not permitted by EPA's stack height rule (excludes Johnsonville 1-10). No Applicable Requirements
52.2232	Reserved	No	Reserved
52.2233	Significant Deterioration of Air Quality	Yes	Disapproves paragraph 1200-3-9-.01(4)-(0)-2 concerning innovative control technology waivers. Also EPA retains authority for permits which involve vessel emissions where a source is not willing to include all vessel emissions in the definition of source. Applicable Requirements
52.2234	Visibility Protection	Yes	Part indicates the Plan is disapproved for visibility protection of Class I areas. Applicable Requirements
52.2235	Control Strategy: Ozone	No	Determines that Nashville ozone nonattainment area has attained the ozone standard and nonattainment provisions of the Clean Air Act do not apply so long as no violations of the standard are monitored. No Applicable Requirements
52.2236	Control Strategy; lead	No	Indicates acceptance of Tennessee’s maintenance plan for Fayette County lead nonattainment area. No Applicable Requirement

40 CFR 52 – Approval and Promulgation of Implementation Plans

Permit number 567519

Part	Title	Applicable Regulations	Comment
52.2237	NOx RACT and NOx conformity exemption	No	EPA approves Tennessee's RACT rule and request for NOx conformity exemption. No Applicable Requirement
52.2239	Original Identification of plan section	Yes	Section identifies the original "Tennessee Air Pollution Control Implementation Plan" and all revisions submitted by Tennessee that were federally approved prior to December 1. 1998. Applicable Requirement

40 CFR 58 – Ambient Air Quality Surveillance

Permit number 567519

Subpart	Title	Applicable Regulations	Comment
A	General Provisions	Yes	Contains definitions, states purpose and defines applicability which includes owners or operators of proposed sources. Applicable Requirements
B	Monitoring Criteria	Yes	Specifies monitoring criteria for monitoring networks including quality assurance requirements which specifies compliance with Appendix B for PSD monitors. No Applicable Requirements
C	State and Local Air Monitoring Stations (SLAMS)	No	Requires the establishment of SLAMS networks and describes monitoring program requirements for SLAMS networks. No Applicable Requirements
D	National Air Monitoring Stations (NAMS)	No	Requires the establishment of NAMS networks and describes monitoring program requirements for NAMS networks. No Applicable Requirements
E	Photochemical Assessment Monitoring Stations (PAMS)	No	Requires the establishment of PAMS networks and describes monitoring program requirements for PAMS networks. No Applicable Requirements
F	Air Quality Index Reporting	No	Requires states to report air quality indexes in areas with populations greater than specified. No Applicable Requirements
G	Federal Monitoring	No	Provides for establishing of federal monitoring networks under certain circumstances. No Applicable Requirements
App. A	Quality Assurance Requirements for State and Local Monitoring Stations (SLAMS)	No	Specifies quality assurance requirements for SLAMS networks. No Applicable Requirements
App. B	Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring	Yes	Specifies quality assurance requirements for PSD monitoring stations. No Applicable Requirements

Subpart	Title	Applicable Regulations	Comment
App. C	Ambient Air Quality Monitoring Methodology	No	Specifies monitoring methods to be used in SLAMS networks. No Applicable Requirements
App. D	Network Design for SLAMS, NAMS, and PAMS	No	Describes monitoring objectives and general criteria for establishing SLAMS, NAMS, and PAMS networks. No Applicable Requirements
App. E	Probe Siting Criteria for Ambient Air Quality Monitoring	No	Describes probe siting criteria for air monitors in SLAMS, NAMS, and PAMS networks. No Applicable Requirements
App. F	Annual SLAMS Air Quality Information	No	Describes information to be compiled and submitted annually to EPA for SLAMS stations. No Applicable Requirements
App. G	Uniform Air Quality Index and Daily Reporting	No	Describes the uniform air quality index to be used by States required to report indexes. No Applicable Requirements

Subpart	Standard of Performance For:	Proposed Date	Effective Date	Affected Unit	Comment
A	General Provisions		11/17/75	Yes	Applies to any source which contains an affected unit or facility designated in Part 60.
B	Adoption and Submittal of State Plans for Designated Facilities		11/17/75	No	Applies to State actions only.
C	Emission Guidelines and Compliance Times		10/18/77	No	No affected units
D	Fossil-Fuel Fired Steam Generators for Which Construction is Commenced after August 17, 1971	8/17/71	12/23/71	No	No affected units
Da	Electric Utility Steam Generating Units for Which Construction is Commenced after September 18, 1978	9/18/78	6/11/79	No	No affected units
Db	Industrial-Commercial-Institutional Steam Generating Units	6/19/84	11/25/86	No	No affected units
Dc	Small Industrial-Commercial-Institutional Steam Generating Units	6/9/89	9/12/90	No	No affected units
E	Incinerators	8/17/71	12/23/71	No	No affected units
Ea	Municipal Waste Combustors	12/20/89	8/12/91	No	No affected units
K	Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after June 11, 1973, and Prior to May 19, 1978	6/11/73	3/8/74	No	No affected units
Ka	Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after May 18, 1978, and Prior to July 23, 1984	5/18/78	4/5/80	No	No affected units
Kb	Storage Vessels for Volatile Organic Liquids for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984	7/23/84	4/8/87	No	No affected units
GG	Stationary Gas Turbines	10/3/77	9/10/79	No	No affected units
OOO	Nonmetallic Minerals Processing Plants	8/31/83	8/1/85	No	No affected units

Subpart	National Emission Standard For:	Affected Unit	Comment
A	General Provisions	Yes	Applies to any stationary source of a regulated pollutant for which a standard is prescribed in this Part.
C	Beryllium	No	No affected units
E	Mercury	No	No affected units
M	Asbestos	Yes	Renovation or demolition activities involving asbestos containing materials at any unit or facility is applicable (40 CFR 61.145, Standard for Demolition and Renovation). Likewise, should the "Source" apply asbestos containing materials by spraying, the requirements of 40 CFR 61.146 (Standard for Spraying) are applicable.
Y	Benzene Emissions from Benzene Storage Vessels	No	No affected units

40 CFR 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories

Permit number 567519

Subpart	Title	Affected Unit	Comment
A	General Provisions	No	These provisions are applicable when a subsequent subpart is applicable. No subparts are applicable to ASource≅.
B	Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Sections 112(g) and 112(j)	No	Applies to a major source of HAPs in a source category/subcategory for which EPA has failed to promulgate a standard by the 112(j) deadline. TVA Bull Run is not a listed applicable major HAP source.
D	Regulations Governing Compliance Extensions for Early Reductions of Hazardous Air Pollutants	No	Applicable only if TVA files an application for compliance extension for early reductions. No affected units. TVA Bull Run is not a listed applicable major HAP source.
H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	No	No affected units
Q	National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers	No	No affected units
T	National Emission Standards for Halogenated Solvent Cleaning	No	No affected units
YYYY	National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines	No	No affected units
ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	No	No affected units
DDDDD	National Emission Standards for Hazardous Air Pollutants for industrial, commercial, and institutional boilers and process heaters	No	No affected units

40 CFR 64 – Compliance Assurance Monitoring

Permit number 567519

Part	Title	Applicable Regulations	Comments
64.1	Definitions	No	Provides definitions for terms used in the regulation No Applicable Requirement
64.2	Applicability	Yes	Describes the general applicability of the regulation and specifies what emission limitation or standard and what units are exempt from the regulation. Applicable Requirement
64.3	Monitoring design criteria	Yes	Provides general criteria for monitoring design, performance criteria, evaluation factors and special criteria. Applicable Requirement
64.4	Submittal requirements	Yes	Specifies the information which the owner or operator of the source must submit to the regulatory authority concerning the monitoring system and documentation of compliance. Applicable Requirement
64.5	Deadlines for submittals	Yes	Specifies deadlines for submittal of required information. Applicable Requirement
64.6	Approval of monitoring	Yes	Requires the regulatory authority to act on monitoring submitted in the application and specifies minimum requirements for permit terms and conditions. Applicable Requirement
64.7	Operation of approved monitoring	Yes	Requires the owner or operator of the source to conduct monitoring in accordance with the issued part 70 or 71 permit, to provide proper maintenance of the monitors, when to collect acceptable data from the monitors, actions to be taken in response to excursions or exceedances during startup, shutdown, or malfunction conditions to minimize emissions and information needed to document such conditions, and what to do if emission limits are exceeded and the monitoring does not indicate the exceedances. Applicable Requirement
64.8	Quality improvement plan (QIP) requirements	Yes	Specifies when a QIP may be required, the elements contained in a QIP, when the owner or operator must develop a QIP, and when a QIP must be modified. Applicable Requirement
64.9	Reporting and recordkeeping requirements	Yes	Specifies what information must be reported as a minimum to the permitting authority and what records must be maintained and how to maintain the records. Applicable Requirement
64.10	Savings provisions	Yes	Indicates that compliance with this requirement does not affect compliance with other regulatory requirements or limits the authority of the administrator or permitting authority. Applicable Requirement

40 CFR 66 – Assessment And Collection Of Noncompliance Penalties by EPA

Permit number 567519

Part	Title	Applicable Regulations	Comment
Subpart A - Purpose and Scope			
66.1	Applicability and Effective Date	No	Describes applicability of this part to proceedings for the assessment by EPA of a noncompliance penalty. Not an Applicable Requirement
66.2	Program Description	No	Describes what is contained in part 66. Not an Applicable Requirement
66.3	Definitions	No	Provides definitions of terms used in this part. Not an Applicable Requirement
66.4	Limitation on Review of Regulations	Yes	Describes what may not be challenged, reviewed or re-examined in a hearing conducted under this part and specifies limitations on review. Applicable Requirement
66.5	Savings Clause	No	Specifies the impact of proceedings under this part on other proceedings. Not an Applicable Requirement
66.6	Effect of Litigation: Time Limits	No	Describes the impact of failure of meeting time limits contained in this part on other proceedings under these regulations. Not an Applicable Requirement
Subpart B - Notice of Noncompliance			
66.11	Issuance of Notices of Noncompliance	No	Specifies the responsibilities of the Administrator in issuing a notice of noncompliance. Not an Applicable Requirement
66.12	Content of Notices of Noncompliance	No	Describes the content of a notice of noncompliance. Not an Applicable Requirement
66.13	Duties of Source Owner or Operator Upon Receipt of a Notice of Noncompliance	Yes	Specifies the action a source owner or operator must take within 45 days of receipt of a notice of noncompliance. Applicable Requirement
Subpart C - Calculation of Noncompliance Penalties			

Part	Title	Applicable Regulations	Comment
66.21	How to Calculate the Penalty	Yes	Requires all penalty calculations be in accordance with the Technical Support Document and the Manual. Applicable Requirement
66.22	Contracting Out Penalty Calculation	No	Allows the Administrator to contract out the penalty calculation if the source owner or operator fails to carry out responsibilities under §66.13. Not an Applicable Requirement
66.23	Interim Recalculation of Penalty	Yes	Specifies action to be taken by the Administrator or source's owner if either feels that the penalty calculation is no longer accurate. Applicable Requirement
Subpart D - Exemption Requests; Revocation of Exemptions			
66.31	Exemptions Based on an Order, Extension or Suspension	Yes	Describes specific situations which are exempt from penalties and specifies the conditions for an exemption and the required demonstration by the source owner. Applicable Requirement
66.32	De Minimis Exemptions	Yes	Allows the Administrator to exempt an owner or operator from penalties for de minimis noncompliance upon petition for such exemption and specifies what the Administrator must consider and do in making the determination. Applicable Requirement
66.33	De Minimis Exemptions: Malfunctions	Yes	Allows the Administrator to exempt an owner or operator from penalties for de minimis noncompliance due to a malfunction upon petition demonstrating entitlement to such exemption and specifies what the Administrator must consider and do in making the determination. Applicable Requirement
66.34	Termination of Exemptions	No	Specifies when an exemption from penalty will be terminated and the actions required by the Administrator in terminating the exemption. Not an Applicable Requirement
66.35	Revocation of Exemptions	No	Specifies when an exemption from penalty will be revoked and the actions required by the Administrator in revoking the exemption. Not an Applicable Requirement
Subpart E - Decisions on Exemption Requests and Challenges to Notices of Noncompliance			

Part	Title	Applicable Regulations	Comment
66.41	Decision on Petitions	No	Describes the actions the Administrator must take within 30 days after receipt of a petition. Not an Applicable Requirement
66.42	Procedure for Hearings	No	Specifies procedures for holding hearings and the time frames for the Presiding Officer to issue an initial decision. Not an Applicable Requirement
66.43	Final Decision; Submission of Penalty Calculation	Yes	Requires the owner or operator to submit penalty calculations and payment within 45 days of an adverse Agency decision. Applicable Requirement
Subpart F - Review of Penalty Calculation			
66.51	Action Upon Receipt of Penalty Calculation	No	Describes action to be taken by the Administrator within 30 days of receipt of a penalty calculation. Not an Applicable Requirement
66.52	Petitions for Reconsideration of Calculation.	Yes	If an owner or operator wished to challenge EPA's recalculation of a penalty, they must file a petition within 45 days of receipt of notice containing specified information. Applicable Requirement
66.53	Decisions on Petitions	No	Describes action to be taken by the Administrator within 30 days of receipt of a petition for reconsideration. Not an Applicable Requirement
66.54	Procedures for Hearings	No	Describes how hearings are to be held and the issuance of decisions. Not an Applicable Requirement
Subpart G - Payment			
66.61	Duty to Pay	Yes	Specifies when payments of penalties must be made. Applicable Requirement
66.62	Method of Payment	Yes	Describes how payments are to be made. Applicable Requirement
66.63	Nonpayment Penalty	Yes	Specifies a nonpayment penalty for failure to make a timely payment of a penalty. Applicable Requirement

Part	Title	Applicable Regulations	Comment
Subpart H - Compliance and Final Adjustment			
66.71	Determination of Compliance	Yes	Requires the owner or operator paying a penalty to notify the Administrator when he believes the source is in full compliance and submit all necessary information. Specifies when the Administrator must make a determination of compliance. Provides for the owner or operator to petition for reconsideration or notify that the violated applicable requirement has been superseded and specifies when the Administrator must respond to the petition. Applicable Requirement
66.72	Additional Payment or Reimbursement	Yes	Specifies when the owner or operator is to submit recalculation of penalties after achieving compliance and what action the Administrator is to take. Applicable Requirement
66.73	Petition for Reconsideration and Procedure for Hearing	Yes	Specifies time frame and form for petitioning for reconsideration and evaluating and hearing the petition. Applicable Requirement
66.74	Payment and Reimbursement	Yes	Specifies how an adjusted penalty is to be paid or reimbursed and the assessment of interest or penalties. Applicable Requirement
Subpart I - Final Action			
66.81	Final Action	No	Describes what constitutes a final Agency action and specifies what final Agency actions are appealable. Not an Applicable Requirement
Subpart J - Supplemental Rules for Formal Adjudicatory Hearings			
66.91	Applicability of Supplemental Rules	No	Specifies what rules will govern all hearings held under this part. Not an Applicable Requirement
66.92	Commencement of Hearings	No	Specifies what actions must be taken upon the Administrator granting a hearing. Not an Applicable Requirement
66.93	Time Limits	No	Specifies when the Presiding Officer is to schedule a hearing and issue an initial decision. Not an Applicable Requirement
66.94	Presentation of Evidence	Yes	Specifies the sequence for the Administrator and the owner or operator to present evidence and what evidence is to be presented. Applicable Requirement

Part	Title	Applicable Regulations	Comment
66.95	Decisions of the Presiding Officer; Appeal to the Administrator	Yes	Specifies requirements for the Presiding Officer to issue decisions and calculate penalties. Also specifies procedures for appealing the issued decision. Applicable Requirement
Appendices to Part 66			
App. A	Technical Support Document		See Appendix A to Part 67
App. B	Instruction Manual		See Appendix B to Part 67
App. C	Computer Program		See Appendix C to Part 67

Part	Title	Applicable Regulations	Comment
Subpart A - General			
68.1	Scope	No	Describes the scope of part 68 provisions. Not an Applicable Requirement
68.3	Definitions	Yes	Provides definitions of terms used in this part. Applicable Requirement
68.10	Applicability	Yes	Details compliance dates and eligibility criteria for the 3 prevention programs. Applicable Requirement
68.12	General Requirements	Yes	Lists requirements for processes in each of the prevention programs. Applicable Requirement
68.15	Management	Yes	Describes management systems required for Programs 2 or 3. Applicable Requirement
Subpart B - Hazard Assessment			
68.20	Applicability	Yes	Specifies hazard assessment requirements for each program. Applicable Requirement
68.22	Offsite Consequence Analysis Parameters	Yes	Lists parameters to be used in offsite consequence analyses. Applicable Requirement
68.25	Worst-Case Release Scenario Analysis	Yes	Details methodologies to be used in worst-case release analyses. Applicable Requirement
68.28	Alternative Release Scenario Analysis	Yes	Provides details on alternative release scenario analyses. Applicable Requirement
68.30	Defining Offsite Impacts - Population	Yes	Requires estimation of populations potentially affected by releases. Applicable Requirement
68.33	Defining Offsite Impacts - Environment	Yes	Requires identification of environmental receptors potentially affected. Applicable Requirement

Part	Title	Applicable Regulations	Comment
68.36	Review and Update	Yes	Requires updates of offsite consequence analyses every 5 years or with significant changes. Applicable Requirement
68.39	Documentation	Yes	Lists records on offsite consequence analyses to be retained on site. Applicable Requirement
68.42	Five-year Accident History	Yes	Requires accident histories for releases causing deaths, injuries, or significant property damages. Applicable Requirement
Subpart C - Program 2 Prevention Program			
68.48	Safety Information	Yes	Details safety information that sources are required to develop. Applicable Requirement
68.50	Hazard Review	Yes	Requires review of hazards associated with substances and processes. Applicable Requirement
68.52	Operating Procedures	Yes	Requires development of procedures for safe process operation. Applicable Requirement
68.54	Training	Yes	Requires employees be trained in the process operating procedures. Applicable Requirement
68.56	Maintenance	Yes	Requires maintenance procedures be developed for processes. Applicable Requirement
68.58	Compliance Audits	Yes	Requires an audit of compliance with provisions of this subpart every 3 years. Applicable Requirement
68.60	Incident Investigation	Yes	Details investigation required for any incident that resulted in, or could have caused, a catastrophic release. Applicable Requirement
Subpart D - Program 3 Prevention Program			
68.65	Process Safety Information	Yes	Requires compilation of process safety information. Applicable Requirement

40 CFR 68 – Chemical Accident Prevention Provisions

Permit number 567519

Part	Title	Applicable Regulations	Comment
68.67	Process Hazard Analysis	Yes	Requires performance of an initial process hazard analysis, with updates every 5 years, and establishment of a system to address findings and recommendations from the analysis. Applicable Requirement
68.69	Operating Procedures	Yes	Requires development of procedures for safe process operation. Applicable Requirement
68.71	Training	Yes	Requires employees be trained in the process operating procedures. Applicable Requirement
68.73	Mechanical Integrity	Yes	Requires development of maintenance procedures, employee training, and inspection and testing for specified process equipment. Applicable Requirement
68.75	Management of Change	Yes	Requires development of procedures to manage process changes. Applicable Requirement
68.77	Pre-startup Review	Yes	Requires performance of a pre-startup safety review for new and modified sources. Applicable Requirement
68.79	Compliance Audits	Yes	Requires an audit of compliance with provisions of this subpart every 3 years. Applicable Requirement
68.81	Incident Investigation	Yes	Details investigation required for any incident that resulted in, or could have caused, a catastrophic release. Applicable Requirement
68.83	Employee Participation	Yes	Requires consultation with employees and their representatives on process safety matters. Applicable Requirement
68.85	Hot Work Permit	Yes	Requires issuance of an internal permit for welding and similar operations on or near covered processes. Applicable Requirement
68.87	Contractors	Yes	Specifies that contractors are to be informed about process safety procedures. Applicable Requirement

Part	Title	Applicable Regulations	Comment
Subpart E - Emergency Response			
68.90	Applicability	Yes	Details exemption from emergency response program requirements. Applicable Requirement
68.95	Emergency Response Program	Yes	Requires development of emergency response program with specified elements. Applicable Requirement
Subpart F - Regulated Substances for Accidental Release Prevention			
68.100	Purpose	No	Establishes purpose of this subpart. Not an Applicable Requirement
68.115	Threshold Determination	Yes	Details procedures to determine whether a threshold quantity of a regulated substance is present. Applicable Requirement
68.120	Petition Process	Yes	Specifies requirements for petitions to modify list of regulated substances. Applicable Requirement
68.125	Exemptions	No	Provides an exemption for ammonia used in farming. Applicable Requirement
68.126	Exclusion	No	Provides an exclusion for flammable substances used as fuel or held for sale as fuel at retail facilities. Applicable Requirement
68.130	List of Substances	Yes	Establishes the list of regulated substances. Applicable Requirement
Subpart G - Risk Management Plan			
68.150	Submission	Yes	Requires submittal of a single Risk Management Plan (RMP) for all covered processes. Applicable Requirement
68.151	Assertion of Claims of Confidential	Yes	Permits a source to assert that some information is confidential business information, specifies what

Part	Title	Applicable Regulations	Comment
	Business Information		information can not be confidential and what information must be submitted to EPA. Applicable Requirement
68.152	Substantiating Claims of Confidential Business Information	Yes	Requirements to substantiate a claim of CBI and how the information must be submitted to EPA. Applicable Requirement
68.155	Executive Summary	Yes	Details requirements for the RMP executive summary. Applicable Requirement
68.160	Registration	Yes	Specifies identifying information to be provided in the RMP. Applicable Requirement
68.165	Offsite Consequence Analysis	Yes	Specifies data on offsite consequence analysis to be given in the RMP. Applicable Requirement
68.168	Five-year Accident History	Yes	Specifies data on 5-year accident history to be given in the RMP. Applicable Requirement
68.170	Prevention Program/Program 2	Yes	Specifies data on Program 2 processes to be given in the RMP. Applicable Requirement
68.175	Prevention Program/Program 3	Yes	Specifies data on Program 3 processes to be given in the RMP. Applicable Requirement
68.180	Emergency Response Program	Yes	Specifies information on emergency response plan to be given in the RMP. Applicable Requirement
68.185	Certification	Yes	Details requirements for certification to be given in the RMP. Applicable Requirement
68.190	Updates	Yes	Details requirements for RMP updates at least every 5 years. Applicable Requirement
68.195	Required Corrections	Yes	Requirements for submitting specified corrections to an RMP. Applicable Requirement
Subpart H - Other Requirements			

Part	Title	Applicable Regulations	Comment
68.200	Recordkeeping	Yes	Requires maintenance of relevant records for 5 years. Applicable Requirement
68.210	Availability of Information to the Public	Yes	Specifies that the RMP shall be available to the public. Applicable Requirement
68.215	Permit Content and Air Permitting Authority or Designated Agency Requirements	Yes	Details interface with Part 70 Operating Permit program. Applicable Requirement
68.220	Audits	Yes	Provides for RMP audits by implementing agency with mechanism for requiring revisions in the RMP. Applicable Requirement
Appendices to Part 68			
App. A	Table of Toxic Endpoints		Toxic endpoints to be used in offsite consequence analyses

40 CFR 70 – State Operating Permit Programs

Permit number 567519

Part	Title	Applicable Regulations	Comment
70.1	Program Overview	No	Provides an overview of the Title V permit program, allows states to establish additional or more stringent requirements, includes Title IV permits in the Title V program, and allows the coordination of the issuance of the permit with permits under RCRA and the Clean Water Act. Not an Applicable Requirement
70.2	Definitions	No	Provides definitions of terms used in this part. Not an Applicable Requirement
70.3	Applicability	Yes	Specifies what sources must have a permit and what sources are exempt from the permitting requirements and allows sources not subject to permits to opt into the permit program. Requires inclusion of fugitive emissions in the same manner as stack emissions. Applicable Requirement
70.4	State Program Submittals and Transition	Yes	Requires the Governor of each state to submit by a specified deadline a proposed part 70 program and specifies the elements of a program that must be contained in the proposed program for approval. Allows the Administrator to grant full, partial, or interim approval of programs under certain conditions and specifies state action in response to approval. Applicable Requirement
70.5	Permit Application	Yes	Requires the owner or operator of a part 70 source to submit a timely and complete permit application and specifies the time frames for submittal of a complete application. Requires states to provide standard application forms and specifies what the application form must include and the information that the owner or operator of the source must provide. Allows the state to develop a list of insignificant sources which may be exempt from the permitting requirements. Applicable Requirement
70.6	Permit Content	Yes	Specifies the standard requirements and content of a permit issued under this part. Requires the permit to be federally enforceable and specify compliance requirements. Provides for general permits and permits for temporary sources. Allows for a permit shield to be granted. Defines what is an emergency and how it may be used as a defense for noncompliance with a permit condition. Applicable Requirement

Part	Title	Applicable Regulations	Comment
70.7	Permit Issuance, Renewal, Reopenings, and Revisions	Yes	Specifies the conditions under which a permit may be issued and prohibits a part 70 source from operating without a permit unless it has submitted a timely and complete application. Requires that permit renewal applications be timely and complete and subject to the same procedural requirements as an initial permit. Defines what an administrative permit amendment is and when it can be used. Defines a permit modification and specifies when and how it may be used. Provides for reopening of a permit for cause. Allows for public participation. Applicable Requirement
70.8	Permit Review by EPA and Affected States	No	Requires that the Administrator and affected states review permits before issuance and submit recommendations and objections to the permitting authority. Specifies EPA's role and responsibility in issuing a permit. Provides for public petition to the Administrator objecting to the issuance of a permit and specifies EPA action in response to a petition. Prohibits default issuance of a permit. Not an Applicable Requirement
70.9	Fee Determination and Certification	Yes	Requires owners and operators of a part 70 source to pay a fee and requires states to develop a fee program according to specified requirements that cover the cost of implementing the permit program. Applicable Requirement
70.10	Federal Oversight and Sanctions	No	Provides for federal oversight of the states permit program and specifies the actions and sanctions to be taken by the Administrator if a state fails to submit or implement a permit program. Specifies criteria for the withdrawal of a state program and provides for the federal collection of fees. Not an Applicable Requirement
70.11	Requirements for Enforcement Authority	No	Specifies required enforcement authority that each approved program must contain. Not an Applicable Requirement

Part	Title	Applicable Regulation	Comment
Subpart A - Acid Rain Program General Provisions			
72.1	Purpose and Scope	No	Provides the purpose and scope of the regulations in this part. Not an Applicable Requirement
72.2	Definitions	Yes	Provides definitions of terms used in this regulation. Not an Applicable Requirement
72.3	Measurements, Abbreviations, and Acronyms	Yes	Provides measurements, abbreviations, and acronyms used in this regulation. Not an Applicable Requirement
72.4	Federal Authority	Yes	Identifies authority reserved to the Administrator. Not an Applicable Requirement
72.5	State Authority	Yes	Allows states to adopt regulations not less stringent than EPA regulations. Not an Applicable Requirement
72.6	Applicability	Yes	Identifies what are affected units to which these regulations are applicable and provides for petition for determination of an affected unit. Applicable Requirement
72.7	New Units Exemption	Yes	Provides for the exemption of certain new utility units from the requirements. Not an Applicable Requirement
72.8	Retired Units Exemption	Yes	Provides for the exemption of units permanently retired and the issuance of a Phase II permit. Applicable Requirement
72.9	Standard Requirements	Yes	Requires sources to apply for an Acid Rain permit, operate in compliance with the application or permit, including monitoring requirements, sulfur dioxide requirements, nitrogen oxides requirements, excess emissions requirements, and recordkeeping and reporting requirements. Applicable Requirement
72.10	Availability of Information	No	Provides for the availability of information to the public. Not an Applicable Requirement
72.11	Computation of Time	Yes	Specifies when a time period is to begin on the occurrence of an act or event. Applicable Requirement

Part	Title	Applicable Regulation	Comment
72.12	Administrative Appeals	Yes	Provides for procedures for appeals of decisions of the Administrator. Applicable Requirement
72.13	Incorporation by Reference	Yes	Incorporates certain ASTM methods by reference. Applicable Requirement
Subpart B - Designated Representative			
72.20	Authorization and Responsibilities of the Designated Representative	Yes	Requires that a designated representative be identified for a source in accordance with certain requirements. Applicable Requirement
72.21	Submissions	Yes	Requires submission of Acid Rain Program submittals containing certain certifications by the designated representative to the Administrator and the owners or operators of affected units. Applicable Requirement
72.22	Alternate Designated Representative	Yes	Provides for the designation of an alternate designated representative. Applicable Requirement
72.23	Changing the Designated Representative, Alternate Designated Representative; Changes in the Owners and Operators	Yes	Provides for the changing of designated and alternate designated representatives, and owners and operators with certain conditions. Applicable Requirement
72.24	Certificate of Representation	Yes	Specifies the contents of a complete certificate of representation. Applicable Requirement
72.25	Objections	No	Specifies the effect of objections submitted to the Administrator and prohibits the Administrator from adjudicating any private legal dispute concerning actions of designated representatives. Not an Applicable Requirement
Subpart C - Acid Rain Permit Applications			
72.30	Requirement to Apply	Yes	Requires designated representatives to submit complete Acid Rain permit applications by applicable deadlines. Applicable Requirement

Part	Title	Applicable Regulation	Comment
72.31	Information Requirements for Acid Rain Permit Applications	Yes	Identifies specific information required for Acid Rain permit applications Applicable Requirement
72.32	Permit Application Shield and Binding Effect of Permit Application	Yes	Provides for an application shield upon submittal of a complete application and binds the source to operating according to the provisions in the application upon submittal of the application. Applicable Requirement
72.33	Identification of Dispatch System	Yes	Provides for the identification of dispatch systems for Phase I units. Applicable Requirement
Subpart D - Acid Rain Compliance Plan and Compliance Options			
72.40	General	Yes	Specifies the content and conditions of compliance plans and compliance options to be contained in an Acid Rain permit application. Applicable Requirement
72.41	Phase I Substitution Plans	No	Allows for the inclusion in the permit application of a substitution plan for Phase I units only. Specifies content and conditions of such a plan. Not an Applicable Requirement
72.42	Phase I Extension Plans	No	Provides for a 2-year extension of the deadline for meeting Phase I sulfur dioxide emission reduction requirements. Specifies the content of the required Early Ranking Application and the Phase I Extension Plan and conditions of an extension. Not an Applicable Requirement
72.43	Phase I Reduced Utilization Plans	No	Requires the inclusion of a reduced utilization plan in a Phase I permit application if the owner/operators plan to reduce utilization of a Phase I unit by shifting generation to another unit or through energy conservation. Specifies the contents of a reduced utilization plan and contains special provisions. Not an Applicable Requirement
72.44	Phase II Repowering Extensions	Yes	Allows for extension of Phase II compliance for units being repowered by qualifying repowering technology. Requires the submittal of a petition for approval of repowering technology and a repowering extension plan and specifies the content of such petition and plan. Applicable Requirement
Subpart E - Acid Rain Permit Contents			

Part	Title	Applicable Regulation	Comment
72.50	General	Yes	Specifies contents of an acid rain permit. Applicable Requirement
72.51	Permit Shield	Yes	Affected units operated in accordance with the acid rain permit are deemed to be operating in compliance with the acid rain program. Applicable Requirement
Subpart F - Federal Acid Rain Permit Issuance Procedures			
72.60	General	No	Describes the scope of the subpart and specifies a six month deadline for approval or disapproval of a permit application after receipt of a complete application. Not an Applicable Requirement.
72.61	Completeness	Yes	Specifies a 30 day time period for the Administrator to determine the completeness of an application and requires the designated representative to submit any supplemental requested information to the Administrator within 30 days of the Administrator=s request. Applicable Requirement
72.62	Draft Permit	Yes	The Administrator will issue a draft permit after receipt of a complete application. Provides for a 30 day public comment period on the draft permit. Not an Applicable Requirement
72.63	Administrative Record	Yes	Requires the Administrator to prepare an administrative record for an acid rain permit or denial of a permit and specifies the content of the records. Not an Applicable Requirement
72.64	Statement of Basis	Yes	Specifies what a statement of basis will contain. Not an Applicable Requirement
72.65	Public Notice of Opportunities for Public Comment	Yes	Requires the Administrator to give public notice of a draft permit or denial and opportunity for public review and comment and specifies the content of such public notice. Not an Applicable Requirement

Part	Title	Applicable Regulation	Comment
72.66	Public Comments	Yes	Requires submittal of written comments from the public and specifies the form of the comment and limitations on the contents of public comments. Not an Applicable Requirement
72.67	Opportunity for Public Hearing	Yes	Provides opportunity for public hearing and allows the Administrator to hold a public hearing on his own motion or at the request of any person. Not an Applicable Requirement
72.68	Response to Comments	Yes	Requires the Administrator to consider comments received during public comment or public hearing, identify changes to draft permit and state reason for change and briefly describe and respond to relevant comments. Not an Applicable Requirement
72.69	Issuance and Effective Date of Acid Rain Permits	Yes	Requires the Administrator to issue or deny a permit after close of the public comment period. The term of the permit will be for 5 years and will take effect on January 1, 1995. Not an Applicable Requirement
Subpart G - Acid Rain Phase II Implementation			
72.70	Relationship to Title V Operating Permit Program	Yes	Requires each state permitting authority to incorporate Acid Rain Program requirements into each affected sources permit Not an Applicable Requirement
72.71	Acceptance of State and Rain Programs - General	Yes	Requires each state to submit to the Administrator an operating permit program meeting Title V requirements. Upon approval of a state program, the Administrator will suspend federal issuance of Phase II acid rain permits. The Administrator will issue all Phase I acid rain permits. Not an Applicable Requirement
72.72	Criteria for State Operating Permit Program	Yes	Specifies certain criteria and requirements for an approvable state permitting program to incorporate acid rain program requirements. Not an Applicable Requirement
72.73	State Issuance of Phase II Permits	Yes	Specifies the responsibilities of states with full, interim, or partial permit program approvals to issue Phase II permits and the dates by which the permits are to be issued and the term of the permits. Applicable Requirement
72.74	Federal Issuance of Phase II Permits	Yes	Provides for the Administrator to issue the Phase II acid rain permits in states which do not have a

Part	Title	Applicable Regulation	Comment
			full, interim, or partially approved permit program and specifies the dates for issuance of the permit. The Administrator will suspend federal issuance of the permit after approval of the state program. Applicable Requirement
Subpart H - Permit Revisions			
72.80	General	Yes	Describes general requirements governing the Administrator or state revision of an acid rain permit. Applicable Requirement
72.81	Permit Modifications	Yes	Specifies what permit revisions shall follow the permit modification procedures and the permit issuance requirements that the modifications must follow. Applicable Requirement
72.82	Fast-track Modifications	Yes	Specifies the responsibilities of the designated representative in requesting a fast-track modification, the procedures to be followed and the time frames for processing the modification request. Applicable Requirement
72.83	Administrative Permit Amendment	Yes	Specifies the type of permit revisions that shall follow the administrative permit amendment procedures. Applicable Requirement
72.84	Automatic Permit Amendment	Yes	Specifies the permit revisions that shall be deemed to automatically amend an acid rain permit. Applicable Requirement
72.85	Permit Reopenings	Yes	Describes when and how a permit is to be reopened. Applicable Requirement
Subpart I - Compliance Certification			
72.90	Annual Compliance Certification Report	Yes	Specifies the deadline for submitting the annual report, the contents of the report and what the designated representative is certifying compliance with. Applicable Requirement

Part	Title	Applicable Regulation	Comment
72.91	Phase I Unit Adjusted Utilization	No	Requires to be included in the annual certification report for Phase I units the adjusted utilization of the unit for the year and a confirmation report if a units annual compliance certification report estimates kilowatt hour savings or improvement in heat rate from energy conservation or improved efficiency under a reduced utilization plan. Not an Applicable Requirement
72.92	Phase I Unit Allowance Surrender	No	If a Phase I unit's adjusted utilization for the year is greater than zero, the report shall include the number of allowances that shall be surrendered along with other specified information. Not an Applicable Requirement
72.93	Units With Phase I Extension Plans	No	Requires inclusion in the annual report for calendar year 1997 the start-up test results upon which the vendor is released from liability under the vendor certification of guaranteed sulfur dioxide removal efficiency. Not an Applicable Requirement
72.94	Units With Repowering Extension Plans	No	Identifies specific information concerning design, engineering and contract requirements which the designated representative must submit by January 1, 2000 for units under a repowering extension plan, and when certain notifications must be given. Not an Applicable Requirement
72.95	Allowance Deduction Formula	Yes	Provides a formula to be used to determine the total number of allowances to be deducted for the calendar year from the allowances held in a unit’s subaccount. Applicable Requirement
72.96	Administrator's Action on Compliance Certifications	No	Describes actions the Administrator may take concerning any compliance certification. Not an Applicable Requirement
App. A	Methodology for Annualization of Emissions Limits	Yes	Specifies a method for determining the annualized emission limit for affected units. Applicable Requirement
App. B	Methodology for Conversion of Emissions Limits	Yes	Specifies a methodology for conversion of various emission limits to pounds of SO_2 per million Btu. Applicable Requirement
App. C	Actual 1985 Yearly SO_2 Emissions Calculation	No	Specifies the equation to be used to calculate the yearly SO_2 emissions. Not Applicable Requirement
App. D	Calculation of Potential Electric	Yes	Specifies the method for calculating the potential electric output capacity of a unit.

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Part	Title	Applicable Regulation	Comment
	Output Capacity		Applicable Requirement

Part	Title	Applicable Regulation	Comment
Subpart A - Background and Summary			
73.1	Purpose and Scope	No	Describes the purpose and scope of this Part. Not an Applicable Requirement
73.2	Applicability	No	Specifies to whom this Part is applicable. Not an Applicable Requirement
73.3	General	Yes	Identifies requirements from other Parts that are applicable to this Part. Applicable Requirement
Subpart B - Allowance Allocations			
73.10	Initial Allocations for Phase I and Phase II	Yes	Specifies Phase I and Phase II allowances to be allocated to affected units accounts. Applicable Requirement
73.11	Reserved		
73.12	Rounding Procedures	No	Requires allowances to be allocated as whole allowances and specifies how allowances are to be rounded. Not an Applicable Requirement
73.13	Procedures for Submittals	Yes	Specifies how submittals are to be made and procedures for appealing decisions as to eligibility or allocation of allowances. Applicable Requirement
73.14	Reserved		
73.15	Reserved		
73.16	Reserved		
73.17	Reserved		
73.18	Submittal Procedures for Units Commencing Commercial Operation during the Period From 1/1/93 Through 12/31/95	No	Describes eligibility of a unit, when to submit application for allowances and how commencement of commercial operation is determined. Not an Applicable Requirement

Part	Title	Applicable Regulation	Comment
73.19	Certain Units With Declining SO_2 Rates	No	Specifies eligibility of units for this section and submittal procedures to be eligible for allowance allocations under this section. Not an Applicable Requirement
73.20	Phase II Early Reduction Credits	No	Specifies eligibility of Phase II units to obtain credits for early reduction of SO_2 emissions. Not an Applicable Requirement
73.21	Phase II Repowering Allowances	No	Specifies how repowering allowances are determined and allocated. Not an Applicable Requirement
73.22	Reserved		
73.23	Reserved		
73.24	Reserved		
73.25	Phase I Extension Reserve	No	Describes how the reserve is established, how the reserve is allocated and what happens to the remaining allowances. Not an Applicable Requirement
73.26	Conservation and Renewable Energy Reserve	No	Describes the establishment of the reserve and the distribution of allowances in the reserve. Not an Applicable Requirement
73.27	Special Allowance Reserve	No	Describes the establishment of the reserve, the reallocation of allowances and the distribution of proceeds from the auctions and sales of allowances. Not an Applicable Requirement
Subpart C - Allowance Tracking System			
73.30	Allowance Tracking System Accounts	Yes	Describes the nature and function of the allowance tracking system accounts. Applicable Requirement
73.31	Establishment of Accounts	Yes	Describes requirements for establishing accounts and specifies the requirements for opening an account. Applicable Requirement

Part	Title	Applicable Regulation	Comment
73.32	Allowance Account Contents	Yes	Describes the content of accounts. Applicable Requirement
73.33	Authorized Account Representative	Yes	Describes the responsibilities of the authorized account representative and allows for the designation of an alternate authorized account representative. Applicable Requirement
73.34	Recordation in Accounts	No	Specifies requirements for the Administrator for recording all allowances and deductions in accounts. Not an Applicable Requirement
73.35	Compliance	Yes	Describes the use of allowances in accounts for compliance. Applicable Requirement
73.36	Banking	Yes	Provides for the banking of allowances not used in a particular year. Applicable Requirement
73.37	Account Error and Dispute Resolution	Yes	Provides for notification of claim of account error, specifies what must be in a notification, and describes the process for dispute resolution. Applicable Requirement
73.38	Closing Accounts	Yes	Describes provisions for closing an account. Applicable Requirement
Subpart D - Allowance Transfers			
73.50	Scope and Submission of Transfers	Yes	Describes the scope of the transfers to and from accounts and requires authorized account representatives to request transfers according to a format. Applicable Requirement
73.51	Prohibition	No	Prohibits Administrator from making certain transfers. Not an Applicable Requirement
73.52	EPA Recordation	No	Requires the Administrator to record allowance transfers provided certain information is submitted. Not an Applicable Requirement
73.53	Notification	No	Specifies requirements for the Administrator to notify the authorized account representative of recordation or non-recordation of transfers. Not an Applicable Requirement

Part	Title	Applicable Regulation	Comment
Subpart E - Auctions, Direct Sales, and Independent Power Producers Written Guarantee			
73.70	Auctions	No	Requires the Administrator to conduct annual auctions of allowances and specifies requirements for conducting such auctions Not an Applicable Requirement
73.71	Bidding	No	Specifies who may bid and how the bidding is to be conducted. Not an Applicable Requirement
73.72	Direct Sales	No	Requires the Administrator to conduct sales of allowances annually, establishes the price of allowances, and specifies how the sales are to be conducted. Not an Applicable Requirement
73.73	Delegation of Auctions and Sales and Termination of Auctions and Sales	No	Allows the Administrator to delegate the conduct of auctions and sales and provides for the termination of auctions and sales. Not an Applicable Requirement
Subpart F - Energy Conservation and Renewable Energy Reserve			
73.80	Operation of Allowance Reserve Program for Conservation and Renewable Energy	No	Requires the Administrator to allocate allowances from the Conservation and Renewable Energy Reserve for qualifying measures and specifies the termination of the reserve. Not an Applicable Requirement
73.81	Qualified Conservation Measures and Renewable Energy Generation	No	Describes what is a qualified conservation measure and renewable energy generation. Not an Applicable Requirement
73.82	Application for Allowances from Reserve Program	No	Specifies the requirements for an application for allowances from the Reserve Program. Not an Applicable Requirement
73.83	Secretary of Energy's Action on Net Income Neutrality Application	No	Specifies the actions the Secretary of Energy must take in processing and certifying net income neutrality applications. Not an Applicable Requirement
73.84	Administrator's Action on Applications	No	Specifies the actions the Administrator must take in processing and approving Allowance Reserve applications. Not an Applicable Requirement

Part	Title	Applicable Regulation	Comment
73.85	Administrator Review of the Reserve Program	No	Specifies when the Administrator must review the reserve program and actions to be taken upon review. Not an Applicable Requirement
73.86	State Regulatory Autonomy	No	Allows for states to provide incentives to encourage investment in conservation measures or renewable energy generation. Not an Applicable Requirement
App. A	List of Qualified Energy Conservation Measures, Qualified Renewable Generation, and Measures Applicable for Reduced Utilization	No	Provides a list of approved qualifying measures. Not an Applicable Requirement
Subpart G - Small Diesel Refineries			
73.90	Allowance Allocations for Small Diesel Refineries	No	Specifies the contents of an application for certification of eligibility of a refinery and the request for allowances and how the Administrator will allocate allowances. Not an Applicable Requirement

Part	Title	Applicable Regulations	Comment
Subpart A - General			
75.1	Purpose and Scope	No	Describes the purpose and scope of part 75 to establish monitoring, recordkeeping and reporting requirements and statistical estimation procedures for missing data. Not an Applicable Requirement
75.2	Applicability	Yes	Specifies the applicability of the regulations to affected units subject to Acid Rain emission limitations or reductions requirements. Applicable Requirement
75.3	General Acid Rain Program Provisions	Yes	Specifies the applicability of other parts to this part 75. Applicable Requirement
75.4	Compliance Dates	Yes	The provisions of this part apply to each affected unit on 2/10/93 and required completion of all certification tests for Phase I units by 11/15/93 and 1/1/95 for Phase II units. Applicable Requirement
75.5	Prohibitions	Yes	Prohibits operation of any affected unit in violation of any applicable regulation in this part, use of any nonapproved monitoring system or reference method, discharge of unaccounted emissions, or unpermissable disruption of monitoring equipment. Applicable Requirement
75.6	Incorporation by Reference	Yes	Incorporates by reference specified ASTM and ASME test methods and procedures. Applicable Requirement
75.7	Reserved		
75.8	Reserved		
Subpart B - Monitoring Provisions			
75.10	General Operating Requirements	Yes	Specifies general operating requirements for the measurement of opacity, SO_2, NO_x, CO_2, heat input and monitoring of operating parameters. Applicable Requirement
75.11	Specific Provisions for	Yes	Describes specific monitoring requirements for certain situations and different fuels.

Part	Title	Applicable Regulations	Comment
	Monitoring SO_2 Emissions (SO_2 and flow monitors)		Applicable Requirement
75.12	Specific Provisions for Monitoring NO_x Emission Rate (NO_x and diluent gas monitors)	Yes	Describes specific monitoring requirements for certain situations and different fuels and the calculation of NO_x emission rates. Applicable Requirement
75.13	Specific Provisions for Monitoring CO_2 Emissions	Yes	Describes specific monitoring requirements for monitoring CO_2 and the calculation of CO_2 emission rates. Applicable Requirement
75.14	Specific Provisions for Monitoring Opacity	Yes	Describes specific monitoring requirements for certain situations and different fuels and sources exempt from monitoring. Applicable Requirement
75.15	Specific Provisions for Monitoring SO_2 Emissions Removal by Qualifying Phase I Technology	Yes	Describes specific additional monitoring requirements for certain qualifying emissions removal technology and calculations necessary to demonstrate emissions removal efficiency. Applicable Requirement
75.16	Special Provisions for Monitoring Emissions from Common, Bypass, and Multiple Stacks for SO_2 Emissions and Heat Input Determinations	Yes	Describes specific provisions for monitoring SO_2 and heat input determinations for emissions from common, bypass, and multiple stacks for Phase I and Phase II units. Applicable Requirement
75.17	Special Provisions for Monitoring Emissions From Common, Bypass, and Multiple Stacks for NO_x Emission Rate	Yes	Describes specific provisions for monitoring NO_x emissions from common, bypass, and multiple stacks. Applicable Requirement
75.18	Specific Provisions for Monitoring Emissions From Common and Bypass Stacks for Opacity	Yes	Describes specific provisions for monitoring opacity from common and bypass stacks. Applicable Requirement
75.19		Yes	Describes specific provisions for applicable units to use the low mass emissions expected

Part	Title	Applicable Regulations	Comment
	Optional SO2, NOX, and CO2 emissions calculation for low mass emissions (LME) units		methodology for determining hourly heat input and hourly SO_2, NO_x, CO_2 emissions. Applicable Requirement

Subpart C - Operation and Maintenance Requirements			
75.20	Initial Certification and Recertification Procedures	Yes	Specifies the process for initial certification or recertification of required monitoring, testing notification and application for certification requirements. Applicable Requirement
75.21	Quality Assurance and Quality Control Requirements	Yes	Requires the operation, calibration, and maintenance of continuous monitoring systems according to specified quality assurance and quality control procedures. Applicable Requirement
75.22	Reference Test Methods	Yes	Specifies reference test methods included in appendix A to part 60 to be used for certification or recertification tests and quality assurance and quality control procedures. Applicable Requirement
75.23	Alternatives to Standards Incorporated by Reference	Yes	Specifies procedures for petitioning for an alternative to any standard incorporated by reference and prescribed in this part. Applicable Requirement
75.24	Out-of-Control Periods and Adjustment for System Bias	Yes	Describes what an out-of-control period is and specifies action to be taken during such period. Applicable Requirement
Subpart D - Missing Data Substitution Procedures			
75.30	General Provisions	Yes	Describes periods when there is missing data and requires the substitution of data for those missing data periods. Applicable Requirement
75.31	Initial Missing Data Procedures	Yes	Defines the initial missing data period and specifies the procedures for providing substitute data. Applicable Requirement

Part	Title	Applicable Regulations	Comment
75.32	Determination of Monitor Data Availability for Standard Missing Data Procedures.	Yes	Requires the calculation and recording of the percent monitor data availability for SO_2, CO_2 (or O_2), NO_x, and flow monitors by a specified procedure. Applicable Requirement
75.33	Standard Missing Data Procedures for SO_2, NO_x and Flow Rate	Yes	Requires providing substitute data for missing data according to specified procedures for SO_2, NO_x, and flow monitoring data. Applicable Requirement.
75.34	Units With Add-on Emission Controls	Yes	Provides for petitioning the Administrator to use an alternate method for providing missing data for units with add-on SO_2 or NO_x controls. Applicable Requirement
75.35	Missing Data Procedures for CO_2 Data	Yes	Requires providing substitute data for missing CO_2 data using specified procedures. Applicable Requirement
75.36	Missing Data Procedures for Heat Input Determinations	Yes	Requires providing substitute data for missing heat input data using specified procedures. Applicable Requirement
75.37	Missing Data Procedures for Moisture	Yes	Requires providing substitute data for missing moisture data using specified procedures. Applicable Requirement
Subpart E - Alternative Monitoring Systems			
75.40	General Demonstration Requirements	Yes	Provides for applying to the Administrator for approval of an alternative monitoring system (or system component) for collecting hourly SO_2, NO_x, or flow data. Applicable Requirement
75.41	Precision Criteria	Yes	Specifies methods and procedures for demonstrating the precision of the alternative method is equal to or better than the continuous monitoring system. Applicable Requirement
75.42	Reliability Criteria	Yes	Requires demonstrating the reliability of the alternative system to be equal to or better than the continuous monitoring system and meets the applicable requirements of App. B. Applicable Requirement
75.43	Accessibility Criteria	Yes	Requires demonstrating the accessibility of the alternative system to be equal to or better than the

Part	Title	Applicable Regulations	Comment
			continuous monitoring system and meets the applicable requirements of subparts F and G. Applicable Requirement
75.44	Timeliness Criteria	Yes	Requires demonstrating the timeliness of the alternative system to be equal to or better than the continuous monitoring system and meets the applicable requirements of subparts F and G. Applicable Requirement
75.45	Daily Quality Assurance Criteria	Yes	Requires demonstrating that daily tests equivalent to those specified in App. B can be performed or that such tests are unnecessary. Applicable Requirement
75.46	Missing Data Substitution Criteria	Yes	Requires demonstrating that all missing data can be accounted for in a manner consistent with procedures specified in subpart D. Applicable Requirement
75.47	Criteria for a Class of Affected Units	Yes	Provides for applying to the Administrator for a class-approved alternative monitoring system and specifies information that must be provided. Applicable Requirement
75.48	Petition for an Alternative Monitoring System	Yes	Specifies information that must be submitted in the petition for approval of an alternative monitoring system. Applicable Requirement
Subpart F - Recordkeeping Requirements			
75.50	Reserved		
75.51	Reserved		
75.52	Reserved		

Part	Title	Applicable Regulations	Comment
75.53	Monitoring Plan	Yes	Requires the preparation and maintenance of a monitoring plan and specifies the content of the plan. Specifies which requirements must be met before April 1, 2000 and which requirements must be met after April 1, 2000. Applicable Requirement
75.54	Reserved		
75.55	Reserved		
75.56	Reserved		
75.57	General Recordkeeping Provisions	Yes	Requires maintaining a file of all measurements, data, reports, and other information required by this part for at least three years and specifies the information to be maintained. Requirements apply on and after April 1, 2000. Applicable Requirement
75.58	General Recordkeeping Provisions for Specific Situations	Yes	Specifies recordkeeping requirements for specific situations that are in addition to those already required. Requirements apply on and after April 1, 2000. Not an Applicable Requirement
75.59	Certification, Quality Assurance and Quality Control Record Provisions	Yes	Requires specific information to be collected for calibration error tests, interference tests, linearity checks, leak checks, relative accuracy tests, cycle time tests, and results of all trial runs and certification tests and quality assurance activities and measurements. Requirements apply on and after April 1, 2000. Applicable Requirement
Subpart G - Reporting Requirements			
75.60	General Provisions	Yes	Requires the submittal of various reports, applications, certifications, etc. and specifies to whom they are to be submitted. Applicable Requirement
75.61	Notifications	Yes	Requires the submittal of notification of initial certification and recertification tests to the Administrator, EPA Regional Office, and State regulatory agency within specified time limits. Applicable Requirement

Part	Title	Applicable Regulations	Comment
75.62	Monitoring Plan	Yes	Requires submittal of the monitoring plan to the Administrator no later than 45 days prior to the certification test. Applicable Requirement
75.63	Initial Certification or Recertification Application	Yes	Requires the submission of an application for certification or recertification to the Administrator within 45 days after completing the test and specifies the content and format of the application. Applicable Requirement
75.64	Quarterly Reports	Yes	Requires the submission on a quarterly basis to the Administrator of certain reports in an electronic format. Applicable Requirement
75.65	Opacity Reports	Yes	Requires the submission of reports on excess emissions of opacity to the applicable state or local regulatory agency in a format specified by them. Applicable Requirement
75.66	Petitions to the Administrator	Yes	Provides for submitting petitions to the Administrator for alternative flow monitoring method, alternative to standards incorporated by reference, alternative monitoring system, parametric monitoring procedure, and missing data for units with add-on controls. Applicable Requirement
75.67	Retired Units Petitions	Yes	Provides for petitioning the Administrator for an exemption from the requirements for continuous emission monitoring for units that will be permanently retired prior to 1/1/95. Not an Applicable Requirement

Subpart H – NOx Mass Emissions Provisions

Part	Title	Applicable Regulations	Comment
75.70	NOx Mass Emissions Provisions	Yes	Provides the general provisions of the requirements, including what units are subject to the requirement, compliance dates, prohibitions, initial certification and recertification procedures, quality assurance and quality control requirements, missing data procedures, reporting data prior to initial certification, requirements for petitions for alternate requirements Applicable Requirement
75.71	Specific Provisions for Monitoring NOx Emission Rate and Heat Input for the Purpose of Calculating NOx Mass Emissions	Yes	Provides specific requirements for monitoring NO_x emission rates and heat inputs for coal-fired units, making moisture correction, gas-fired nonpeaking units or oil-fired nonpeaking units, gas-fired or oil-fired peaking units, and other units. Applicable Requirement
75.72	Determination of NOx Mass Emissions	Yes	Specifies how NO_x mass emission rates are to be determined for a unit utilizing common stack with other affected unit(s), a unit utilizing common stack with nonaffected unit(s), unit with a bypass stack, unit with multiple stacks, units using a NO_x concentration monitoring system and a flow monitoring system to determine NO_x mass emissions, units using the low mass emitter excepted methodology, and procedures for apportioning heat input to the unit level. Applicable Requirement
75.73	Recordkeeping and Reporting	Yes	Provides general recordkeeping and reporting requirements. Applicable Requirement
75.74	Annual and Ozone Season Monitoring and Reporting Requirements	Yes	Describes what monitoring and reporting requirements a source must meet if the source is subject to both an Acid Rain emissions limitation and a State or federal NO_x mass reduction program during the entire calendar year or if only subject to the requirements during the ozone season. Applicable Requirement
75.75	Additional Ozone Season Calculation Procedures for Special Circumstances	Yes	Describes additional calculations for units that are required to calculate ozone season heat input for determining allocations. Applicable Requirement
Appendices to Part 75			

Part	Title	Applicable Regulations	Comment
App. A	Specifications and Test Procedures	Yes	Provides specification and test procedures for installation and measurement location, equipment specifications, performance specifications, data acquisition and handling systems, calibration gas, certification tests and procedures, and calculations. Applicable Requirement
App. B	Quality Assurance and Quality Control Procedures	Yes	Requires the development and implementation of a quality control program and specifies the minimum requirements, and specifies the frequency of certain required testing and the recording of information. Applicable Requirement
App. C	Missing Data Estimation Procedures	Yes	Specifies parametric monitoring procedures for missing SO_2 concentration or NO_x emission rate data, and load-based procedures for missing flow rate and NO_x emission rate data. Applicable Requirement
App. D	Optional SO_2 Emissions Data Protocol for Gas-Fired and Oil-Fired Units	Yes	Specifies optional procedures for determining hourly SO_2 emissions from gas-fired and oil-fired units. Not an Applicable Requirement
App. E	Optional NO_x Emissions Estimation Protocol for Gas-Fired Peaking Units and Oil-Fired Peaking Units	Yes	Describes provisions and procedures for determining the average NO_x emission rate and hourly NO_x emission rate for gas-fired and oil-fired peaking units. Applicable Requirement
App. F	Conversion Procedures	Yes	Specifies procedures for converting measured data from a monitor into the appropriate units of the standard. Applicable Requirement
App. G	Determination of CO_2 Emissions	Yes	Provides procedures for estimating CO_2 mass emissions from combustion and sorbent used in wet flue gas desulfurization control system, fluidized bed boiler or other emission controls. Applicable Requirement
App. H	Revised Traceability Protocol No. 1	Reserved	
App. I	Optional F-Factor/Fuel Flow Method	Reserved	

Part	Title	Applicable Regulations	Comment
App. J	Compliance Dates for Revised Recordkeeping Requirements and Missing Data Procedures	Reserved	

40 CFR 76 – Acid Rain Nitrogen Oxides Emission Reduction Program

Permit number 567519

Part	Title	Applicable Regulations	Comment
76.1	Applicability	Yes	Applies to all coal-fired utility units subject to an Acid Rain emissions limitation or reduction requirement for SO_2 under Phase I or Phase II and requires the NO_x emission limit apply on the date the unit must meet the SO_2 reduction requirement. Applicable Requirement
76.2	Definitions	No	Provides definitions for all terms used in this part. Not an Applicable Requirement
76.3	General Acid Rain Program Provisions	Yes	Specifies requirements contained in part 72 that apply to this part Applicable Requirement
76.4	Incorporation By Reference	Yes	Specifies certain test methods and procedures that are required to be used in this part which are incorporated by reference. Applicable Requirement
76.5	NO_x Emission Limitation for Group 1 Boilers	Yes	Specifies the NO_x emission limits for tangentially-fired and dry bottom wall-fired Group 1 boilers and the dates on which compliance with those limits must be achieved. Applicable Requirement
76.6	NO_x Emission Limitations for Group 2 Boilers	Yes	Specifies the NO_x emission limits Group 2 coal-fired boilers with cell burner, cyclone, wet bottom, or vertically fired boilers. Applicable Requirement
76.7	Revised NO_x Emission Limitations for Group 1, Phase II Boilers	Yes	Specifies the NO_x emission limits for Group I, Phase II coal-fired boilers with tangentially fired or dry bottom wall-fired boilers. Applicable Requirement
76.8	Early Election for Group 1, Phase II Boilers	Yes	Describes provisions for early election for a Group 1 Phase II boiler to meet the applicable NO_x emission limitation not later than 1/1/97. Requires the submission of an early election plan and specifies the content of the plan. Applicable Requirement
76.9	Permit Application and Compliance Plans	Yes	Requires the submittal of a complete Acid Rain permit application that includes a complete compliance plan for NO_x emissions covering the unit. Specifies the dates for submittal and the contents of a NO_x compliance plan. Applicable Requirement

Part	Title	Applicable Regulations	Comment
76.10	Alternative Emission Limitations	Yes	Provides for petitioning for an alternative less stringent emission limitation if unable to meet the required limit by using specified technology. Specifies required demonstration of inability to meet the required emission limit, the content of a petition for an alternate standard, and actions to be taken to renew or change the alternate standard. Applicable Requirement
76.11	Emissions Averaging	Yes	Provides for averaging NO_x emissions for all units under control of the same owner or operator and having the same designated representative under an averaging plan. Requires the submittal of an averaging plan and specifies the content of such plan. Applicable Requirement
76.12	Phase I NO_x Compliance Extensions	No	Provides for applying for a 15-month extension of the deadline for meeting the emission limitation for certain situations and specifies the content of Phase I NO_x compliance extension plans. Not an Applicable Requirement
76.13	Compliance and Excess Emissions	Yes	Specifies the method for calculating excess emissions of NO_x. Applicable Requirement
76.14	Monitoring, Recordkeeping, and Reporting	Yes	Describes the content of a petition for an alternative emission limitation demonstration period and petition for alternative emission limitation and requires reporting of costs of low NO_x burner technology applied to Group 1, Phase I boilers. Applicable Requirement
76.15	Test Methods and Procedures	Yes	Specifies tests required to be used for the basis for a petition for a final alternative emission limitation. Applicable Requirement
App. A	Phase I Affected Coal-Fired Utility Units With Group 1 or Cell Burner Boilers	No	Tables listing all Phase I affected coal-fired utility units with Group 1 or cell burner boilers. Not an Applicable Requirement
App. B	Procedures and Methods for Estimating Costs of Nitrogen Oxides Controls Applied to Group 1, Phase I Boilers	No	Specifies the procedures, methods, and data to be used by the Administrator in establishing the degree of reduction achievable and estimating the average capital cost and average cost-effectiveness of installed low NO_x burner technology applied to Group 1, Phase I boilers. Specifies information required to be submitted by each designated representative of a Phase I affected unit. Not an Applicable Requirement

Part	Title	Applicable Regulations	Comment
77.1	Purpose and Scope	No	Describes the purpose and scope of this part which specifies the excess emissions offset planning and offset penalty requirements. Not an Applicable Requirement
77.2	General	Yes	Specifies the applicability of sections of part 72 to this part and the procedures for appeals. Applicable Requirement
77.3	Offset Plans for Excess Emissions of Sulfur Dioxide	Yes	Requires an excess emissions offset plan for each unit having excess emissions in a calendar year and specifies the content of the plan. Applicable Requirement
77.4	Administrator's Action on Proposed Offset Plans	Yes	Describes the action of the Administrator in processing a proposed offset plan and requires the designated representative to submit any additional information requested by the Administrator with 30 days of request. Applicable Requirement
77.5	Deduction of Allowances to Offset Excess Emissions of Sulfur Dioxide	Yes	Specifies how deduction of allowances to offset excess emissions will be made and requires the designated representative to hold sufficient allowances in the appropriate account to cover the deductions. Applicable Requirement
77.6	Penalties for Excess Emissions of Sulfur Dioxide and Nitrogen Oxides	Yes	Requires the payment of penalties for excess emissions of SO_2 and NO_x and specifies how the penalties are to be calculated. Applicable Requirement

Part	Title	Applicable Regulations	Comment
78.1	Purpose and Scope	Yes	Specifies the decisions of the Administrator that may be appealed, requires the filing of a petition for administrative review with the Environmental Appeals Board to appeal a decision. Applicable Requirement
78.2	General	Yes	Specifies sections of part 72 that apply to this part. Applicable Requirement
78.3	Petition for Administrative Review and Request for Evidentiary Hearing	No	Specifies who may appeal specific decisions and what must be contained in a petition for administrative review. Not an Applicable Requirement
78.4	Filings	No	Specifies what must be contained in a filing for administrative review, who may make a filing, and who must be notified of a filing. Not an Applicable Requirement
78.5	Limitation on Filing or Presenting New Evidence and Raising New Issues	No	Specifies when new evidence or new issues may be presented or raised and provides exceptions to the requirement. Not an Applicable Requirement
78.6	Action on Petition for Administrative Review	No	Describes what action the Environmental Appeals Board can take upon receipt of a petition for Administrative Review. Not an Applicable Requirement
78.7	Reserved		
78.8	Consolidation and Severance of Appeals Proceedings	No	Describes the authority of the Environmental Appeals Board to consolidate proceedings or sever issues or parties from a proceeding. Not an Applicable Requirement
78.9	Notice of the Filing of Petition for Administrative Review	No	Requires the Administrator to publish a notice in the Federal Register concerning an administrative review. Not an Applicable Requirement
78.10	Ex parte Communications During Pendency of a Hearing	Yes	Prohibits any ex parte communications between all parties involved in an appeal and describes actions to be taken if ex parte communications occur. Applicable Requirement

Part	Title	Applicable Regulations	Comment
78.11	Intervenors	No	Provides for filing motion for leave to intervene and specifies conditions for granting the motion. Not an Applicable Requirement
78.12	Standard of Review	No	Specifies the responsibilities of the parties involved in the hearing to pursue the review. Not an Applicable Requirement
78.13	Scheduling Orders and Pre-hearing Conferences.	No	Requires the Presiding Officer to issue an order scheduling certain activities. Not an Applicable Requirement
78.14	Evidentiary Hearing Procedure	No	Describes the authority of the Presiding Officer during an evidentiary hearing, and requires all testimony be filed in written form. Not an Applicable Requirement
78.15	Motions in Evidentiary Hearings	No	Describes who may file motion in an evidentiary hearing and on what the motions can be filed. Not an Applicable Requirement
78.16	Record of Appeal Proceeding	No	Requires a record of appeal proceedings and specifies what will be in the record and the process involved with filing the record. Not an Applicable Requirement
78.17	Proposed Findings and Conclusions and Supporting Brief	No	Specifies when a party may file proposed findings and conclusions with the Hearing Clerk after the complete transcript is available. Not an Applicable Requirement
78.18	Proposed Decision	No	Provides for decisions by the Presiding Officer becoming final Agency action unless appealed within 30 days. Not an Applicable Requirement
78.19	Interlocutory Appeal	No	Provides for filing interlocutory appeals and describes actions to be taken by the Presiding Officer and the Environmental Appeals Board. Not an Applicable Requirement
78.20	Appeal of Decision of Administrator or Proposed Decision to the Environmental Appeals Board	No	Provides for appealing a proposed decision of the Presiding Officer and the responsibilities of the involved parties following the appeal and specifies the impact of an order issued by the Environmental Appeals Board. Not an Applicable Requirement

Part	Title	Applicable Regulations	Comment
Subpart A – NO_x Budget Trading Program General Provisions			
96.1	Purpose	Yes	Describes the purpose of the general provisions and requires compliance with the requirements. Applicable Requirement
96.2	Definitions	Yes	Provides the definitions of significant terms used in the regulations. Applicable Requirement
96.3	Measurement, Abbreviations, Acronyms	Yes	Provides the measurements, abbreviations and acronyms used in the regulation. Applicable Requirement
96.4	Applicability	Yes	Specifies the sources to which the regulations are applicable. Applicable Requirement
96.5	Retired Units Exemption	Yes	Provides for exemption from the rules for units that are permanently retired from operation. Requires a NO_x Budget permit application submittal at least 18 months prior to restarting a retired unit. Applicable Requirement
96.6	Standard Requirements	Yes	Specifies standard requirements for NO_x Budget sources including permit, monitoring, NO_x, excess emissions, recordkeeping and reporting, and liability requirements. Applicable Requirement
96.7	Computation of Time	Yes	Describes requirements for time period scheduling. Applicable Requirement
Subpart B - Authorized Account Representatives for NO_x Budget Sources			
96.10	Authorization and Responsibilities of the NO_x Authorized Account Representative	Yes	Specifies the requirements for a NO_x authorized account representative and the responsibilities of the representative. Applicable Requirement
96.11	Alternate NO_x Authorized Account Representative	Yes	Allows for the designation of one alternate NO_x authorized account representative. Applicable Requirement

Part	Title	Applicable Regulations	Comment
96.12	Changing the NO_x Authorized Account Representative and the Alternate Authorized NO_x Account Representative; Changing the Owners and Operators	Yes	Allows for changing the NO_x authorized account representative and the alternate NO_x authorized account representatives and describes the requirements associated with such change. Applicable Requirement
96.13	Account Certificate of Representation	Yes	Prescribes the elements and format of a complete account certificate of representation for a NO_x authorized account representative or alternate NO_x authorized account representative. Applicable Requirement
96.14	Objections Concerning the NO_x Authorized Account Representative	Yes	Prohibits objections or other communications with the permitting authority or Administrator concerning the actions of the authorized representative as long as there is a valid certificate of representation. Applicable Requirement
Subpart C - Permits			
96.20	General NO_x Budget Trading Program Permit Requirements	Yes	Describes the general requirements for the NO_x Budget trading program permit. Applicable Requirement
96.21	Submission of NO_x Budget Permit Applications	Yes	Requires NO_x Budget sources to apply and reapply for a NO_x Budget permit and specifies time frames for submitting of the required application. Applicable Requirement
96.22	Information Requirements of NO_x Budget Permit Applications	Yes	Specifies the information required to be submitted in an application for a NO_x Budget permit. Applicable Requirement
96.23	NO_x Budget Permit Contents	Yes	Specifies the content of a NO_x Budget permit. Applicable Requirement
96.24	Effective Date on Initial NO_x Budget Permit	Yes	Specifies the effective date of the initial NO_x Budget permit. Applicable Requirement
96.25	NO_x Budget Permit Revisions	Yes	Provides for revision of the NO_x Budget permit by the permitting authority. Applicable Requirement

Part	Title	Applicable Regulations	Comment
Part	**Title**	**Applicable Regulations**	**Comment**
Subpart D - Compliance Certification			
96.30	Compliance Certification Report	Yes	Requires the submission of a compliance certification report by November 30 of each year containing a control period and specifies the content of the report. Applicable Requirement
96.31	Permitting Authority's and Administrator's Action on Compliance Certification	Yes	Describes actions that may be taken by the permitting authority or the Administrator based on the compliance certification report. Applicable Requirement
Subpart E - NO_x Allowance Allocations			
96.40	State Trading Program Budget	Yes	Requires that the State trading program budget allocated for a control period equals the total number of tons of NO_x emissions apportioned to the NO_x Budget units. Not an Applicable Requirement
96.41	Timing Requirement for NO_x Allowance Allocations	Yes	Specifies when the permitting authority is to submit NO_x allowance allocations to the Administrator. Not an Applicable Requirement
96.42	NO_x Allowance Allocations	Yes	Specifies how NO_x allowances will be determined and allocated, the establishment of the set-aside allocation and how NO_x authorized account representative may request set-aside allocations. Applicable Requirement
Subpart F - NO_x Allowance Tracking System			
96.50	NO_x Allowance Tracking System Accounts	Yes	Describes the nature and function of compliance and overdraft accounts and general accounts. Applicable Requirement

Part	Title	Applicable Regulations	Comment
96.51	Establishment of Accounts	Yes	Requires the Administrator to establish compliance and overdraft accounts for NO_x Budget units upon receipt of complete applications. Also requires the Administrator to establish general accounts upon receipt of a complete application and specifies the requirements for a complete application and the responsibilities for the NO_x authorized account representative for the general account. Requires the Administrator to assign unique identifying numbers for each account. Not an Applicable Requirement

Part	Title	Applicable Regulations	Comment
96.52	NO_x Allowance Tracking System Responsibilities of NO_x Authorized Account	Yes	Requires that all submissions concerning the deduction or transfer of NO_x allowances in the account, shall be made only by the NOX authorized account representative for the account. Applicable Requirement
96.53	Recordation of NO_x Allowance Allocations	Yes	Specifies the recordation requirements of the Administrator for recording allowances and requires the Administrator to assign a unique identification number for each NO_x allowance. Not an Applicable Requirement
96.54	Compliance	Yes	Specifies how the Administrator will deduct allowances from the NO_x Allowance Tracking System account and provides for the NO_x authorized account representative to request allowance deductions. Specifies the deductions for excess emissions and violations for excess emissions. Applicable Requirement
96.55	Banking	Yes	Allows for the banking of NO_x allowances and specifies how the Administrator is to bank and allocate allowances. Applicable Requirement
96.56	Account Error	Yes	Allows the Administrator to correct accounting errors. Not an Applicable Requirement
96.57	Closing of General Accounts	Yes	Describes how a general account may be closed. Not an Applicable Requirement
Subpart G - NO_x Allowance Transfer			

96.60	Submission of NO_x Allowance Transfers	Yes	Provides for the transfer of NO_x allowances and specifies the elements and format of a request for transfer of allowances by a NO_x authorized account representative. Applicable Requirement
96.61	EPA Recordation	Yes	Requires the Administrator to record allowance transfers subject to certain stipulations. Applicable Requirement
96.62	Notification	Yes	Requires notification by the Administrator of the recordation or non-recordation each transfer to the parties of the transfer. Not an Applicable Requirement
Part	**Title**	**Applicable Regulations**	**Comment**
Subpart H - Monitoring and Reporting			
96.70	General Requirements	Yes	Describes the general requirements for the installation, certification and operation of required monitoring systems, the compliance dates for such monitoring systems, and the reporting requirements for the monitoring systems. Prohibits the use of unauthorized monitoring systems, the unauthorized disruption of approved monitoring systems, and the non-accounting of all NO_x emissions. Applicable Requirement
96.71	Initial Certification and Recertification Procedures	Yes	Specifies the initial certification procedures and recertification procedures for required monitoring systems and exceptions thereto. Applicable Requirement
96.72	Out of Control Periods	Yes	Specifies what data shall be substituted for monitoring data during periods when the monitoring system fails to meet quality assurance requirements. Describes the responsibility of the permitting authority to decertify a monitoring system and the impacts of such decertification and the requirements for recertification. Applicable Requirement
96.73	Notifications	Yes	Specifies the notification requirement of the NO_x authorized account representative in accordance with 40 CFR 75.61. Applicable Requirement

96.74	Recordkeeping and Reporting	Yes	Describes the recordkeeping and reporting requirements of the NO_x authorized account representative, including monitoring plans, certification applications, quarterly reports and certification reports. Applicable Requirement
96.75	Petitions	Yes	Allows the NO_x authorized account representative to submit a petition to the Administrator requesting approval for alternatives to any requirement of this subpart. Applicable Requirement
96.76	Additional Requirements to Provide Heat Input Data for Allocation Purposes	Yes	Specifies additional requirements for providing heat input data for allocation purposes. Applicable Requirement
Part	**Title**	**Applicable Regulations**	**Comment**
Subpart I - Individual Unit Opt-ins			
96.80	Applicability	Yes	Describes what sources may qualify to become a NO_x Budget opt-in source. Applicable Requirement
96.81	General	Yes	Requires that NO_x Budget opt-in sources to be treated as a NO_x Budget unit for purposes of this part. Applicable Requirement
96.82	NO_x Authorized Account Representatives	Yes	Requires the same NO_x authorized account representative for a NO_x Budget opt-in located at a source at a NO_x Budget source. Applicable Requirement
96.83	Applying NO_x Budget Opt-in Permit	Yes	Allows the NO_x authorized account representative to apply for an initial NO_x Budget opt-in permit with a complete NO_x Budget permit application, monitoring plan, and account certification and just reapply as required. Applicable Requirement
96.84	Opt-in Process	Yes	Describes the process for a permitting authority to issue or deny an initial application for a NO_x Budget opt-in permit. Applicable Requirement

96.85	NO_x Budget Opt-in Permit Contents	Yes	Specifies the content of a NO_x Budget opt-in permit Applicable Requirement
96.86	Withdrawal from NO_x Budget Trading Program	Yes	Specifies the requirements for withdrawing from the NO_x Budget Trading Program. Applicable Requirement
96.87	Change in Regulatory Status	Yes	Requires the NO_x authorized account representative to notify the permitting authority and the Administrator when a NO_x Budget opt-in source becomes a NO_x Budget source. Describes the actions of the permitting authority and Administrator to be taken upon such notification. Applicable Requirement
96.88	NO_x Allowance Allocations to Opt-in Units	Yes	Requires the permitting authority to allocate NO_x allowances to NO_x Budget opt-in sources and submit the allocation to the Administrator, and specifies how the NO_x allowances are to be determined. Not an Applicable Requirement

Future EPA Regulations

Clean Air Act (CAA) Proposed Rule Stage			
Sequence Number	**SAN Number**	**Title**	**Regulation Identifier Number**
3053	4752	Clean Air Fine Particle Implementation Rule	2060-AK74
3079	4793	Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR): Allowable Plantwide Applicability Limit (PAL), Aggregation, and Debottlenecking	2060-AL75
3103	4881	Prevention of Significant Deterioration for Nitrogen Oxides	2060-AM33
3106	4885	Flexible Air Permit Rule	2060-AM45
3113	4676	Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR): Routine Maintenance, Repair and Replacement (RMRR); Maintenance and Repair Amendments	2060-AM62
3119	4912	New Source Performance Standards(NSPS) for Stationary Combustion Turbines	2060-AM79
3120	4913	New Source Performance Standards(NSPS) for Electric Utility Steam Generating Units and Industrial and Commercial Boilers	2060-AM80
3121	4914	New Source Performance Standards(NSPS) for Reciprocating Internal Combustion Compression Ignition Engines	2060-AM81
3126	4940	Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR): Reconsideration of Inclusion of Fugitive Emissions	2060-AM91
3127	4933	Federal Implementation Plans to Reduce Interstate Transport for Fine Particulate Matter and Ozone	2060-AM93

Clean Air Act (CAA) Final Rule Stage			
Sequence Number	**SAN Number**	**Title**	**Regulation Identifier Number**
3135	4625	Clean Air Ozone Implementation Rule (Part 1 and Part 2)	2060-AJ99
3141	4571	Clean Air Mercury Rule - Electric Utility Steam Generating Units	2060-AJ65
3146	4751	National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines - Petition to Delist	2060-AK73

3158	4450	Clean Air Visibility Rule	2060-AJ31
3165	4794	Clean Air Interstate Rule Formerly Titled: Interstate Air Quality Rule	2060-AL76
3167	4840	Clean Air Fine Particle Designations	2060-AM04

Clean Air Act (CAA) Final Rule Stage			
Sequence Number	**SAN Number**	**Title**	**Regulation Identifier Number**
3179	4676	Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR): Routine Maintenance, Repair and Replacement (RMRR); Equipment Replacement Provision (ERP); Reconsideration	2060-AM58
3180	3259	Non-attainment Major New Source Review	2060-AM59

Clean Air Act (CAA) Long-Term Actions			
Sequence Number	**SAN Number**	**Title**	**Regulation Identifier Number**
3188	4607	Accidental Release Prevention Requirements: Rick Management Programs Under the Clean Ir Act, Section 112(r)(7); Availability of Information to the Public; Technical Amendment	2050-AE95
3217	4691	Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR): Clean Units	2060-AK42
3240	4915	New Source Performance Standards(NSPS) for Reciprocating Internal Combustion Spark Ignited Engines	2060-AM82
3158	4450	Clean Air Visibility Rule	2060-AJ31
3165	4794	Clean Air Interstate Rule Formerly Titled: Interstate Air Quality Rule	2060-AL76

ATTACHMENT 14

CAIR PERMIT and Application

TENNESSEE AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-1531

CAIR PERMIT Issued Pursuant to Tennessee Air Quality Act

This permit fulfills the requirements of the federal regulations promulgated at 40 CFR Parts 60 and 96. This permit is issued in accordance with the applicable provisions of paragraphs 1200-3-14-.04, 1200-3-27-.10, 1200-3-27-.11, and 1200-3-37 of the Tennessee Air Pollution Control Regulations. The permittee has been granted permission to operate an air contaminant source in accordance with emissions limitations and monitoring requirements set forth herein.

Date Issued:
Date Expires: See Condition 2

Permit Number: 869022

Issued To:
Tennessee Valley Authority
Bull Run Fossil Plant

Installation Address:
1265 Edgemoor Road
Clinton

Unit Description: Units #1

Emission Source Reference Number: 01-0009
Renewal Application Due Date: See Condition 3

ORIS/Facility Code: 3396

Authorized Account Representative
Name: James R. Dalrymple
Sr. VP of Operatioins
Phone: (423) 751-4096

Alternate Account Representative
Name: William W. Morrison
VP, Western Coal & Gas Operations
Phone: (423) 751-6834

Applicable Rules:
CAIR SO_2 Annual Trading Program (1200-03-14-.04)
CAIR NO_X Annual Trading Program (1200-03-27-.10)
CAIR NO_X Ozone Season Trading Program (1200-03-27-.11)

TECHNICAL SECRETARY

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

POST AT INSTALLATION ADDRESS

CN-0827 (Rev.9-92) RDA-1298

1. **General permit requirements.** For each CAIR source or CAIR opt-in source required to have a Title V operating permit, such permit shall include a CAIR permit administered by the permitting authority for the Title V operating permit or the federally enforceable permit as applicable. The CAIR portion of the Title V permit or other federally enforceable permit as applicable shall be administered in accordance with the permitting authority's Title V operating permit regulations promulgated under Rule 1200-3-9-.02(11) of the Tennessee Air Pollution Control Regulations (or equivalent regulations for delegated local programs), except as provided otherwise by applicable retired unit provisions or CAIR opt-in provisions. The Attachment to this permit contains the CAIR permit application, and the conditions listed in the application are enforceable conditions of this permit. This permit shall be incorporated in its entirety into the Title V Operating Permit as a complete and separable portion of that permit.

   TAPCR 1200-3-14-.04, 1200-3-27-.10, and 1200-3-27-.11, 40 CFR §§96.120, 96.220, and 96.320

2. **CAIR permit term.** The term of the CAIR permit will be set by the permitting authority, as necessary to facilitate coordination of the renewal of the CAIR permit with issuance, revision, or renewal of the CAIR source's Title V operating permit or other federally enforceable permit as applicable. Prior to incorporation into the CAIR source's Title V Operating Permit, the CAIR permit shall be subject to the procedural requirements for public participation, EPA review, and affected State review as specified by applicable rules. The CAIR permit shall be incorporated into the Title V Operating Permit as follows:

   1. If the term of the facility's existing Title V Operating Permit is three (3) or more years from the issue date of the CAIR permit, then the CAIR permit will be incorporated into the facility's existing Title V Operating Permit as specified in Rule 1200-3-9-.02(11)(f)6. (reopening for cause).

   2. If the term of the facility's existing Title V Operating Permit is less than three (3) years from the issue date of the CAIR permit, then upon renewal of the facility's Title V Operating Permit, the CAIR permit will be incorporated into the Title V Operating Permit upon renewal of that permit, or the Title V Operating Permit may be reopened for cause at the permittee's request.

   3. **Upon incorporation of this permit into a Title V Operating Permit, the expiration date of the CAIR permit shall be the same as the expiration date listed on the cover page of the Title V permit.**

   TAPCR 1200-3-14-.04, 1200-3-27-.10, and 1200-3-27-.11, 40 CFR §§96.123, 96.223, and 96.323

3. **Duty to reapply.** For a CAIR source required to have a Title V operating permit, the CAIR designated representative shall submit a complete CAIR permit application for the source covering each CAIR unit at the source to renew the CAIR permit in accordance with the permitting authority's Title V operating permits regulations addressing permit renewal, except as provided by applicable CAIR opt-in provisions. **Upon incorporation of the CAIR permit into a Title V Operating Permit, the permittee shall submit a timely and complete application for renewal of the CAIR permit at least one hundred eighty (180) days, but not more than two hundred seventy (270) days prior to expiration of the Title V Operating Permit, in accordance with Rule 1200-3-9-.02(11)(d)1.(i)(III).**

   Applicable provisions of 1200-3-14-.04, 1200-3-27-.10, 1200-3-27-.11, and applicable provisions of 40 CFR §§96.121, 96.221, and 96.321.

4. **CAIR permit revisions.** Except as provided otherwise by applicable CAIR regulations, the permitting authority will revise the CAIR permit, as necessary, in accordance with Rule 1200-3-9-.02(11) of the Tennessee Air Pollution Control Regulations.

   TAPCR 1200-3-14-.04, 1200-3-27-.10, and 1200-3-27-.11, 40 CFR §§96.124, 96.224, and 96.324

5. **Local program rules.** For sources located within Shelby, Davidson, Knox, or Hamilton counties, the CAIR permit will be added to the Title V Operating Permit pursuant to the local permitting authority's Title V regulations.

Permit number 869022 Expiration Date:

MHB

TN. DIV. OF
AIR POLLUTION CONTROL

2013 AUG -1 PM 2:05

RECEIVED

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

July 31, 2013

Mr. Barry Stephens
Tennessee Department of Environment and Conservation
Division of Air Pollution Control
Tennessee Tower William R. Snodgrass Building
312 Rosa L Parks Avenue
Nashville, Tennessee 37243

Dear Mr. Stephens:

TENNESSEE VALLEY AUTHORITY (TVA) – RENEWAL CAIR PERMIT APPLICATIONS

In accordance with TDEC Rule 1200-03-27-.10, enclosed are renewal CAIR NO_x and SO_2 Permit Applications for the following TVA facility:

Bull Run (3396)

If you have any questions, please contact Donald L. Spellman at (423) 751-7393 or by e-mail at dlspellman@tva.gov.

Sincerely,

James R. Dalrymple
Designated Representative

Enclosures

Attachment: CAIR Permit Application

CAIR Permit Application
(for sources covered under a CAIR SIP)

For more information, refer to 40 CFR 96.121, 96.122, 96.221, 96.222, 96.321, and 96.322

This submission is: ☐ New x Revised

STEP 1
Identify the source by plant name, State, and ORIS or facility code

Plant Name **Bull Run** State **TN** ORIS/Facility Code **3396**

STEP 2
Enter the unit ID# for each CAIR unit and indicate to which CAIR programs each unit is subject (by placing an "X" in the column)

Unit ID#	NO_X Annual	SO_2	NO_X Ozone Season
1	X	X	X

STEP 3
Read the standard requirements and the certification, enter the name of the CAIR designated representative, and sign and date

Standard Requirements

(a) Permit Requirements.

(1) The CAIR designated representative of each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) required to have a title V operating permit and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) required to have a title V operating permit at the source shall:

(i) Submit to the permitting authority a complete CAIR permit application under §96.122, §96.222, and §96.322 (as applicable) in accordance with the deadlines specified in §96.121, §96.221, and §96.321 (as applicable); and

(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review a CAIR permit application and issue or deny a CAIR permit.

(2) The owners and operators of each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) required to have a title V operating permit and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) required to have a title V operating permit at the source shall have a CAIR permit issued by the permitting authority under subpart CC, CCC, and CCCC (as applicable) of 40 CFR part 96 for the source and operate the source and the unit in compliance with such CAIR permit.

(3) Except as provided in subpart II, III, and IIII (as applicable) of 40 CFR part 96, the owners and operators of a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) that is not otherwise required to have a title V operating permit and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) that is not otherwise required to have a title V operating permit are not required to submit a CAIR permit application, and to have a CAIR permit, under subpart CC, CCC, and CCCC (as applicable) of 40 CFR part 96 for such CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and such CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable).

Bull Run
Plant Name (from Step 1)

STEP 3, continued

(b) Monitoring, reporting, and recordkeeping requirements.

(1) The owners and operators, and the CAIR designated representative, of each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) at the source shall comply with the monitoring, reporting, and recordkeeping requirements of subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96.

(2) The emissions measurements recorded and reported in accordance with subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96 shall be used to determine compliance by each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) with the CAIR NO_X emissions limitation, CAIR SO_2 emissions limitation, and CAIR NO_X Ozone Season emissions limitation (as applicable) under paragraph (c) of §96.106, §96.206, and §96.306 (as applicable).

(c) Nitrogen oxides emissions requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X source and each CAIR NO_X unit at the source shall hold, in the source's compliance account, CAIR NO_X allowances available for compliance deductions for the control period under §96.154(a) in an amount not less than the tons of total nitrogen oxides emissions for the control period from all CAIR NO_X units at the source, as determined in accordance with subpart HH of 40 CFR part 96.

(2) A CAIR NO_X unit shall be subject to the requirements under paragraph (c)(1) of §96.106 for the control period starting on the later of January 1, 2009 or the deadline for meeting the unit's monitor certification requirements under §96.170(b)(1), (2), or (5) and for each control period thereafter.

(3) A CAIR NO_X allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.106, for a control period in a calendar year before the year for which the CAIR NO_X allowance was allocated.

(4) CAIR NO_X allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Allowance Tracking System accounts in accordance with subparts FF, GG, and II of 40 CFR part 96.

(5) A CAIR NO_X allowance is a limited authorization to emit one ton of nitrogen oxides in accordance with the CAIR NO_X Annual Trading Program. No provision of the CAIR NO_X Annual Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.105 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR NO_X allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart EE, FF, GG, or II of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR NO_X allowance to or from a CAIR NO_X source's compliance account is incorporated automatically in any CAIR permit of the source that includes the CAIR NO_X unit.

Sulfur dioxide emission requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR SO_2 source and each CAIR SO_2 unit at the source shall hold, in the source's compliance account, a tonnage equivalent of CAIR SO_2 allowances available for compliance deductions for the control period under §96.254(a) and (b) not less than the tons of total sulfur dioxide emissions for the control period from all CAIR SO_2 units at the source, as determined in accordance with subpart HHH of 40 CFR part 96.

(2) A CAIR SO_2 unit shall be subject to the requirements under paragraph (c)(1) of §96.206 for the control period starting on the later of January 1, 2010 or the deadline for meeting the unit's monitor certification requirements under §96.270(b)(1), (2), or (5) and for each control period thereafter.

(3) A CAIR SO_2 allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.206, for a control period in a calendar year before the year for which the CAIR SO_2 allowance was allocated.

(4) CAIR SO_2 allowances shall be held in, deducted from, or transferred into or among CAIR SO_2 Allowance Tracking System accounts in accordance with subparts FFF, GGG, and III of 40 CFR part 96.

(5) A CAIR SO_2 allowance is a limited authorization to emit sulfur dioxide in accordance with the CAIR SO_2 Trading Program. No provision of the CAIR SO_2 Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.205 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR SO_2 allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart FFF, GGG, or III of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR SO_2 allowance to or from a CAIR SO_2 source's compliance account is incorporated automatically in any CAIR permit of the source that includes the CAIR SO_2 unit.

Nitrogen oxides ozone season emissions requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source shall hold, in the source's compliance account, CAIR NO_X Ozone Season allowances available for compliance deductions for the control period under §96.354(a) in an amount not less than the tons of total nitrogen oxides emissions for the control period from all CAIR NO_X Ozone Season units at the source, as determined in accordance with subpart HHHH of 40 CFR part 96.

(2) A CAIR NO_X Ozone Season unit shall be subject to the requirements under paragraph (c)(1) of §96.306 for the control period starting on the later of May 1, 2009 or the deadline for meeting the unit's monitor certification requirements under §96.370(b)(1), (2), (3) or (7) and for each control period thereafter.

(3) A CAIR NO_X Ozone Season allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.306, for a control period in a calendar year before the year for which the CAIR NO_X Ozone Season allowance was allocated.

(4) CAIR NO_X Ozone Season allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Ozone Season Allowance Tracking System accounts in accordance with subparts FFFF, GGGG, and IIII of 40 CFR part 96.

(5) A CAIR NO_X allowance is a limited authorization to emit one ton of nitrogen oxides in accordance with the CAIR NO_X Ozone Season Trading Program. No provision of the CAIR NO_X Ozone Season Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.305 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR NO_X allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart EEEE, FFFF, GGGG, or IIII of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR NO_X Ozone Season allowance to or from a CAIR NO_X Ozone Season source's compliance account is incorporated automatically in any CAIR permit of the source.

Bull Run
Plant Name (from Step 1)

STEP 3, continued

(d) Excess emissions requirements.
If a CAIR NO_X source emits nitrogen oxides during any control period in excess of the CAIR NO_X emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_X unit at the source shall surrender the CAIR NO_X allowances required for deduction under §96.154(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

If a CAIR SO_2 source emits sulfur dioxide during any control period in excess of the CAIR SO_2 emissions limitation, then:
(1) The owners and operators of the source and each CAIR SO_2 unit at the source shall surrender the CAIR SO_2 allowances required for deduction under §96.254(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

If a CAIR NO_X Ozone Season source emits nitrogen oxides during any control period in excess of the CAIR NO_X Ozone Season emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_X Ozone Season unit at the source shall surrender the CAIR NO_X Ozone Season allowances required for deduction under §96.354(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

(e) Recordkeeping and Reporting Requirements.
(1) Unless otherwise provided, the owners and operators of the CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time before the end of 5 years, in writing by the permitting authority or the Administrator.
(i) The certificate of representation under §96.113, §96.213, and §96.313 (as applicable) for the CAIR designated representative for the source and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) at the source and all documents that demonstrate the truth of the statements in the certificate of representation; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation under §96.113, §96.213, and §96.313 (as applicable) changing the CAIR designated representative.
(ii) All emissions monitoring information, in accordance with subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96, provided that to the extent that subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable).
(iv) Copies of all documents used to complete a CAIR permit application and any other submission under the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable) or to demonstrate compliance with the requirements of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable).
(2) The CAIR designated representative of a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) at the source shall submit the reports required under the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable) including those under subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96.

(f) Liability.
(1) Each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and each NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) shall meet the requirements of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable).
(2) Any provision of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable) that applies to a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) or the CAIR designated representative of a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) shall also apply to the owners and operators of such source and of the CAIR NO_X units, CAIR SO_2 units, and CAIR NO_X Ozone Season units (as applicable) at the source.
(3) Any provision of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable) that applies to a CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) or the CAIR designated representative of a CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) shall also apply to the owners and operators of such unit.

Bull Run
Plant Name (from Step 1)

STEP 3, continued

(g) Effect on Other Authorities.
No provision of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable), a CAIR permit application, a CAIR permit, or an exemption under § 96.105, §96.205, and §96.305 (as applicable) shall be construed as exempting or excluding the owners and operators, and the CAIR designated representative, of a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) or CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) from compliance with any other provision of the applicable, approved State implementation plan, a federally enforceable permit, or the Clean Air Act.

Certification

I am authorized to make this submission on behalf of the owners and operators of the source or units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and 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 statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name James R. Dalrymple

Signature J R Dalrymple Date 7/31/13

Tennessee Valley Authority, 1101 Market Street, BR 4A, Chattanooga, Tennessee 37402

August 11, 2014

Mr. Barry Stephens
Division of Air Pollution Control
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue
Nashville, Tennessee 37243

Dear Mr. Stephens:

RENEWAL CAIR PERMIT APPLICATIONS, ARP PERMIT APPLICATIONS, PHASE II NO_x COMPLIANCE PLANS, AND NO_x AVERAGING PLANS.

In accordance with 40 CFR 96.121, 96.122, 96.221, 96.222, 96.321 and 96.322, enclosed are revised CAIR Permit Applications for the following TVA facilities:

Brownsville CT (55081)
Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Gleason Generating Facility (55251)
Johnsonville (3406)
John Sevier (3405)
Kingston (3407)
Lagoon Creek (7845)

In accordance with 40 CFR 72.30 and 72.31, enclosed are renewal Acid Rain Permit Applications for the following TVA facilities:

Brownsville CT (55081)
Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Gleason Generating Facility (55251)
Johnsonville (3406)
John Sevier (3405)
Kingston (3407)
Lagoon Creek (7845)

Mr. Barry Stephens
Page 2
August 11, 2014

In accordance with requirements of 40 CFR §76.9 and §76.11, Acid Rain Nitrogen Oxides Emission Reduction Program, enclosed are Phase II NO_X Compliance Plans for the following TVA facilities:

Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Johnsonville (3406)
Kingston (3407)

TVA's Phase II NO_X Averaging Plan is also enclosed. TVA's current plan is to demonstrate compliance with the NO_X reduction requirements utilizing a system-wide averaging approach that includes all TVA units and to ensure that the Title IV permit reflects the compliance requirements imposed by the permitting authorities.

The Phase II NO_X Averaging Plan includes the following TVA facilities:

Allen (3393)
Bull Run (3396)
Colbert (47)
Cumberland (3399)
Gallatin (3403)
Johnsonville (3406)
Kingston (3407)
Paradise (1378)
Shawnee (1379) Units 1-9
Widows Creek (50)

If you have any questions, please contact Eric Walker at (423)751-7129, or by e-mail at elwalker@tva.gov.

Sincerely,

James R. Dalrymple
Designated Representative

Enclosures
cc: U.S. EPA Region IV
Air, Pesticides, and Toxics Management Division (#4 APT-AEB)
Monitor & Technical Support Section

CAIR Permit Application
(for sources covered under a CAIR SIP)

For more information, refer to 40 CFR 96.121, 96.122, 96.221, 96.222, 96.321, and 96.322

This submission is: ☐ New ☑ Revised

STEP 1
Identify the source by plant name, State, and ORIS or facility code

Plant Name Bull Run State TN ORIS/Facility Code 3396

STEP 2
Enter the unit ID# for each CAIR unit and indicate to which CAIR programs each unit is subject (by placing an "X" in the column)

Unit ID#	NO_x Annual	SO_2	NO_x Ozone Season
1	X	X	X

STEP 3
Read the standard requirements and the certification, enter the name of the CAIR designated representative, and sign and date

Standard Requirements

(a) Permit Requirements.

(1) The CAIR designated representative of each CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) required to have a title V operating permit and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) required to have a title V operating permit at the source shall:

(i) Submit to the permitting authority a complete CAIR permit application under §96.122, §96.222, and §96.322 (as applicable) in accordance with the deadlines specified in §96.121, §96.221, and §96.321 (as applicable); and

(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review a CAIR permit application and issue or deny a CAIR permit.

(2) The owners and operators of each CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) required to have a title V operating permit and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) required to have a title V operating permit at the source shall have a CAIR permit issued by the permitting authority under subpart CC, CCC, and CCCC (as applicable) of 40 CFR part 96 for the source and operate the source and the unit in compliance with such CAIR permit.

(3) Except as provided in subpart II, III, and IIII (as applicable) of 40 CFR part 96, the owners and operators of a CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) that is not otherwise required to have a title V operating permit and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) that is not otherwise required to have a title V operating permit are not required to submit a CAIR permit application, and to have a CAIR permit, under subpart CC, CCC, and CCCC (as applicable) of 40 CFR part 96 for such CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) and such CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone

Plant Name (from Step 1) Bull Run

STEP 3, continued

(b) Monitoring, reporting, and recordkeeping requirements.

(1) The owners and operators, and the CAIR designated representative, of each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) and each CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) at the source shall comply with the monitoring, reporting, and recordkeeping requirements of subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96.

(2) The emissions measurements recorded and reported in accordance with subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96 shall be used to determine compliance by each CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) with the CAIR NO_X emissions limitation, CAIR SO_2 emissions limitation, and CAIR NO_X Ozone Season emissions limitation (as applicable) under paragraph (c) of §96.106, §96.206, and §96.306 (as applicable).

(c) Nitrogen oxides emissions requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X source and each CAIR NO_X unit at the source shall hold, in the source's compliance account, CAIR NO_X allowances available for compliance deductions for the control period under §96.154(a) in an amount not less than the tons of total nitrogen oxides emissions for the control period from all CAIR NO_X units at the source, as determined in accordance with subpart HH of 40 CFR part 96.

(2) A CAIR NO_X unit shall be subject to the requirements under paragraph (c)(1) of §96.106 for the control period starting on the later of January 1, 2009 or the deadline for meeting the unit's monitor certification requirements under §96.170(b)(1), (2), or (5) and for each control period thereafter.

(3) A CAIR NO_X allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.106, for a control period in a calendar year before the year for which the CAIR NO_X allowance was allocated.

(4) CAIR NO_X allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Allowance Tracking System accounts in accordance with subparts FF, GG, and II of 40 CFR part 96.

(5) A CAIR NO_X allowance is a limited authorization to emit one ton of nitrogen oxides in accordance with the CAIR NO_X Annual Trading Program. No provision of the CAIR NO_X Annual Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.105 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR NO_X allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart EE, FF, GG, or II of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR NO_X allowance to or from a CAIR NO_X source's compliance account is incorporated automatically in any CAIR permit of the source that includes the CAIR NO_X unit.

Sulfur dioxide emission requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR SO_2 source and each CAIR SO_2 unit at the source shall hold, in the source's compliance account, a tonnage equivalent of CAIR SO_2 allowances available for compliance deductions for the control period under §96.254(a) and (b) not less than the tons of total sulfur dioxide emissions for the control period from all CAIR SO_2 units at the source, as determined in accordance with subpart HHH of 40 CFR part 96.

(2) A CAIR SO_2 unit shall be subject to the requirements under paragraph (c)(1) of §96.206 for the control period starting on the later of January 1, 2010 or the deadline for meeting the unit's monitor certification requirements under §96.270(b)(1), (2), or (5) and for each control period thereafter.

(3) A CAIR SO_2 allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.206, for a control period in a calendar year before the year for which the CAIR SO_2 allowance was allocated.

(4) CAIR SO_2 allowances shall be held in, deducted from, or transferred into or among CAIR SO_2 Allowance Tracking System accounts in accordance with subparts FFF, GGG, and III of 40 CFR part 96.

(5) A CAIR SO_2 allowance is a limited authorization to emit sulfur dioxide in accordance with the CAIR SO_2 Trading Program. No provision of the CAIR SO_2 Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.205 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR SO_2 allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart FFF, GGG, or III of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR SO_2 allowance to or from a CAIR SO_2 source's compliance account is incorporated automatically in any CAIR permit of the source that includes the CAIR SO_2 unit.

Nitrogen oxides ozone season emissions requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source shall hold, in the source's compliance account, CAIR NO_X Ozone Season allowances available for compliance deductions for the control period under §96.354(a) in an amount not less than the tons of total nitrogen oxides emissions for the control period from all CAIR NO_X Ozone Season units at the source, as determined in accordance with subpart HHHH of 40 CFR part 96.

(2) A CAIR NO_X Ozone Season unit shall be subject to the requirements under paragraph (c)(1) of §96.306 for the control period starting on the later of May 1, 2009 or the deadline for meeting the unit's monitor certification requirements under §96.370(b)(1), (2), (3) or (7) and for each control period thereafter.

(3) A CAIR NO_X Ozone Season allowance shall not be deducted, for compliance with the requirements under paragraph (c)(1) of §96.306, for a control period in a calendar year before the year for which the CAIR NO_X Ozone Season allowance was allocated.

(4) CAIR NO_X Ozone Season allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Ozone Season Allowance Tracking System accounts in accordance with subparts FFFF, GGGG, and IIII of 40 CFR part 96.

(5) A CAIR NO_X allowance is a limited authorization to emit one ton of nitrogen oxides in accordance with the CAIR NO_X Ozone Season Trading Program. No provision of the CAIR NO_X Ozone Season Trading Program, the CAIR permit application, the CAIR permit, or an exemption under §96.305 and no provision of law shall be construed to limit the authority of the State or the United States to terminate or limit such authorization.

(6) A CAIR NO_X allowance does not constitute a property right.

(7) Upon recordation by the Administrator under subpart EEEE, FFFF, GGGG, or IIII of 40 CFR part 96, every allocation, transfer, or deduction of a CAIR NO_X Ozone Season allowance to or from a CAIR NO_X Ozone Season source's compliance account is incorporated automatically in any CAIR permit of the source.

Plant Name (from Step 1) Bull Run

STEP 3, continued

(d) Excess emissions requirements.
If a CAIR NO_x source emits nitrogen oxides during any control period in excess of the CAIR NO_x emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_x unit at the source shall surrender the CAIR NO_x allowances required for deduction under §96.154(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

If a CAIR SO_2 source emits sulfur dioxide during any control period in excess of the CAIR SO_2 emissions limitation, then:
(1) The owners and operators of the source and each CAIR SO_2 unit at the source shall surrender the CAIR SO_2 allowances required for deduction under §96.254(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

If a CAIR NO_x Ozone Season source emits nitrogen oxides during any control period in excess of the CAIR NO_x Ozone Season emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_x Ozone Season unit at the source shall surrender the CAIR NO_x Ozone Season allowances required for deduction under §96.354(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable State law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of this subpart, the Clean Air Act, and applicable State law.

(e) Recordkeeping and Reporting Requirements.
(1) Unless otherwise provided, the owners and operators of the CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time before the end of 5 years, in writing by the permitting authority or the Administrator.
(i) The certificate of representation under §96.113, §96.213, and §96.313 (as applicable) for the CAIR designated representative for the source and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) at the source and all documents that demonstrate the truth of the statements in the certificate of representation; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation under §96.113, §96.213, and §96.313 (as applicable) changing the CAIR designated representative.
(ii) All emissions monitoring information, in accordance with subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96, provided that to the extent that subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable).
(iv) Copies of all documents used to complete a CAIR permit application and any other submission under the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable) or to demonstrate compliance with the requirements of the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable).
(2) The CAIR designated representative of a CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) and each CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) at the source shall submit the reports required under the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable) including those under subparts HH, HHH, and HHHH (as applicable) of 40 CFR part 96.

(f) Liability.
(1) Each CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) and each NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) shall meet the requirements of the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable).
(2) Any provision of the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable) that applies to a CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) or the CAIR designated representative of a CAIR NO_x source, CAIR SO_2 source, and CAIR NO_x Ozone Season source (as applicable) shall also apply to the owners and operators of such source and of the CAIR NO_x units, CAIR SO_2 units, and CAIR NO_x Ozone Season units (as applicable) at the source.
(3) Any provision of the CAIR NO_x Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_x Ozone Season Trading Program (as applicable) that applies to a CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) or the CAIR designated representative of a CAIR NO_x unit, CAIR SO_2 unit, and CAIR NO_x Ozone Season unit (as applicable) shall also apply to the owners and operators of such unit.

CAIR Permit Application
Page 4

Plant Name (from Step 1) Bull Run

STEP 3, continued

(g) Effect on Other Authorities.
No provision of the CAIR NO_X Annual Trading Program, CAIR SO_2 Trading Program, and CAIR NO_X Ozone Season Trading Program (as applicable), a CAIR permit application, a CAIR permit, or an exemption under § 96.105, §96.205, and §96.305 (as applicable) shall be construed as exempting or excluding the owners and operators, and the CAIR designated representative, of a CAIR NO_X source, CAIR SO_2 source, and CAIR NO_X Ozone Season source (as applicable) or CAIR NO_X unit, CAIR SO_2 unit, and CAIR NO_X Ozone Season unit (as applicable) from compliance with any other provision of the applicable, approved State implementation plan, a federally enforceable permit, or the Clean Air Act.

Certification

I am authorized to make this submission on behalf of the owners and operators of the source or units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and 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 statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name James R. Dalrymple

Signature JR Dalrymple Date 8/8/14

ATTACHMENT 15

Acid Rain Permit for TVA – Bull Run Fossil Plant
(Issued Same Date As Title V Permit)

TENNESSEE AIR POLLUTION CONTROL BOARD
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-1531

Phase II Acid Rain Permit

This permit fulfills the requirements of the federal regulations promulgated at 40 CFR Parts 72, 73, 75, 76, 77, and 78. This permit is issued in accordance with the applicable provisions of rule 1200-03-30 of the Tennessee Air Pollution Control Regulations. The permittee has been granted permission to operate an air contaminant source in accordance with emissions limitations and monitoring requirements set forth herein.

Date Issued: Draft
Effective Dates: Draft

Permit Number 869161

Issued By:
Tennessee Air Pollution Control Board
Tennessee Department of Environment and Conservation

Issued To:
Tennessee Valley Authority
Bull Run Fossil Plant

Installation Address:
1265 Edgemoor Road
Clinton

Emission Source Reference Number: 01-0009 **ORIS/Facility Code: 3396**

Acid Rain Permit Contents:

1. Statement of Basis.

2. SO_2 allowances allocated under this permit and NO_x requirements for each affected unit.

3. Standard Requirements (40 CFR 72.9 and 1200-03-30-.01(6)).

4. Comments, notes, and justifications regarding permit decisions and changes made to the permit application forms during the review process, and any additional requirements or conditions.

5. The permit application, NO_x compliance plan, and NO_x averaging plan submitted for this source, as corrected by the Tennessee Department of Environment and Conservation. The owners and operators of the source must comply with the standard requirements and special provisions set forth in the application. See Attachment Number Twelve (12) for the aforementioned items.

6. Summary of previous actions, present action and future action.

_____
TECHNICAL SECRETARY

No Authority is Granted by this Permit to Operate, Construct, or Maintain any Installation in Violation of any Law, Statute, Code, Ordinance, Rule, or Regulation of the State of Tennessee or any of its Political Subdivisions.

NON-TRANSFERABLE **POST AT INSTALLATION ADDRESS**

1. Statement of Basis

Statutory and Regulatory Authorities: In accordance with Tennessee Code Annotated 68-201-105 and 4-5-202 and Titles IV and V of the Clean Air Act, the Tennessee Air Pollution Control Board and Tennessee Department of Environment and Conservation issue this permit pursuant to Chapter 1200-03-30 and Paragraph 1200-03-09-.02(11) of the Tennessee Air Pollution Control Regulations and 40 CFR Part 76 of the Federal Regulations.

2. SO_2 Allowance Allocations and NO_x Requirements for each affected unit

		2015	2016	2017	2018	2019
Unit 1	**SO_2 allowances, under Tables 2, 3, or 4 of 40 CFR part 73.**	**25090***	**25090***	**25090***	**25090***	**25090***
	NO_x limit	**Pursuant to 40 CFR Part 76, the Tennessee Department of Environment and Conservation approves five (5) NO_X emissions averaging plans for this unit. Each plan is effective for one calendar year for the years 2015, 2016, 2017, 2018, and 2019. Under each plan, this unit's NO_X emissions shall not exceed the annual average alternative contemporaneous emission limitation (ACEL) of** 0.63 lb/mmBtu**. In addition, this unit shall not have an annual heat input greater than** 59,269,756 mmBtu**.** **Under each plan, the actual Btu-weighted annual average NO_X emissions rate for the units in each plan shall be less than or equal to the Btu-weighted annual average NO_X emissions rate for the same units had they each 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, except that for any early election units, the applicable emissions limitations shall be under 40 CFR 76.7. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under each respective plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.** **In accordance with 40 CFR 72.40(b)(2), approval of the averaging plans shall be final only when the Alabama Department of Environmental Management, Kentucky Department for Environmental Protection, and Memphis-Shelby County Health Department have also approved the averaging plans.** **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 U.S. EPA may change in a revision to 40 CFR part 73 Tables 2, 3, and 4. 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 necessitate a revision to the unit SO_2 allowance allocations identified in this permit (See 40 CFR 72.84).

3. Standard Requirements (40 CFR 72.9 and 1200-03-30-.01(6)).

4. Comments, Notes, and Justifications: **Affected unit is one (1) coal fired boiler**

5. Permit Application, NO_X Compliance Plan, and NO_X Averaging Plan: **Attached.**

6. Summary of Previous Actions, Present Action and Future Action:

Previous Actions:

1. Draft permit, including SO_2 compliance plan, issued for public comment.	August 5, 1997
2. SO_2 portion of permit finalized and issued.	November 10, 1997
3. Permit revised to include a draft nitrogen oxides Emissions Compliance Plan for Unit 1, issued for public comment on the NO_X portion only.	October 8, 1998
4. NO_X portion of permit finalized and issued.	April 1, 1999
5. Permit, revised to include a draft nitrogen oxides Averaging Plan for Unit 1, issued for public comment on the NO_X portion only.	February 20, 2001
6. Permit, including NO_X Averaging Plan, Finalized and issued.	May 14, 2001
7. Draft renewal permit including NOx averaging plan issued for public comment	October 15, 2008
8. Renewal Permit, including NOx Averaging Plan, Finalized and issued.	January 6, 2009
9. Renewal Application Due Date:	December 31, 2009
10. Renewal Title V Permit Issued: Permit Number: 556854	January 6, 2009
11. Issuing a public notice for the draft renewal Phase II Acid Rain Permit	April 22, 2010
12. Issuing the renewal Phase II Acid Rain Permit	June 7, 2010
13. Administrative Permit Amendment #1.	February 9, 2011

14.	Significant Modification 1 Application.	March 17, 2011
15.	Administrative Permit Amendment #2.	May 20, 2011
16.	Significant Modification 2 Application.	October 11, 2012

Present Action:

17.	Title V Permit Renewal Application dated.	July 8, 2013
18.	Acid Rain/Cair Title V Permit Renewal Application dated	August 8, 2014

Acid Rain Permit Application

NO_X compliance plan,

and

NO_X averaging plan

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Approval expires 11/30/2012

Acid Rain Permit Application

For more information, see instructions and 40 CFR 72.30 and 72.31.

This submission is: new ☐ revised ☑ for Acid Rain permit renewal

STEP 1

Identify the facility name, State, and plant (ORIS) code.

Bull Run Facility (Source) Name:	TN State:	3396 Plant Code:

STEP 2

Enter the unit ID# for every affected unit at the affected source in column "a."

a	b
Unit ID#	Unit Will Hold Allowances In Accordance with 40 CFR 72.9(c)(1)
1	Yes

EPA Form 7610-16 (Revised 12-2009)

Bull Run
Facility (Source) Name (from STEP 1):

STEP 3

Read the standard requirements.

Permit Requirements

(1) The designated representative of each affected source and each affected unit at the source shall:
(i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and
(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;
(2) The owners and operators of each affected source and each affected unit at the source shall:
(i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and
(ii) Have an Acid Rain Permit.

Monitoring Requirements

(1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75.
(2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the source or unit, as appropriate, with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
(3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements

(1) The owners and operators of each source and each affected unit at the source shall:
(i) Hold allowances, as of the allowance transfer deadline, in the source's compliance account (after deductions under 40 CFR 73.34(c)), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the affected units at the source; and
(ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
(3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
(i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or
(ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).

Bull Run
Facility (Source) Name (from STEP 1):

Sulfur Dioxide Requirements, Cont'd.

STEP 3, Cont'd.

(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements

The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements

(1) The designated representative of an affected source that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
(2) The owners and operators of an affected source that has excess emissions in any calendar year shall:
(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
(ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements

(1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
(i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;

Bull Run
Facility (Source) Name (from STEP 1):

Recordkeeping and Reporting Requirements, Cont'd.

STEP 3, Cont'd.

(ii) All emissions monitoring information, in accordance with 40 CFR part 75, provided that to the extent that 40 CFR part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
(iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
(2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit.
(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities

No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 shall be construed as:
(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating

Bull Run
Facility (Source) Name (from STEP 1):

Effect on Other Authorities, Cont'd.

STEP 3, Cont'd.

to applicable National Ambient Air Quality Standards or State Implementation Plans;
(2) Limiting the number of allowances a source can hold; *provided*, that the number of allowances held by the source shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

Certification

STEP 4
Read the certification statement, sign, and date.

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and 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 statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name: James R. Dalrymple

Signature: J R Dalrymple Date: 8/8/14

EPA Form 7610-16 (Revised 12-2009)

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Approval expires 11/30/2012

Acid Rain NO_X Compliance Plan

For more information, see instructions and refer to 40 CFR 76.9

This submission is: ☐ New ☑ Revised

STEP 1
Indicate plant name, State, and Plant code from the current Certificate of Representation covering the facility.

Bull Run Plant Name:	TN State:	3396 Plant Code:

STEP 2

Identify each affected Group 1 and Group 2 boiler using the unit IDs from the current Certificate of Representation covering the facility. Also indicate the boiler type: "CB" for cell burner, "CY" for cyclone, "DBW" for dry bottom wall-fired, "T" for tangentially fired, "V" for vertically fired, and "WB" for wet bottom, and select the compliance option for each unit by making an 'X' in the appropriate row and column.

	ID# 1 Type T	ID# Type	ID# Type	ID# Type	ID# Type	ID# Type
(a) Standard annual average emission limitation of 0.50 lb/mmBtu (for Phase I dry bottom wall-fired boilers)						
(b) Standard annual average emission limitation of 0.45 lb/mmBtu (for Phase I tangentially fired boilers)						
(c) Standard annual average emission limitation of 0.46 lb/mmBtu (for Phase II dry bottom wall-fired boilers)						
(d) Standard annual average emission limitation of 0.40 lb/mmBtu (for Phase II tangentially fired boilers)						
(e) Standard annual average emission limitation of 0.68 lb/mmBtu (for cell burner boilers)						
(f) Standard annual average emission limitation of 0.86 lb/mmBtu (for cyclone boilers)						
(g) Standard annual average emission limitation of 0.80 lb/mmBtu (for vertically fired boilers)						
(h) Standard annual average emission limitation of 0.84 lb/mmBtu (for wet bottom boilers)						

STEP 2, cont'd

Plant Name (From Step 1): Bull Run

	ID# 1	ID#	ID#	ID#	ID#	ID#
	Type: T	Type	Type	Type	Type	Type
(i) NO_X Averaging Plan (include NO_X Averaging form)	X					
(j) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(A) (check the standard emission limitation box above for most stringent limitation applicable to any unit utilizing stack)						
(k) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(B) with NO_X Averaging (check the NO_X Averaging Plan box and include NO_X Averaging Form))						
(l) EPA-approved common stack apportionment method pursuant to 40 CFR 75.17(a)(2)(i)(C), (a)(2)(ii)(B), or (b)(2)						

STEP 3: Identify the first calendar year in which this plan will apply.

January 1, 2015

STEP 4: Read the special provisions and certification, enter the name of the designated representative, sign and date.

Special Provisions

General. This source is subject to the standard requirements in 40 CFR 72.9. These requirements are listed in this source's Acid Rain Permit.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and 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 statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name JAMES R DALRYMPLE

Signature JRDalrymple Date 8/8/14

EPA Form 7610-28 (Revised 1-2014)

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Approval expires 11/30/2012

Acid Rain NO_x Averaging Plan

For more information, see instructions and refer to 40 CFR 76.11 Page 1

This submission is: ☐ New ☒ Revised Page **1** of **4**

STEP 1

Identify the units participating in this averaging plan by plant name, State, and unit ID. In column (a), fill in each unit's applicable emission limitation from 40 CFR 76.5, 76.6, or 76.7. In column (b), assign an alternative contemporaneous annual emissions limitation (ACEL) in lb/mmBtu to each unit. In column (c), assign an annual heat input limitation in mmBtu to each unit. Continue to page 3 if necessary.

Plant Name	State	Unit ID#	(a) Emission Limitation	(b) ACEL	(c) Annual Heat Input Limit
Allen	TN	1	0.86	0.76	13,796,000
Allen	TN	2	0.86	0.76	13,222,000
Allen	TN	3	0.86	0.76	11,387,000
Bull Run	TN	1	0.40	0.63	37,251,000
Colbert	AL	1	0.50	0.48	3,501,000
Colbert	AL	2	0.50	0.48	3,596,000
Colbert	AL	3	0.50	0.48	3,802,000
Colbert	AL	4	0.50	0.48	3,736,000
Colbert	AL	5	0.50	0.48	885,000

STEP 2

Use the formula to enter the Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan and the Btu-weighted annual average emission rate for the same units if they are operated in compliance with 40 CFR 76.5, 76.6, or 76.7. The former must be less than or equal to the latter.

Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan: **0.6035**

$$\frac{\sum_{i=1}^{n} (R_{Ui} \times HI_i)}{\sum_{i=1}^{n} HI_i} \leq$$

Btu-weighted annual average emission rate for same units operated in compliance with 40 CFR 76.5, 76.6 or 76.7: **0.6137**

$$\leq \frac{\sum_{i=1}^{n} [R_i \times HI_i]}{\sum_{i=1}^{n} HI_i}$$

Where,

R_{Ui} = Alternative contemporaneous annual emission limitation for unit i, in lb/mmBtu, as specified in column (b) of Step 1;

R_i = Applicable emission limitation for unit i, in lb/mmBtu, as specified in column (a) of Step 1;

HI_i = Annual heat input for unit i, in mmBtu, as specified in column (c) of Step 1;

n = Number of units in the averaging plan

STEP 3

Identify the first calendar year in which this plan will apply.

January 1, 2015

STEP 4

Read the special provisions and certification, enter the name of the designated representative, and sign and date.

Special Provisions

Emission Limitations

Each affected unit in an approved averaging plan is in compliance with the Acid Rain emission limitation for NO_X under the plan only if the following requirements are met:

(i) For each unit, the unit's actual annual average emission rate for the calendar year, in lb/mmBtu, is less than or equal to its alternative contemporaneous annual emission limitation in the averaging plan, and
(a) For each unit with an alternative contemporaneous emission limitation less stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year does not exceed the annual heat input limit in the averaging plan,
(b) For each unit with an alternative contemporaneous emission limitation more stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year is not less than the annual heat input limit in the averaging plan, or
(ii) If one or more of the units does not meet the requirements of (i), the designated representative shall demonstrate, in accordance with 40 CFR 76.11(d)(1)(ii)(A) and (B), that the actual Btu-weighted annual average emission rate for the units in the plan is less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations in 40 CFR 76.5, 76.6, or 76.7.
(iii) If there is a successful group showing of compliance under 40 CFR 76.11(d)(1)(ii)(A) and (B) for a calendar year, then all units in the averaging plan shall be deemed to be in compliance for that year with their alternative contemporaneous emission limitations and annual heat input limits under (i).

Liability

The owners and operators of a unit governed by an approved averaging plan shall be liable for any violation of the plan or this section at that unit or any other unit in the plan, including liability for fulfilling the obligations specified in part 77 of this chapter and sections 113 and 411 of the Act.

Termination

The designated representative may submit a notification to terminate an approved averaging plan, in accordance with 40 CFR 72.40(d), no later than October 1 of the calendar year for which the plan is to be terminated.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and 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 statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name JAMES R DRYMPLE	
Signature J S R Dalrymple	Date 8/8/11

Tennessee Valley Authority, 1101 Market Street, BR 4A, Chattanooga, Tennessee 37402

August 11, 2014

Mr. Barry Stephens
Division of Air Pollution Control
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue
Nashville, Tennessee 37243

Dear Mr. Stephens:

RENEWAL CAIR PERMIT APPLICATIONS, ARP PERMIT APPLICATIONS, PHASE II NO_X COMPLIANCE PLANS, AND NO_X AVERAGING PLANS.

In accordance with 40 CFR 96.121, 96.122, 96.221, 96.222, 96.321 and 96.322, enclosed are revised CAIR Permit Applications for the following TVA facilities:

Brownsville CT (55081)
Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Gleason Generating Facility (55251)
Johnsonville (3406)
John Sevier (3405)
Kingston (3407)
Lagoon Creek (7845)

In accordance with 40 CFR 72.30 and 72.31, enclosed are renewal Acid Rain Permit Applications for the following TVA facilities:

Brownsville CT (55081)
Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Gleason Generating Facility (55251)
Johnsonville (3406)
John Sevier (3405)
Kingston (3407)
Lagoon Creek (7845)

In accordance with requirements of 40 CFR §76.9 and §76.11, Acid Rain Nitrogen Oxides Emission Reduction Program, enclosed are Phase II NO_X Compliance Plans for the following TVA facilities:

Bull Run (3396)
Cumberland (3399)
Gallatin (3403)
Johnsonville (3406)
Kingston (3407)

TVA's Phase II NO_X Averaging Plan is also enclosed. TVA's current plan is to demonstrate compliance with the NO_X reduction requirements utilizing a system-wide averaging approach that includes all TVA units and to ensure that the Title IV permit reflects the compliance requirements imposed by the permitting authorities.

The Phase II NO_X Averaging Plan includes the following TVA facilities:

Allen (3393)
Bull Run (3396)
Colbert (47)
Cumberland (3399)
Gallatin (3403)
Johnsonville (3406)
Kingston (3407)
Paradise (1378)
Shawnee (1379) Units 1-9
Widows Creek (50)

If you have any questions, please contact Eric Walker at (423)751-7129, or by e-mail at elwalker@tva.gov.

Sincerely,

James R. Dalrymple
Designated Representative

Enclosures
cc: U.S. EPA Region IV
Air, Pesticides, and Toxics Management Division (#4 APT-AEB)
Monitor & Technical Support Section
Sam Nunn Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Mail Code 6204M
Attn: Acid Rain NOx
Washington, DC 20460