Gibson, Victoria

From: Comer, Patricia
Sent: Tuesday, August 14, 2007 11:42 AM
To: Gibson, Victoria
Subject: FW: Gainesville Regional Utilities--Deerhaven

Vickie
I usually copy Trina so you know what's going on....but I forgot on this one. We're closing this file.
Pat

And we have closed the Mosaic Green Bay file if you're keeping track of that.

-----Original Message-----
From: Comer, Patricia
Sent: Tuesday, August 14, 2007 11:40 AM
To: Arif, Syed
Subject: Gainesville Regional Utilities--Deerhaven

Syed
OGC received a "Withdrawal of Request for Extension of Time" on case number OGC 07-1263... permit intent 0010006-005AC . The litigation file is being closed.
Pat

Gibson, Victoria

From: Crandall, Lea
Sent: Tuesday, August 14, 2007 2:15 PM
To: Gibson, Victoria; Arif, Syed
Subject: City of Gainesville - 0010006-005-AC - Withdrawal of Request for Extension of Time.

Attachments: Di4700708141406.PDF

Di4700708141406.
PDF (3 MB)

FYI!

Thanks,
Lea

Lea Crandall
Agency Clerk
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 35
Tallahassee, FL 32399-3000
Phone: (850) 245-2212 SC: 205-2212
Fax: (850) 245-2303

-----Original Message-----
From: Knight, Barnard
Sent: Tuesday, August 14, 2007 2:08 PM
To: Crandall, Lea
Subject: From KONICA MINOLTA Di470

GRU -- City of Gainesville - Deerhaven Generating Station

0010006-005-AC (Syed)

2007	
12-Jul	OGC received in the 1st request for extension of time through 8/27
	book, list and notes
16-Jul	note to Jeff and Syed to see if request will be granted; yes they will grant
	forwarded Jeff's e-mail to Pat and Val in OGC
27-Jul	OGC issued the order to grant until 8/27
	copies to Syed, Jeff and Patty
13-Aug	Received a copy from the facility of their order to withdraw this request
	signed and received in OGC on 8/10
	copy was sent to Syed as well
	LCT has not been updated yet by OGC
14-Aug	note from Pat; case closed without final order
	Case Closed in OGC
	Expires on August 27th

THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Air Construction Permit by:

OGC No. 01-1265

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, FL 32614-7117

Deerhaven Generating Station (DGS)
Facility ID No. 0010005
Draft Permit No. 0010006-005-AC
Alachua County

_____/

WITHDRAWAL OF REQUEST FOR EXTENSION OF TIME

By and through undersigned counsel, the City of Gainesville, Gainesville Regional Utilities (GRU) hereby withdraws its Request for Extension of Time to file a Petition for Administrative Proceedings in accordance with Florida Administrative Code Rule 62-110.106(4). GRU filed its request for extension of time until August 27, 2007, in response to the "Intent to Issue Air Permit" (Permit No. 0010006-005-AC) for the Deerhaven Generating Station, located in Alachua County, Florida. The Department of Environmental Protection (Department) granted that extension on July 27, 2007.

This withdrawal is conditioned upon changes agreed to between the Department and GRU, which are reflected in the document attached as Exhibit A, as well as an extension of the permits expiration date to September 30, 2011.

Respectfully submitted this 10th day of August, 2007.

HOPPING GREEN & SAMS, P.A.

_____

Angela Morrison Uhland
Fla. Bar No. 0855766
123 South Calhoun Street
Post Office Box 6526
Tallahassee, FL 32314
(850) 222-7500

Attorney for CITY OF GAINESVILLE,
GAINESVILLE REGIONAL UTILITIES (GRU)

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing has been furnished to the following by U.S. Mail on this 10th day of August, 2007:

Patricia Comer, Esquire
Office of General Counsel
Department of Environmental Protection
3900 Commonwealth Blvd.
Tallahassee, FL 32399-2600

Trina Vielhauer, Chief
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Syed Arif
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attorney

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative:
Ms. Karen Alford, Interim Assistant General Manager
Energy Supply

Permit No.:	0010006-005-AC
Facility ID No.:	0010006
Project:	Installation of Air Quality Control Systems
Expires:	September 30, 2009

PROJECT AND LOCATION

This permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The Deerhaven Generating Station is an existing electrical generating plant (SIC No. 4911) located at 10001 NW 13th Street in Gainesville, Alachua County, Florida. The UTM coordinates are: Zone 17; 365.7 km E; 3292.6 km N.

STATEMENT OF BASIS

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation except as needed to comply with the New Source Performance Standards (NSPS) in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). However, the addition of hydrated lime to the flue gas is required when burning compliance coal (approximately up to 0.8 weight percent sulfur) and when the CDS is not fully operational to ensure there is no Prevention of Significant Deterioration (PSD) significant emission increase of sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the CFR. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

CONTENTS

Section 1.	General Information
Section 2.	Administrative Requirements
Section 3.	Emissions Unit Specific Conditions
Appendix GC.	Construction Permit General Conditions

Executed in Tallahassee, Florida

Joseph Kahn, Director
Division of Air Resource Management

(Date)

FACILITY DESCRIPTION

The City of Gainesville, GRU operates an existing electrical generating plant at the Deerhaven Generating Station (DGS). This plant consists of two steam boilers (Unit Nos. 1 and 2) and associated steam turbines; a simple cycle combustion turbine (CT No. 3); two unregulated simple cycle combustion turbines (CT Nos. 1 and 2); a recirculating cooling water system; storage and handling facilities for coal; brine salt; fly ash and bottom ash; fuel oil storage tanks; water treatment facilities; a railcar maintenance facility and ancillary equipments. Boiler No. 2 has a nominal nameplate rating of 251 megawatts (MW), electric. Emission control equipment currently installed on Boiler No. 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

PROJECT DESCRIPTION

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation, except as needed to comply with the NSPS in 40 CFR 60, Subpart D.

Installation of the SCR system will result in collateral generation of SAM as particulate matter (PM/PM_{10}). There is a potential increase in emissions if the permittee elects not to fully operate the CDS (i.e., with water injection and ash recirculation), a situation that is only likely to occur when burning low sulfur coal (approximately up to 0.8 weight percent sulfur). The potential increase of SAM generation is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) and the subsequent reaction of SO_3 and water to form SAM. In the absence of hydrated lime injection when burning low-sulfur coal, there is a potential for increased emissions of SAM if the CDS and baghouse are not in operation. The permit requires the injection of hydrated lime to the flue gas when burning low-sulfur coal and when the CDS is not fully operational to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will react with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

REGULATORY CLASSIFICATION

Title III: The existing facility is a major source of hazardous air pollutants (HAPs).

Title IV: The existing facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a major stationary in accordance with Rule 62-212.400, F.A.C.

NSPS: The existing facility operates units subject to the New Source Performance Standards of 40 CFR 60.

RELEVANT DOCUMENTS

The permit request and additional information received to make it complete are not a part of this permit; however, the information is listed in the technical evaluation which is issued concurrently with this permit.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: All documents related to applications for permits regarding construction and operation shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be sent to the Department's Northeast District Office.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to Northeast District Office.

3. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C.; and Title 40, Part 60 of the CFR, adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

   {Note: The capacities and specifications stated in the application are based on preliminary design and the final design could include minor changes from the capacities and specification listed in the original application.}

4. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

5. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

6. Title V Permit: This permit authorizes modification of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

7. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by increasing its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction has not yet commenced on the source or modification. [Rule 62-212.400(12)(c), F.A.C.]

The specific conditions listed in this section apply to the following emission unit:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
005	Steam Boiler - Unit 2

Unit 2 is a fossil fuel-fired steam generator with a nominal nameplate rating of 251 MW. Authorized fuels include pulverized coal, natural gas and/or distillate fuel oils (Nos. 1 or 2) with emissions exhausted through a 350 feet stack. The maximum heat input to Unit 2 is 2,428 MMBtu/hour. Unit 2 is a dry bottom, wall-fired boiler with a hot-side electrostatic precipitator to control particulate matter. Unit 2 began commercial operation in 1981. Opacity, nitrogen oxides (NOx) and SO_2 emissions are continuously monitored.

PREVIOUS APPLICABLE REQUIREMENTS

1. Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

AUTHORIZED WORK

2. SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: urea to ammonia conversion system; ammonia flow control unit; ammonia injection grid; two active layers of catalyst with space provided for a future layer; SCR reactor chamber; and other ancillary equipment, including a system to add calcium to the fuel for catalyst preservation. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

3. CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. In general, the system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. SO_2 will be measured at the inlet of the CDS reactor; outlet SO_2 will be measured at the stack. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

4. Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. The design outlet grain loading is 0.01 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

5. Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR and CDS is not required by this permit. As necessary, the permittee shall operate the hydrated lime addition system and baghouse for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (49 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

PERFORMANCE REQUIREMENTS

6. Annual SAM Emissions Projections: The permittee projected that the increase in actual annual emissions of SAM due to the project would not exceed the PSD significance level (i.e., 7 tons/year). The permittee

shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

{Permitting Note: The baseline actual emission of SAM is 49 tons/year.}

7. Hydrated Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed 7 tons per year above the baseline actual emissions of 49 tons per year. The permittee shall add hydrated lime at a frequency and injection rate for SAM control to satisfy this requirement. The permittee will adjust the hydrated lime flow rate for the given set of operating conditions based on the most recent correlation curves in a performance test. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

8. Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv) as demonstrated by an annual test. [Design; and Rule 62-4.070(3), F.A.C.]

EMISSIONS PERFORMANCE TESTING

9. Baseline Performance Test – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct a baseline performance test at permitted capacity to evaluate SAM emissions. A baseline performance test shall be conducted using current coal (0.8 weight percent sulfur). The baseline performance test shall be conducted prior to the installation of the AQCS. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to the test and shall submit a test report summarizing the emission test and results within 45 days of the completion of the performance test.

   [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

10. Post- AQCS Construction Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions and demonstrate that there is no PSD-significant emissions increase of SAM as a result of the installation of the AQCS. Post- AQCS construction tests shall evaluate both current (up to 0.8 weight percent) and higher sulfur (up to 2.5 weight percent) coals.

    a. No later than November 30, 2008, the permittee shall submit to the Department for review and approval a SAM Evaluation and Testing Plan which shall include as a minimum the following:

        - Evaluation of factors affecting SAM generation (e.g., fuel type, emission control devices, operating conditions, etc.)
        - Determination of the SO_2 to SO_3 conversion rates across the SCR.
        - Evaluation of the hydrated lime injection rates required to mitigate SAM emissions.
        - Testing protocol (e.g., methods, number of runs, operating scenarios, annual tests, etc.)

    b. Testing shall be conducted no later than 180 days after the first flue gas flow through the entire AQCS.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

    d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

    e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing operating conditions

and providing details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

11. Annual Tests – Hydrated Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection rates as necessary. The Department may re-evaluate this requirement based on the results of the initial testing. The protocol for the performance tests shall be submitted to the Department no later than November 30, 2008. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

12. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. [Rule 62-297.310(7)(a)9, F.A.C.]

13. Test Methods: Required tests shall be performed in accordance with the following reference methods or other Department approved methods upon request by permittee:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the sulfuric acid mist emissions can also be determined with the National Council for Air and Stream Improvement (NCASI) Method 8A. Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

14. Startup, Shutdown and Malfunction: Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

[Rule 40 CFR 60.8(c)]

{Permitting Note: Boiler startup or shutdown may exceed two hours due to operational constraints of the control equipment, which include:

a. During boiler startup or shutdown, the SCR system is fully functional once the boiler flue gas temperature at the SCR reactor inlet stabilizes to 613^0F or greater.

b. During boiler startup and shutdown, the CDS system is fully functional once the following sequential criteria are met:

- The flue gas flow rate at the outlet of the baghouse stabilizes at approximately 1.5 million pounds per hour or greater for a minimum of 6 hours;
- The boiler flue gas temperature at the CDS inlet stabilizes at 230^0F or greater; and
- Water has been injected into the reactor for a minimum of 2 hours.}

15. Emissions: The permittee at all times, including periods of startup, shutdown, and malfunction shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control

equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility. [Rule 40 CFR 60.11(d)]

NOTIFICATIONS, RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each sulfuric acid mist test run, the report shall also indicate the lime injection rate for SAM emissions control, unit load, and unit heat input rate. [Rule 62-297.310(8), F.A.C.]

17. Operational Data: The permittee shall monitor and record the hydrated lime consumption rate for SAM emissions control when the unit is combusting compliance coal (approximately up to 0.8 weight percent sulfur) and the CDS is not fully operational. [Rule 62-4.070(3), F.A.C.]

18. Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

    a. The permittee shall evaluate the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years following resumption of regular operations after completing construction on the unit's emission control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

        a. Name, address and telephone number of the owner or operator of the major stationary source;

        b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

        d. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

19. SAM Emissions Computation and Reporting: The permittee shall compute SAM emissions in accordance with the following requirements.

    a. For each year of reporting required, emissions shall be computed based on the controlled and uncontrolled emissions factors determined during the required annual emissions test. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

    b. With appropriate supporting test data, multiple emission factors may be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

c. The permittee shall compute emissions by multiplying the appropriate controlled or uncontrolled emission factor by the annual heat input rate for the period over which the emissions are computed. The uncontrolled emissions factor shall be used if the minimum lime injection rate established for the latest test is not met.

d. The permittee shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the Department or Compliance Authority for any regulatory purpose.

[Rule 62-210.370, F.A.C.]

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CITY OF GAINESVILLE – GAINESVILLE REGIONAL UTILITIES, DEERHAVEN GENERATING STATION,

Petitioner,

v.

OGC No. 07-1263
DEP Permit No. 0010006-005-AC

DEPARTMENT OF ENVIRONMENTAL PROTECTION,

Respondent.
_____/

ORDER GRANTING REQUEST FOR
EXTENSION OF TIME TO FILE PETITION FOR HEARING

This cause has come before the Florida Department of Environmental Protection (FDEP) upon receipt of a request made by Petitioner, City of Gainesville – Gainesville Regional Utilities, Deerhaven Generating Station, to grant an extension of time to file a petition for administrative hearing to allow time to discuss with FDEP several specific permit conditions for its facility in Alachua County, Florida. Because the request shows good cause for the extension of time,

IT IS ORDERED:

The request for an extension of time to file a petition for administrative proceeding is granted. Petitioner shall have until August 27, 2007, to file a petition in this matter. Filing shall be complete upon receipt by the Office of General Counsel, Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

DONE AND ORDERED on this 27th day of July, 2007, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

JACK CHISOLM, Deputy General Counsel
3900 Commonwealth Boulevard - MS 35
Tallahassee, Florida 32399-3000
850/245-2242 facsimile 850/245-2302

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished via ✓ U. S. Mail ✓ facsimile _ **only**, this 27th day of July, 2007, to:

Angela Morrison Uhland
Hopping Green & Sams, P.A.
Post Office Box 6526
Tallahassee, FL 32314

Facsimile: 850/224-8551

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Patricia E. Comer, Assistant General Counsel
FL Bar 0224146
3900 Commonwealth Boulevard - MS 35
Tallahassee, Florida 32399-3000
850/245-2288 facsimile 850/245-2302

with courtesy copies via electronic mail to:

Trina Vielhauer, Chief – FDEP, BAR
Syed Arif, Project Engineer – FDEP, BAR

Gibson, Victoria

From: Miskelley, Valerie
Sent: Friday, July 27, 2007 1:13 PM
To: Gibson, Victoria; Arif, Syed
Subject: GRU Deerhaven 0010006-005-AC

Attachments: Ord Granting City of Gainesville - GRU 07-1263.pdf

Syed and Vickie,
Here is the order granting on OGC No. 07-1263 for your files. Let me know if you need anything else.

Ord Granting City of Gainesvil...

Thanks,
Valerie I. Miskelley
Office of General Counsel
Florida Department of Environmental Protection
3900 Commonwealth Blvd. - MS 35
Tallahassee, Florida 32399-3000
email: Valerie.Miskelley@dep.state.fl.us
850/245-2260 SC/205-2250

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Gibson, Victoria

From: Miskelley, Valerie
Sent: Friday, July 27, 2007 10:50 AM
To: Gibson, Victoria
Subject: RE: GRU - Deerhaven 0010006-005-AC

this one and the order for smurfit 015-av are going out this morning...i will email it to you shortly!

From: Gibson, Victoria
Sent: Friday, July 27, 2007 10:37 AM
To: Miskelley, Valerie
Subject: GRU - Deerhaven 0010006-005-AC

Hi,

Please give me a status update on this order to grant.

Thanks.

Vickie

Victoria Gibson, Administrative Secretary for
Trina Vielhauer, Chief
Bureau of Air Regulation
Department of Air Resource Management
victoria.gibson@dep.state.fl.us
850-921-9504 fax 850-921-9533

Gibson, Victoria

From: Miskelley, Valerie
Sent: Friday, July 20, 2007 3:33 PM
To: Gibson, Victoria
Subject: RE: GRU - Deerhaven Generating Station - AC Permit NO. 0010006-005-AC
Follow Up Flag: Follow up
Flag Status: Red

Vickie,
I was finally got this case. I have drafted the order granting and it is in Jack's box. I will email it to you as soon as it is signed.

Thanks,
Valerie

...and in case you hadn't heard...next Friday is my last day with the Department. I accepted a position with the Fla Assoc of Counties. It has been great working with you!!!

From: Gibson, Victoria
Sent: Monday, July 16, 2007 1:53 PM
To: Koerner, Jeff
Cc: Comer, Patricia; Miskelley, Valerie
Subject: RE: GRU - Deerhaven Generating Station - AC Permit NO. 0010006-005-AC

Thank you. I will forward this on to Pat Comer and her assistant, Valerie Miskelley.

Vickie

From: Koerner, Jeff
Sent: Monday, July 16, 2007 1:47 PM
To: Gibson, Victoria
Cc: Arif, Syed
Subject: FW: GRU - Deerhaven Generating Station - AC Permit NO. 0010006-005-AC

FYI ...

Jeff

From: Arif, Syed
Sent: Wednesday, July 11, 2007 1:23 PM
To: Jonynas, Yolanta E
Cc: Koerner, Jeff
Subject: RE: GRU - Deerhaven Generating Station - AC Permit NO. 0010006-005-AC

Yolanta,

We don't have any objections in your filing an extension of time. I thought you needed this permit ASAP. Normally the extension is for 30 days but if you need 45 days, I don't have a problem with it and neither does Jeff.

Syed

From: Jonynas, Yolanta E [mailto:JONYNASYE@gru.com]
Sent: Wednesday, July 11, 2007 10:30 AM
To: Koerner, Jeff; Arif, Syed
Cc: Angela Morrison Uhland
Subject: GRU - Deerhaven Generating Station - AC Permit NO. 0010006-005-AC
Importance: High

Jeff and Syed, we are going to need to file for an extension of time (45 days) for filing for an administrative hearing. Do you have any objection to this? Thanks.

THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Air Construction Permit by:

OGC No. _____

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, FL 32614-7117

Deerhaven Generating Station (DGS)
Facility ID No. 0010005
Draft Permit No. 0010006-005-AC
Alachua County

_____/

REQUEST FOR EXTENSION OF TIME

By and through undersigned counsel, the City of Gainesville, Gainesville Regional Utilities (GRU) hereby requests, pursuant to Florida Administrative Code Rule 62-110.106(4), an extension of time to and including August 27, 2007, in which to file a Petition for Administrative Proceedings in the above-styled matter. As good cause for granting this request, GRU states the following:

1. On or about June 29, 2007, GRU received from the Department of Environmental Protection (Department) a Technical Evaluation and Preliminary Determination, a Proposed Draft Permit, and a Written Notice of Intent to Issue Air Permit (Permit No. 0010006-005-AC) for the Deerhaven Generating Station located in Alachua County, Florida.

2. The draft permit contains several provisions that warrant clarification or correction.

3. Representatives of GRU will correspond with staff of the Department's Bureau of Air Regulation in an effort to resolve all issues.

4. This request is filed simply as a protective measure to avoid waiver of GRU's right to challenge certain conditions contained in the Notice of Intent to Issue Air Permit. Grant of this request will not prejudice either party, but will further their mutual interest and likely avoid the need to file a petition and proceed to a formal administrative hearing.

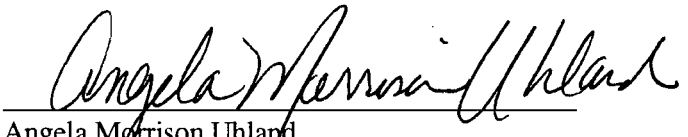
5. Counsel for GRU has attempted without success to contact Patricia Comer with the Department's Office of General Counsel regarding this request.

6. GRU representatives have contacted Syed Arif with the Department's Bureau of Air Regulation, and he has no objection to the Request for Extension.

WHEREFORE, GRU respectfully requests that the time for filing a Petition for Administrative Proceedings with regard to the above-referenced Technical Evaluation and Preliminary Determination, Proposed Draft Permit, and Written Notice of Intent to Issue Air Permit (Permit No. 0010006-005-AC) be formally extended to and including August 27, 2007. If the Department denies this request, GRU requests the opportunity to file a Petition for Administrative Proceedings within 10 days of such denial.

Respectfully submitted this 12th day of July, 2007.

HOPPING GREEN & SAMS, P.A.



Angela Morrison Uhland
Fla. Bar No. 0855766
123 South Calhoun Street
Post Office Box 6526
Tallahassee, FL 32314
(850) 222-7500

Attorney for CITY OF GAINESVILLE,
GAINESVILLE REGIONAL UTILITIES (GRU)

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing has been furnished to the following by U.S. Mail on this 12th day of July, 2007:

Patricia Comer, Esquire
Office of General Counsel
Department of Environmental Protection
3900 Commonwealth Blvd.
Tallahassee, FL 32399-2600

Trina Vielhauer, Chief
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Syed Arif
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attorney

265101

Gibson, Victoria

From: Gibson, Victoria
Sent: Thursday, July 12, 2007 3:55 PM
To: Koerner, Jeff
Subject: FW: Request for Extension of Time rec'd. - 0010006-005-AC - City of Gainesville (Gainesville Regional Utilities)

Attachments: Di4700707121547A.PDF

From: Crandall, Lea
Sent: Thursday, July 12, 2007 3:51 PM
To: Gibson, Victoria; Arif, Syed
Subject: FW: Request for Extension of Time rec'd. - 0010006-005-AC - City of Gainesville (Gainesville Regional Utilities)

Di4700707121547A
.PDF (531 KB)

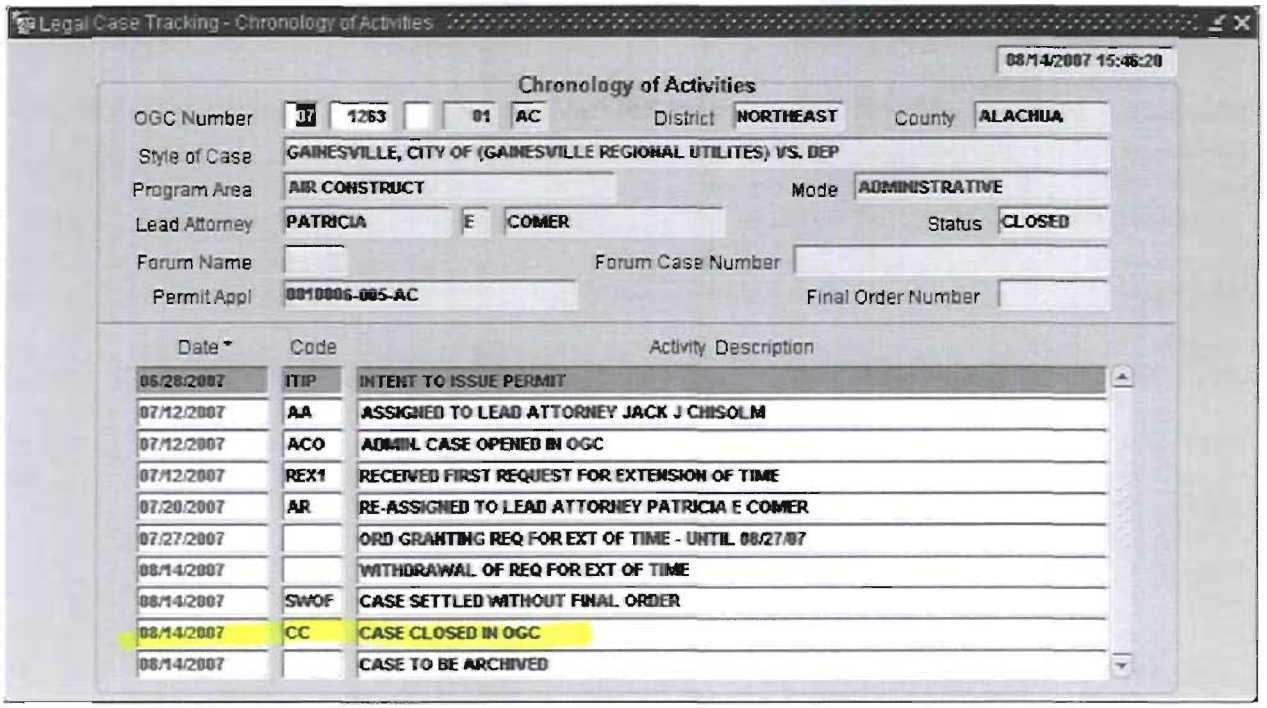
Lea Crandall
Agency Clerk
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 35
Tallahassee, FL 32399-3000
Phone: (850) 245-2212 SC: 205-2212
Fax: (850) 245-2303

-----Original Message-----
From: Crandall, Lea
Sent: Thursday, July 12, 2007 2:45 PM
To: Chisolm, Jack; Brown, Lisa L.; Gibson, Victoria; Arif, Syed
Subject: Request for Extension of Time rec'd. - 0010006-005-AC - City of Gainesville (Gainesville Regional Utilities)

FYI, a Request for Extension of Time was rec'd. today re: 0010006-005-AC - City of Gainesville (Gainesville Regional Utilities).

Thanks,
Lea

Lea Crandall
Agency Clerk
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 35
Tallahassee, FL 32399-3000
Phone: (850) 245-2212 SC: 205-2212
Fax: (850) 245-2303


Legal Case Tracking - Chronology of Activities
08/14/2007 15:46:20
Chronology of Activities
OGC Number
JT
1263
01
AC
District
NORTHEAST
County
ALACHUA
Style of Case
GAINESVILLE, CITY OF (GAINESVILLE REGIONAL UTILITES) VS. DEP
Program Area
AIR CONSTRUCT
Mode
ADMINISTRATIVE
Lead Attorney
PATRICIA
E
COMER
Status
CLOSED
Forum Name
Forum Case Number
Permit Appl
0810006-005-AC
Final Order Number
Date
Code
Activity Description
06/26/2007
ITIP
INTENT TO ISSUE PERMIT
07/12/2007
AA
ASSIGNED TO LEAD ATTORNEY JACK J CHISOLM
07/12/2007
ACO
ADMIN. CASE OPENED IN OGC
07/12/2007
REX1
RECEIVED FIRST REQUEST FOR EXTENSION OF TIME
07/20/2007
AR
RE-ASSIGNED TO LEAD ATTORNEY PATRICIA E COMER
07/27/2007
ORD GRANTING REQ FOR EXT OF TIME - UNTIL 08/27/07
08/14/2007
WITHDRAWAL OF REQ FOR EXT OF TIME
08/14/2007
SWOF
CASE SETTLED WITHOUT FINAL ORDER
08/14/2007
CC
CASE CLOSED IN OGC
08/14/2007
CASE TO BE ARCHIVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Air Permit by:

Ms. Karen Alford
Gainesville Regional Utilities
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Air Permit No. 0010006-005-AC
Deerhaven Generating Station
Alachua County

Enclosed is the Final Permit which authorizes the installation of selective catalytic reduction, circulating dry scrubber and baghouse systems. The proposed work will be conducted on the existing Unit 2 at the Deerhaven Generating Station, which is located in Alachua County at 10001 NW 13th Street in Gainesville, Florida. As noted in the attached Final Determination, changes and revisions were made to the draft permit. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68 of the Florida Statutes by filing a notice of appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Permit and Final determination) and all copies were sent by electronic mail with received receipt requested before the close of business on 8/13/01 to the persons listed below:

Karen Alford, GRU (alfordkc@gru.com)
Yolanta E. Jonynas, GRU (jonynasye@gru.com)
Jim Little, EPA (little.james@epa.gov)
Kathleen Forney, EPA (forney.kathleen@epa.gov)
D. Morse, NPS (dee_morse@nps.gov)
Chris Kirts, DEP-NED (christopher.kirts@dep.state.fl.us)
Tom W. Davis, P.E., ECT, Inc. (tdavis@ectinc.com)
Michael Halpin, OSC (michael.halpin@dep.state.fl.us)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) (Date) 8/13/01

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative:
Ms. Karen Alford, Interim Assistant General Manager
Energy Supply

Permit No.:	0010006-005-AC
Facility ID No.:	0010006
Project:	Installation of Air Quality Control Systems
Expires:	September 30, 2011

PROJECT AND LOCATION

This permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The Deerhaven Generating Station is an existing electrical generating plant (SIC No. 4911) located at 10001 NW 13th Street in Gainesville, Alachua County, Florida. The UTM coordinates are: Zone 17; 365.7 km E; 3292.6 km N.

STATEMENT OF BASIS

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation except as needed to comply with the New Source Performance Standards (NSPS) in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). However, the addition of hydrated lime to the flue gas is required when burning compliance coal (approximately up to 0.8 weight percent sulfur) and when the CDS is not fully operational to ensure there is no Prevention of Significant Deterioration (PSD) significant emission increase of sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the CFR. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

CONTENTS

Section 1.	General Information
Section 2.	Administrative Requirements
Section 3.	Emissions Unit Specific Conditions
Appendix GC.	Construction Permit General Conditions

Executed in Tallahassee, Florida

Joseph Kahn, Director
Division of Air Resource Management

8/13/07
(Date)

FACILITY DESCRIPTION

The City of Gainesville, GRU operates an existing electrical generating plant at the Deerhaven Generating Station (DGS). This plant consists of two steam boilers (Unit Nos. 1 and 2) and associated steam turbines; a simple cycle combustion turbine (CT No. 3); two unregulated simple cycle combustion turbines (CT Nos. 1 and 2); a recirculating cooling water system; storage and handling facilities for coal; brine salt; fly ash and bottom ash; fuel oil storage tanks; water treatment facilities; a railcar maintenance facility and ancillary equipments. Boiler No. 2 has a nominal nameplate rating of 251 megawatts (MW), electric. Emission control equipment currently installed on Boiler No. 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

PROJECT DESCRIPTION

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation, except as needed to comply with the NSPS in 40 CFR 60, Subpart D.

Installation of the SCR system will result in collateral generation of SAM as particulate matter (PM/PM_{10}). There is a potential increase in emissions if the permittee elects not to fully operate the CDS (i.e., with water injection and ash recirculation), a situation that is only likely to occur when burning low sulfur coal (approximately up to 0.8 weight percent sulfur). The potential increase of SAM generation is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) and the subsequent reaction of SO_3 and water to form SAM. In the absence of hydrated lime injection when burning low-sulfur coal, there is a potential for increased emissions of SAM if the CDS and baghouse are not in operation. The permit requires the injection of hydrated lime to the flue gas when burning low-sulfur coal and when the CDS is not fully operational to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will react with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

REGULATORY CLASSIFICATION

Title III: The existing facility is a major source of hazardous air pollutants (HAPs).

Title IV: The existing facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a major stationary in accordance with Rule 62-212.400, F.A.C.

NSPS: The existing facility operates units subject to the New Source Performance Standards of 40 CFR 60.

RELEVANT DOCUMENTS

The permit request and additional information received to make it complete are not a part of this permit; however, the information is listed in the technical evaluation which is issued concurrently with this permit.

1. Permitting Authority: All documents related to applications for permits regarding construction and operation shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be sent to the Department's Northeast District Office.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to Northeast District Office.

3. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C.; and Title 40, Part 60 of the CFR, adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

   {Note: The capacities and specifications stated in the application are based on preliminary design and the final design could include minor changes from the capacities and specification listed in the original application.}

4. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

5. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

6. Title V Permit: This permit authorizes modification of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

7. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by increasing its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction has not yet commenced on the source or modification. [Rule 62-212.400(12)(c), F.A.C.]

The specific conditions listed in this section apply to the following emission unit:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
005	Steam Boiler - Unit 2

Unit 2 is a fossil fuel-fired steam generator with a nominal nameplate rating of 251 MW. Authorized fuels include pulverized coal, natural gas and/or distillate fuel oils (Nos. 1 or 2) with emissions exhausted through a 350 feet stack. The maximum heat input to Unit 2 is 2,428 MMBtu/hour. Unit 2 is a dry bottom, wall-fired boiler with a hot-side electrostatic precipitator to control particulate matter. Unit 2 began commercial operation in 1981. Opacity, nitrogen oxides (NOx) and SO_2 emissions are continuously monitored.

PREVIOUS APPLICABLE REQUIREMENTS

1. Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

AUTHORIZED WORK

2. SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: urea to ammonia conversion system; ammonia flow control unit; ammonia injection grid; two active layers of catalyst with space provided for a future layer; SCR reactor chamber; and other ancillary equipment, including a system to add calcium to the fuel for catalyst preservation. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
3. CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. In general, the system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. SO_2 will be measured at the inlet of the CDS reactor; outlet SO_2 will be measured at the stack. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
4. Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. The design outlet grain loading is 0.01 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
5. Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR and CDS is not required by this permit. As necessary, the permittee shall operate the hydrated lime addition system and baghouse for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (49 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

PERFORMANCE REQUIREMENTS

6. Annual SAM Emissions Projections: The permittee projected that the increase in actual annual emissions of SAM due to the project would not exceed the PSD significance level (i.e., 7 tons/year). The permittee

shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

{Permitting Note: The baseline actual emission of SAM is 49 tons/year.}

7. Hydrated Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed 7 tons per year above the baseline actual emissions of 49 tons per year. The permittee shall add hydrated lime at a frequency and injection rate for SAM control to satisfy this requirement. The permittee will adjust the hydrated lime flow rate for the given set of operating conditions based on the most recent correlation curves in a performance test. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

8. Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv) as demonstrated by an annual test. [Design; and Rule 62-4.070(3), F.A.C.]

EMISSIONS PERFORMANCE TESTING

9. Baseline Performance Test – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct a baseline performance test at permitted capacity to evaluate SAM emissions. A baseline performance test shall be conducted using current coal (0.8 weight percent sulfur). The baseline performance test shall be conducted prior to the installation of the AQCS. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to the test and shall submit a test report summarizing the emission test and results within 45 days of the completion of the performance test.

   [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

10. Post- AQCS Construction Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions and demonstrate that there is no PSD-significant emissions increase of SAM as a result of the installation of the AQCS. Post- AQCS construction tests shall evaluate both current (up to 0.8 weight percent) and higher sulfur (up to 2.5 weight percent) coals.

    a. No later than November 30, 2008, the permittee shall submit to the Department for review and approval a SAM Evaluation and Testing Plan which shall include as a minimum the following:

       - Evaluation of factors affecting SAM generation (e.g., fuel type, emission control devices, operating conditions, etc.)
       - Determination of the SO_2 to SO_3 conversion rates across the SCR.
       - Evaluation of the hydrated lime injection rates required to mitigate SAM emissions.
       - Testing protocol (e.g., methods, number of runs, operating scenarios, annual tests, etc.)

    b. Testing shall be conducted no later than 180 days after the first flue gas flow through the entire AQCS.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

    d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

    e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing operating conditions

and providing details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

11. Annual Tests – Hydrated Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection rates as necessary. The Department may re-evaluate this requirement based on the results of the initial testing. The protocol for the performance tests shall be submitted to the Department no later than November 30, 2008. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

12. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. [Rule 62-297.310(7)(a)9, F.A.C.]

13. Test Methods: Required tests shall be performed in accordance with the following reference methods or other Department approved methods upon request by permittee:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the sulfuric acid mist emissions can also be determined with the National Council for Air and Stream Improvement (NCASI) Method 8A. Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

14. Startup, Shutdown and Malfunction: Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

[Rule 40 CFR 60.8(c)]

{Permitting Note: Boiler startup or shutdown may exceed two hours due to operational constraints of the control equipment, which include:

a. During boiler startup or shutdown, the SCR system is fully functional once the boiler flue gas temperature at the SCR reactor inlet stabilizes to 613^0F or greater.

b. During boiler startup and shutdown, the CDS system is fully functional once the following sequential criteria are met:

- The flue gas flow rate at the outlet of the baghouse stabilizes at approximately 1.5 million pounds per hour or greater for a minimum of 6 hours;
- The boiler flue gas temperature at the CDS inlet stabilizes at 230^0F or greater; and
- Water has been injected into the reactor for a minimum of 2 hours.}

15. Emissions: The permittee at all times, including periods of startup, shutdown, and malfunction shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control

equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility. [Rule 40 CFR 60.11(d)]

NOTIFICATIONS, RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each sulfuric acid mist test run, the report shall also indicate the lime injection rate for SAM emissions control, unit load, and unit heat input rate. [Rule 62-297.310(8), F.A.C.]

17. Operational Data: The permittee shall monitor and record the hydrated lime consumption rate for SAM emissions control when the unit is combusting compliance coal (approximately up to 0.8 weight percent sulfur) and the CDS is not fully operational. [Rule 62-4.070(3), F.A.C.]

18. Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

    a. The permittee shall evaluate the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years following resumption of regular operations after completing construction on the unit's emission control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

        a. Name, address and telephone number of the owner or operator of the major stationary source;

        b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

        d. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

19. SAM Emissions Computation and Reporting: The permittee shall compute SAM emissions in accordance with the following requirements.

    a. For each year of reporting required, emissions shall be computed based on the controlled and uncontrolled emissions factors determined during the required annual emissions test. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

    b. With appropriate supporting test data, multiple emission factors may be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

c. The permittee shall compute emissions by multiplying the appropriate controlled or uncontrolled emission factor by the annual heat input rate for the period over which the emissions are computed. The uncontrolled emissions factor shall be used if the minimum lime injection rate established for the latest test is not met.

d. The permittee shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the Department or Compliance Authority for any regulatory purpose.

[Rule 62-210.370, F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S. the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
   a. Have access to and copy any records that must be kept under the conditions of the permit;
   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
   a. a description of and cause of non-compliance; and
   b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:
( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:
    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
    c. Records of monitoring information shall include:
        - the date, exact place, and time of sampling or measurements;
        - the person responsible for performing the sampling or measurements;
        - the dates analyses were performed;
        - the person responsible for performing the analyses;
        - the analytical techniques or methods used; and
        - the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

REVISED
TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

City of Gainesville

Gainesville Regional Utilities

Deerhaven Generating Station
Unit 2, Installation of Air Quality Control Systems
Alachua County, Florida

DEP File Number
0010006-005-AC

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation

August 6, 2007

1. APPLICATION INFORMATION

APPLICANT

City of Gainesville
Gainesville Regional Utilities (GRU)
P.O. Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative: Ms. Karen Alford, Assistant General Manager – Energy Supply

FACILITY LOCATION

The applicant's facility, Deerhaven Generating Station (DGS) is located at 10001 NW 13th Street, Gainesville, Alachua County, Florida. UTM coordinates of the site are: Zone 17, 367.70 km E and 3292.60 km N. This location is approximately 80 km from the nearest Class I area, the Okefenokee Wilderness Area.

The facility consists of two steam boilers (Units No. 1 and 2) and associated steam turbines, a simple cycle combustion turbine (CT No. 3), two unregulated simple cycle combustion turbines (CT Nos. 1 and 2), a recirculating cooling water system, storage and handling facilities for coal, brine salt, fly ash and bottom ash, fuel oil storage tanks, water treatment facilities, a railcar maintenance facility and ancillary support equipment.

Emission control equipment presently installed on Unit 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

The standard industrial classification (SIC) code for the power plant is Major Group No. 49, Industry Group No. 4911.

REGULATORY CLASSIFICATION

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.). Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC).

The existing facility is major source of hazardous air pollutants (HAP).

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-210.200, F.A.C. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a Prevention of Significant Deterioration (PSD)-major source.

Unit 2 and CT No. 3 were certified pursuant to Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, Florida Statutes (F.S.).

MODIFICATION REQUEST

GRU submitted an application for a minor source air construction permit to retrofit DGS Unit 2 with air quality control systems (AQCS) as one means of complying with the requirements of EPA's Clean

Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) as implemented by the Department in Rules 62-296.470 and 62-296.480, F.A.C., respectively. The AQCS planned for DGS Unit 2 includes the following:

- Selective catalytic reduction (SCR) system to reduce NOx emissions.
- A circulating dry scrubber (CDS) to reduce SO_2 emissions.
- Baghouse (fabric filter) to reduce PM emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime and CDS by-product) handling and storage.

These emission control systems will also have the co-benefit of controlling mercury (Hg), hydrogen chloride (HCl), hydrogen fluoride (HF) and sulfuric acid mist (SAM) emissions. Provisions have been made in the design of the AQCS for activated carbon injection in the future if needed for additional Hg control. The primary purpose of the project is to reduce emissions of SO_2, NOx, particulate matter and Hg (through co-benefits) to assist with CAIR and CAMR. While the addition of SCR and the CDS will substantially decrease emissions of NOx and SO_2, there is the potential for collateral increases in the generation of particulate matter (PM) and SAM under certain operating conditions. The potential increase of SAM emissions is a result of the oxidation of SO_2 to sulfur trioxide (SO_3) that is emitted as SAM when burning low-sulfur coal if the CDS system and baghouse are not in operation. SAM generation will also increase as a result of the proposed higher sulfur coals. Potential increases in SAM emissions will be minimized through the injection of alkaline reagent (lime) to react with SO_3 prior to the baghouse. The reactants, primarily particulate calcium compounds, will be collected in the fabric filter. The potential increase in PM from the reaction of lime and SO_3 will be collected in the fabric filter. There will be no emissions increase over the PSD significant emission rates from the installation of SCR and CDS.

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high- and intermediate-pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine in order to recover power lost due to the parasitic load associated with the operation of the new AQCS. DGS Unit 2 is currently fired with low sulfur eastern bituminous coal. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 percent sulfur), and still comply with the New Source Performance Standards (NSPS) Subpart D of 40 CFR 60.

REVIEWING AND PROCESS SCHEDULE

02-23-2007: Date of Receipt of Application
03-12-2007: Department of Environmental Protection's (DEP's) 1st Completeness Request
03-30-2007: Applicant's response to DEP's 1st Completeness Request
04-23-2007: DEP's 2nd Completeness Request
05-15-2007: Applicant's response to DEP's 2nd Completeness Request
06-14-2007: DEP's 3rd Completeness Request
06-22-2007: Applicant's response to DEP's 3rd Completeness Request. Application complete

AQCS DESCRIPTION

Selective Catalytic Reactor

SCR is a process that uses catalyst to promote the conversion of NOx to nitrogen and water in the flue gas. The conversion occurs between the boiler economizer and the air heaters in a specially designed ductwork section called the SCR Reactor, which contains the catalyst. Ammonia vapor is injected into the flue gas upstream of the catalyst and is thoroughly mixed with the flue gas prior to the catalyst. As the flue gas passes over the catalyst, the nitrogen monoxide and nitrogen dioxide combine with the ammonia to form nitrogen and water.

Unit 2 will have two SCR reactors. The SCR system will tie into the ductwork at the outlet of the existing hot-side electrostatic precipitator which is expected to remain in-service after installation of the AQCS. Ammonia mixer plates and patented Delta Wing mixers will be located within the inlet duct to the two SCR reactors. The SCR outlet duct will connect to the existing air heaters.

The SCR system is designed so that flue gas flows through it whenever the Unit 2 is operating i.e., there are no bypasses. The SCR system contains instrumentation to measure flue gas pressures, temperatures and NOx concentrations at various locations in the ductwork and reactors. NOx control is initiated when the temperature at the outlet of the reactor reaches the minimum short-term operating temperature of 613°F and ammonia flow is started through the injection nozzles.

Unit 2 flue gas will flow through the two layers (space is provided for one future layer) of honeycomb catalyst. This SCR design provides sufficient space with margin to accommodate plate or honeycomb type catalyst and meet the performance requirements without using the spare catalyst level. The catalyst handling system will consist of a catalyst-rotating device, catalyst module lift device (supplied by the catalyst vendor), electric and manual hoists, and a catalyst cart and rail system. Provisions have been made in the catalyst design for removable test samples of catalyst material that can be used to monitor and predict catalyst activity during the catalyst life. The design life of the catalyst is 24,000 hours.

Gaseous arsenic is one of the predominant catalyst deactivation mechanisms in coal-fired SCR applications. Introducing calcium oxide (CaO) to the fuel reduces the gaseous arsenic in the flue gas and decreases its harmful effect on the catalyst. For the DGS Unit 2 SCR system, an addition rate of up to 0.51 weight percent CaO per unit weight of coal is expected to reduce the concentration of arsenic in the flue gas to within acceptable limits, subsequently ensuring the catalyst for a minimum 24,000 hours of operation. The CaO addition will be provided by introducing calcium to the coal conveyor belt after the primary coal crusher. Currently, this is proposed to be accomplished by 1) taking off a slipstream of pebble lime from the main pebble lime feed system between the pebble lime silo and day bins, 2) routing it to a small day tank and 3) feeding it from the day tank onto the coal conveyor belt.

A permanent sampling grid will be provided above and below the catalyst layers as well as between layers. These grids will allow sampling of the gas stream from outside the SCR while the unit is operating. A moveable NO_x probe will be provided in each SCR reactor inlet and outlet. A sampling/NO_x analyzer system will be connected to each probe to measure the inlet and outlet NO_x and provide a process control signal for the ammonia injection system.

A urea-based ammonia system will be provided to supply ammonia for the SCR catalyst to remove NO_x. The system is sized to produce ammonia for two SCR reactors at full boiler load. The urea to ammonia system will use urea that is dissolved into water and the solution will be injected into heated in-line hydrolysers (one operating and one spare) at a controlled rate and under conditions to provide, on demand, the required amount of ammonia. The process will produce a gaseous mixture of ammonia, carbon dioxide and water vapor, which will be mixed into the flue gas stream.

The Unit 2 SCR control system is designed to achieve a target outlet NO_x emission rate of 0.07 pounds per million British thermal units (lb/MMBtu) with an ammonia slip concentration of no more than 5.0 parts per million at 3% oxygen (O_2). The target SCR controlled NO_x emission is ten times lower than the current NSPS Subpart D limit of 0.7 lb/MMBtu.

Circulating Dry SO_2 Scrubber

The CDS will be installed down stream of the existing Unit 2 induced draft (ID) fans. This dry flue gas desulfurization (FGD) system will remove the acidic constituents of the flue gas, primarily SO_2 and SO_3 and to a lesser extent HCl and HF, by reaction with hydrated lime. The system includes the CDS vessel, hydrated lime preparation and injection, water injection, product recycle injection and a flue gas recycle system. To assure a high level of SO_2 removal, a portion of the solid products exiting the CDS vessel (i.e., primarily reaction products such as calcium sulfite ($CaSO_3$), calcium sulfate ($CaSO_4$), calcium carbonate ($CaCO_3$), calcium chloride ($CaCl_2$), calcium fluoride (CaF_2) and inerts) will be separated from the flue gas in the baghouse and recycled back into the CDS to maintain the fluidized bed, while the excess material will be pneumatically transported out of the system to a storage silo. The amount of solids recycled is dependent upon the differential pressure within the CDS and the volumetric flue gas flow rate.

In order to ensure that the CDS is constantly fluidized, a portion of the flue gas stream downstream of the two booster fans will be recirculated to the inlet duct of the CDS during Unit 2 boiler operation at reduced loads. The amount of flue gas recirculated is accomplished through the position of one recirculation damper.

The CDS is designed so that flue gas flows through it whenever Unit 2 is operating (i.e., there are no bypasses). It contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork.

Unit 2 flue gas will first pass through a group of venturi nozzles. The venturi nozzles serve to accelerate the flue gas just prior to the injection of high-pressure water, recycled solids, and adsorbent (i.e., hydrated lime). The reactor acts as a fluidized bed, assuring maximum contact between the pollutants in the flue gas and the adsorbent solids. The reactor is characterized by high turbulences and optimal chemical and physical heat and mass transfer rates. Water is added to bring the flue gas closer to the saturation temperature where the SO_2 absorption is most effective. The high dust load leaving the reactor is captured in the baghouse (fabric filter).

Inlet SO_2 will be measured at the Turbosorp inlet duct before the entrance of the recirculation air; outlet SO_2 will be measured at the stack. These measurements will be used to vary the quantity of fresh hydrated lime that is introduced into the reactor. The final residue of the CDS process is a wetted product which may be landfilled or potentially re-utilized.

Hydrated lime, $Ca(OH)_2$, is the adsorbent used in the CDS process. Pebble lime will be delivered to the DGS via truck or rail and subsequently hydrated to increase its reactivity before injection in the CDS. Within the hydrator, the pebble lime is mixed with water and agitated until the hydration reaction is complete. The quantity of fresh hydrated lime that is introduced into the CDS is controlled by inlet and outlet SO_2 concentrations.

SAM generation can also be controlled by injecting hydrated lime into the CDS reactor without water injection and with no ash recirculating provided the baghouse is in-service. The hydrated lime reacts with SO_3 (and condensed H_2SO_4) to form calcium sulfate salts in the CDS reactor. These will be collected as particulate calcium compounds by the downstream fabric filter. To evaluate potential changes in SAM emissions, GRU proposes to conduct both baseline (prior to installation of the AQCS) and post-AQCS stack testing to demonstrate that there will be no PSD-significant increase in SAM emissions. Prior to conducting the baseline and post – AQCS testing GRU will submit for the

Department's review and approval a proposed SAM Evaluation and Testing Plan. Baseline stack testing would be conducted using compliance coal while the post-AQCS testing will evaluate both compliance and higher sulfur coals.

The DGS Unit 2 CDS control system is designed to achieve a target outlet SO_2 emission rate of 0.12 lb/MMBtu. The target CDS controlled SO_2 emission is ten times lower than the current NSPS Subpart D limit of 1.2 lb/MMBtu.

Baghouse

For particulate removal, one pulse-jet baghouse containing ten (10) compartments will be installed between the outlet of the CDS and inlet of the booster fans at DGS Unit 2. The fabric filter is designed so that flue gas flows through it whenever the DGS Unit 2 is operating (i.e., there are no bypasses).

Particulate contained in the raw flue gas as well as reaction products from the CDS are captured in the pulsejet fabric filter. The pulsejet fabric filter is multi-compartmented, consisting of two parallel trains with centrally located inlet and outlet plenums. Each parallel train of compartments is served by an air slide utilizing heated air. The air slide conveys a significant portion of the collected particulate back to the CDS to maintain a high solids environment and improve overall reagent utilization. The balance of the collected particulate goes to surge bins (one per air slide) from which it is pneumatically conveyed to a common CDS product silo equipped with redundant pug mills. The CDS product can then be loaded into trucks.

Each compartment will generally contain one cylindrical bag bundle with 984 filter bags per bundle. This equates to a total of approximately 9,840 bags installed; provisions have been made for startup spares. The design outlet grain loading for the baghouse is 0.01 grains per dry standard cubic foot (gr/dscf) at 3 percent oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1 or less with one compartment off-line for maintenance.

The pulsejet fabric filter utilizes bags fabricated from felted PPS fabric that is appropriate for this application. During operation the incoming particulate laden flue gas passes from outside of each bag creating a filter cake. With the passage of time, this cake thickens and tends to increase pressure drop. An automatic cleaning system is utilized to dislodge this filter cake, thus maintaining the desired overall pressure drop. The motive force for cleaning is pressurized air that is introduced at the top of the bags, just above the tubesheet. This flow of pressurized air travels counter to the normal flow of flue gas, thus dislodging the accumulated filter cake and assisting its downward drop into the collecting hoppers below. Redundant low-pressure positive displacement blowers provide the pressurized air.

Two 50 percent booster fans are provided for the DGS Unit 2 AQCS. The fans serve two functions. They provide the additional motive force to overcome the additional pressure drop imposed on the system by the addition of the SCRs, the CDS, and the baghouse. They also allow the CDS to operate at reduced Unit 2 loads by recycling a portion of flue gas from the baghouse outlet to the CDS vessel inlet, thereby keeping the solids bed in the vessel fluidized. The discharge of the booster fans ties into the ductwork upstream of the stack.

The DGS Unit 2 fabric filter control system is designed to achieve a target outlet filterable PM emission rate of 0.015 lb/MMBtu. The target fabric filter controlled PM emission is 6.7 times lower than the current NSPS Subpart D limit of 0.1 lb/MMBtu.

Urea, Lime and CDS By-Product Handling and Storage

Reagents associated with the DGS Unit 2 AQCS include urea for the SCR NO_x control system and lime for the SO_2 CDS control system. Solid materials generated by the DGS Unit 2 AQCS consist of

the reaction products (primarily calcium sulfate, calcium sulfite, unreacted lime and inerts) from the SO_2 CDS control system. A discussion of the handling and storage of the AQCS reagents and by-product are provided in the following sections.

Urea

Granular or prilled urea will be delivered by truck and transferred pneumatically directly to the urea to ammonia dissolver tank where the urea is dissolved in water and then transferred to a storage tank. The urea/water solution will then be injected into a heated in-line reactor at controlled rates to produce the appropriate amounts of gaseous ammonia and water vapor. The gaseous ammonia and water vapor stream will then be injected into the SCR control system. Accordingly, there will be no emissions associated with the unloading and processing of urea.

Lime

The pebble lime unloading and storage system includes equipment for the pneumatic unloading of pebble lime from railcars or trucks, transport to a storage silo, and transport from the storage silo into two pebble lime day bins.

Pebble lime will be received in 100 ton railcars that have bottom hopper outlets. Pebble lime may also be received in 25 ton maximum capacity trucks that have self-unloading blower systems. A roofed enclosure with partial walls parallel to the track for wind and rain protection is provided to protect the unloading operation from weather exposure.

For railcar unloading, unloading pans are provided that are clamped to each of three hopper outlet flanges, and a vacuum conveying system removes pebble lime from the railcar hopper, one hopper section at a time, into a filter receiver. From the filter receiver, pebble lime is fed through an airlock, into an airlock hopper, which discharges through another airlock into a positive pressure pneumatic conveyor. The vacuum and pressure conveying systems each have two blowers, one blower is spare.

The vacuum conveyor system is also designed to unload two positive pressure pneumatic trucks by having the truck discharge line connect to the vacuum conveyor line. The unloading building also provides for one or two self-unloading pressure differential trucks to unload. Two independent conveying pipes and hoses are provided so both trucks can unload at the same time.

The positive pressure lime conveyor discharges into the pebble lime storage silo. The silo has a vibrating bin outlet, to assure continuous flow from the silo and has a bin vent to exhaust filtered air from the silo. From the vibrating bin discharger, pebble lime discharges through a diverter gate to either of two airlock hoppers. Each hopper feeds an independent positive pressure conveyor that transports pebble lime into either of two pebble lime day bins, selected by a diverter in the conveying line. Three 50% blowers are provided.

Both day bins are provided with a bin vent filter. Two conveying pipes with hoses to connect to self-unloading pressure differential trucks are also provided to use as emergency sources of pebble lime for the day bins.

Pebble lime from the day bins is conveyed to hydrators that vent into the CDS. The hydrators convert the pebble lime to hydrated lime with approximately 1 to 2 percent moisture. Hydrated lime is then conveyed by a positive pressure pneumatic conveyor into the hydrated lime silo. A bin vent filter is provided for the silo to vent filtered conveying air from the silo. Hydrated lime discharges from the silo through an airlock, and then into a feeder hopper, which discharges through another airlock into the conveying line. A positive pressure conveyor transports hydrated lime to the turbo reactor. The conveyor has two blowers with one acting as a spare.

PM emission sources associated with the lime handling and storage system consist of: (1) railcar unloading filter receiver, (2) pebble lime storage silo, (3) two pebble lime day bin silos, and (4) a

hydrated lime storage silo. The railcar unloading filter receiver and each of the storage silos will be equipped with bin vent fabric filters designed to achieve an outlet PM concentration of 0.01 gr/dscf.

CDS Byproduct

A portion of the CDS byproducts will be collected by the CDS fabric filter and pneumatically transferred to a CDS byproduct storage silo which will be equipped with a bin vent fabric filter designed to achieve an outlet PM concentration of 0.01 gr/dscf.

CDS byproduct will then be transferred into two pin paddle mixers where it will be mixed with water prior to being loaded into trucks. There are no significant PM emissions associated with the wet pin mixer operation.

Calcium Oxide Addition System for Fuel Conditioning

Calcium oxide in the form of lime or limestone may be added to the coal conveying system, as needed, to condition the fuel and enhance the life of the SCR catalyst.

2. PROJECT EMISSIONS

The existing DGS is located in an attainment area and is classified as a *major facility.* A modification to an existing major facility located an attainment area which has a net emissions increase equal to or exceeding the significant emission rates listed in Rule 62-210.200(277), F.A.C., will be subject to PSD review.

For changes to existing emission units, such as the Unit 2 AQCS, the determination of a net emission increase is based on a comparison of actual-to-projected actual emission rates. A significant emissions increase of a PSD pollutant will occur if the difference between the *baseline actual emissions* and *projected actual emissions* equals or exceeds the significant emissions rate for that pollutant. As defined by Rule 62-210.200(36), F.A.C., baseline actual emissions for an existing electric utility steam generating unit means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by the Department. Baseline actual emissions include fugitive emissions, to the extent quantifiable, as well as emissions associated with startups and shutdowns.

Projected actual emissions, as defined by Rule 62-210.200(248), F.A.C., means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. Emissions that the unit could have accommodated during the 24-month baseline period and that are unrelated to the modification are excluded. As noted previously, there will be no changes to the existing Unit 2 electrical steam generator and no increase in maximum heat input to the boiler or steam flow capability of the turbine. Since Unit 2 is a base load unit, there will also be no change in Unit 2 utilization (i.e., capacity factor) due to the AQCS project. Accordingly, the applicable period for determining projected actual emissions for the Unit 2 AQCS project is the 5 years following installation of the additional emission controls.

The Unit 2 AQCS project will result in substantial reductions in actual emissions of NOx, SO_2, PM/PM_{10}, HF and SAM. The Department has reasonable assurance that PM/PM_{10} emissions will not increase due to the existing electrostatic precipitator as well as additional particulate control with the

baghouse system. No changes are planned to the Unit 2 combustion process. Accordingly, no change in actual emissions of combustion related pollutants (i.e., CO and VOC) will result due to the AQCS project. Baseline actual emissions, projected actual emissions and net change in emissions are listed in the following tables:

TABLE 1 – PAST ACTUAL EMISSIONS & 2-YEAR AVERAGES

Year	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
2002	7,147.4	3,315.9	270.6	181.3	41.7	27.0	0.051
2003	7,678.8	3,666.3	308.3	206.5	41.5	29.0	0.044
2004	6,951.7	3,322.8	116.9	78.3	40.2	25.3	0.038
2005	8,042.9	3,932.5	96.9	64.9	51.6	33.0	0.025
2006	8,119.3	3691.9	151.0	101.2	46.7	29.9	0.045
02-03 Average	N/A	N/A	289.4	193.9	N/A	N/A	N/A
05-06 Average	8,081.1	3812.2	N/A	N/A	49.2	31.4	0.035

TABLE 2 – PROJECTED ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Projected Emissions	942.6	549.9	117.8	108.4	15.4	3.1	0.0070
AQCS Material Handling	N/A	N/A	6.0	6.0	N/A	N/A	N/A
AQCS By-Product Truck Traffic	N/A	N/A	Neg.	Neg.	N/A	N/A	N/A
Totals	942.6	549.9	123.8	114.4	15.4	3.1	0.0070

TABLE 3 – ESTIMATED NET CHANGE IN ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Net Change	-7,138.5	-3,262.3	-165.6	-79.5	-33.8	-28.3	-0.028

3. STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

Unit 2 is subject to the SO_2, NOx and PM standards in 40 CFR 60, Subpart D. According to 40 CFR 60.8(c), operations during periods of startup, shutdown, and malfunction do not constitute representative conditions for performance testing, and emissions in excess of an applicable standard during such periods are not considered to be violations unless otherwise specified in the standard. Since Subpart D does not contain language indicating that the emissions standards apply at all times,

emissions in excess of the Subpart D emissions standards during startup, shutdown, and malfunction periods are not considered violations pursuant to 40 CFR 60.8(c). Due to the operational constraints of the proposed emission control equipment, startup and shutdown of the boiler could exceed two hours.

Since the facility is proposing to use higher sulfur coals, startup emissions will be higher compared to startup emissions presently. The Department considered requiring the facility to use lower sulfur coal for startup, but storage pile space constraints, segregation of different grades of coal, logistical handling issues for multiple types of coal negated that approach.

Even though the emission limits in Subpart D does not apply during startup, shutdown, and malfunction, the reporting provisions in 40 CFR 60.7(c) requires owners and operators to report emissions in excess of the standards, including startup, shutdown and malfunction. In addition, 40 CFR 60.11(d) requires that owners and operators maintain and operate affected facilities in a manner to minimize emissions at all times. Because of this requirement, excess emission reports are reviewed in order to determine whether source owners and operators have taken adequate steps to minimize emissions during startup, shutdown, and malfunction.

4. RULE APPLICABILITY

Prevention of Significant Deterioration

New Source Review under PSD regulations is not applicable to the proposed project as the net increase in emissions due to this modification is less than the PSD significant emission rates listed in Rule 62-210.200, F.A.C. The net increase in emissions is determined based on the difference between the projected future actual emissions and the baseline actual emissions.

Federal and State Emission Standards

The proposed project is subject to the applicable provisions of Chapter 403, F.S., Chapters 62-4, 62-210, 62-212 and 62-296, F.A.C. The facility is located in an area designated attainment or maintenance for all criteria pollutants in accordance with F.A.C. Rule 62-204.340, F.A.C. The project is subject to the monitoring, record keeping and reporting requirements of Rule 62-212.300(1)(e), F.A.C. The draft permit authorizes the construction of the AQCS for Unit 2 and establishes specific monitoring conditions to determine whether the project resulted in significant net emissions increases.

The emission units are regulated under Acid Rain, Phase II and Phase I; NSPS – 40 CFR 60 Subpart D, Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After August 17, 1971, adopted and incorporated by reference in Rule 62.204-800, F.A.C.

5. AIR QUALITY ANALYSIS

According to the application and our review, the proposed project does not require an air quality analysis because there will be no net significant emissions increases.

6. CONCLUSION

Based on the foregoing technical evaluation of the application and information submitted by GRU, the Department has made a preliminary determination that the proposed project will comply with all applicable federal and state air pollution regulations.

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, FL 32614-7117

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation, Air Permitting North Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

Permit No. 0010006-005-AC
Deerhaven Generating Station (DGS)

GRU proposes to retrofit DGS Unit No. 2 with air quality control systems (AQCS) as one means of complying with the requirements of EPA's Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) as implemented by the Department in Rules 62-296.470 and 62-296.480, Florida Administrative Code (F.A.C.), respectively. The AQCS planned for DGS Unit 2 includes the following:

- Selective catalytic reduction (SCR) system to reduce NOx emissions.
- A circulating dry scrubber (CDS) to reduce SO_2 emissions.
- Baghouse (fabric filter) to reduce PM emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime and CDS by-product) handling and storage.

NOTICE AND PUBLICATION

The Department distributed an Intent to Issue Air Permit package on June 29, 2007. The applicant published the Public Notice of Intent to Issue Air Permit in the Gainesville Sun on July 6, 2007. The permittee submitted on July 12, 2007, a request for extension of time until August 27, 2007, to file a petition for an administrative hearing. The Department granted an extension of time to file a petition for an administrative hearing on July 27, 2007. The permittee withdrew this request on August 10, 2007. The Department received the proof of publication on July 16, 2007. The proof of publication was resubmitted again on July 30, 2007, as there was a discrepancy on dates on the original proof of publication.

COMMENTS

No comments on the Draft Permit were received from the public, the Department's Northeast District, the EPA Region 4 Office or the National Park Service.

Comments were submitted by the applicant on the Draft Permit as well as the Technical Evaluation and Preliminary Determination on July 20, 2007. The following summarizes their comments on the Draft Permit and the Department's response:

1. Change in Authorized Representative.

The Department required the applicant to submit a new responsible official form signed by the current designated representative. The Department received the new form on July 20, 2007, and accordingly the name of the primary authorized representative on the cover page of the permit will be changed to read:

Authorized Representative:
~~Mr. George K. Allen~~ Ms. Karen Alford, Interim Assistant General Manager

2. Clarification in the Statement of Basis.

The applicant wanted to make clear in the Statement of Basis that the addition of hydrated lime to the flue gas will be required when burning compliance coal as the Circulating Dry Scrubber (CDS) will not be operational since there will be no need to reduce SO_2 emissions. The CDS will be in full operation when burning higher sulfur coals as the emission unit will need to comply with the New Source Performance Standards in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). The Statement of Basis will be changed to read as follows:

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of ~~SCR~~ this equipment nor its operation except as needed to comply with the New Source Performance Standards (NSPS) in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). However, ~~installation and operation of additional~~ the addition of hydrated lime ~~injection system~~ to the flue gas is required when burning compliance coal (approximately up to 0.8 weight percent sulfur) and when the CDS is not fully operational to ~~reduce~~ ensure there is no Prevention of Significant Deterioration (PSD) significant emission increase of sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the CFR ~~Code of Federal Regulations (CFR)~~. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

3. Clarification of Project Description in Section 1.

The applicant suggested revising the language in the Project Description section to make it clearer when the CDS system will be operational and when the hydrated lime injection will be required in the flue gas. The applicant also noted that empirical data indicates that a baghouse alone can provide up to 90 percent control of SAM. The Department will make the necessary changes and the Project Description section will be changed to read:

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation, except as needed to comply with the NSPS in 40 CFR 60, Subpart D.

Installation of the SCR system will result in collateral ~~increases in emissions~~ generation of SAM ~~and~~ as particulate matter (PM/PM_{10}). There is a potential increase in emissions if the permittee elects not to fully operate the CDS (i.e., with water injection and ash recirculation), a situation that is only likely to occur when burning low-sulfur coal (approximately up to 0.8 weight percent sulfur). The potential increase of SAM ~~emissions~~ generation is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) ~~that~~

~~is emitted as SAM after the CDS system~~ and the subsequent reaction of SO_3 and water to form SAM. In the absence of hydrated lime injection when burning low-sulfur coal, there is a potential for increased emissions of SAM if the CDS and baghouse are not in operation. The permit requires the injection of hydrated lime to the flue gas ~~in the CDS~~ when burning low-sulfur coal and when the CDS is not fully operational ~~to reduce SAM emissions~~ to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will reacts with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

4. Condition 3 of Section 2, Administrative Requirements needs clarification for preliminary design.

The applicant wanted to have some language to account for minor changes that may be made in the final design that differ from the capacities and specification stated in the original application which was based on preliminary design. The Department will add a note at the end to indicate that the design is preliminary and that the final design could differ in the capacities and specification listed in the original application. The Department will also make some minor changes in the text for style purposes. Item 3 of Section 2 will read as follows:

Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S. ~~of the Florida Statutes (F.S.)~~; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. ~~of the Florida Administrative Code (F.A.C.)~~; and Title 40, Part 60 of the CFR ~~Code of Federal Regulations (CFR)~~, adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the F.A.C. ~~Florida Administrative Code.~~ The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

{Note: The capacities and specifications stated in the application are based on preliminary design and the final design could include minor changes from the capacities and specification listed in the original application.}

5. Emission Unit description in Section 3.

The applicant wanted the pollutant SO_2 spelled out in the emission unit description. The Department has already identified in the permit earlier that SO_2 implies sulfur dioxide and does not see the need to spell out the pollutant again.

6. Specific Condition 1 of Section 3.

The Department will rephrase the language used in the condition to make it clearer the intent of the condition. The condition will now read:

Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements. ~~The facility remains subject to all of the requirements~~ specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

7. Specific Condition 2 of Section 3.

The applicant wanted to elaborate on the equipment classified for the SCR system. One of them will be the urea to ammonia conversion system. They also noted that the SCR system will have two layers of catalyst and a space for a future layer of catalyst will be provided. There will also be a system to add calcium to the fuel to preserve the life of the SCR catalyst. The calcium will be added to the coal conveyor belt after the primary coal crusher. The Department will make the necessary changes and the condition will read:

SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: ~~ammonia storage~~ urea to ammonia conversion system; ammonia flow control unit; ammonia injection grid; ~~three~~ two active layers of catalyst with space provided for a future layer ~~(two active and one future layer) of honeycomb catalyst~~; ~~an~~ SCR reactor chamber; and other ancillary equipment, including a system to add calcium to the fuel for catalyst preservation. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

8. Specific Condition 3 of Section 3.

The applicant commented on the level of detail included in the condition and indicated that the level of detail may unnecessarily constrain minor design changes from the preliminary design given in the application. The Department agrees with the applicant and will make the necessary changes to remove that restriction. The condition will read:

CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. In general, t~~T~~he system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. ~~The system contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork~~. SO_2 will be measured at the inlet of the CDS reactor; ~~and~~ outlet SO_2 will be measured ~~of the CDS reactor~~ at the stack. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

9. Specific Condition 4 of Section 3.

The applicant commented on the level of detail included in the condition and indicated that the level of detail may unnecessarily constrain minor design changes from the preliminary design given in the application. The Department asked the applicant to provide information regarding the outlet grain loading in grains per dry standard cubic feet as well as the design gas flow rate in dry standard cubic feet per minute for the fabric filter. The Department will remove the detailed description of the baghouse and will replace it with the other information requested from the applicant. The condition will read:

Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. ~~Design Information: Each compartment will contain one cylindrical bag bundle with 984 filter bags per bundle. A total of 9,840 bags will be installed, with an additional 2 percent included as startup spares. The filter bags are fabricated from heavy weight 18 oz/yd nominal weight polyphenyl sulfide fabric~~. The design outlet grain loading is 0.01 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

10. Specific Condition 5 of Section 3.

The applicant wanted to clarify the condition in terms of which control equipments are not required to operate by the permit and which control equipments should operate for emissions control. The applicant identified an error in the SAM baseline emissions. The reduction in emissions due to condensation across the air pre-heater was not taken into account when developing the baseline emissions. The Department concurs with the applicant and the condition will be changed to read:

Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR and CDS is not required by this permit. As necessary, the permittee shall operate the hydrated lime ~~injection~~ addition system and baghouse for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (~~98~~ 49 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

11. Specific Condition 6 of Section 3.

The applicant wanted to rephrase the condition in terms of PSD significances level for SAM emissions, rather than in terms of baseline actual emissions of SAM. The Department will make the change and add a permitting note to quantify the baseline actual emissions of SAM. The condition will read:

Annual SAM Emissions Projections: ~~For this project,~~ Tthe permittee projected that the increase in actual annual emissions of SAM due to the project would not exceed the ~~baseline actual emissions of SAM~~ PSD significance level (i.e., ~~98~~ 7 tons/year). The permittee shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

{Permitting Note: The baseline actual emission of SAM is 49 tons/year.}

12. Specific Condition 7 of Section 3.

The applicant wanted to rephrase the condition to reflect hydrated lime is being added instead of lime and wanted to remove the automatic control system for lime addition. The applicant commented that lime is added to a tank where it is hydrated and then added to the flue gas for SAM control. The amount of hydrated lime added is not measured but can be deduced from the amount of lime added to the tank. The Department was interested in the adjustment of the flow rate for hydrated lime for a given set of operating conditions. The condition will read:

Hydrated Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed ~~98~~ 7 tons per year above the baseline actual emissions of 49 tons per year. The permittee shall ~~install and operate the~~ add hydrated lime ~~injection system~~ at a frequency and injection rate for SAM control to satisfy this requirement. The permittee will

~~An automated control system will be used to~~ adjust the hydrated lime flow rate for the given set of operating conditions based on the most recent correlation curves in a ~~based on~~ performance test~~ing~~. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

13. Specific Condition 8 of Section 3.

The applicant wanted the condition to be consistent with prior Department requirements. The Department will change the condition to reflect that, and the condition will read:

Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv) as demonstrated by an a~~A~~nnual test~~ing of ammonia shall be conducted and corrective measures taken if measured values exceed 2 ppmv~~. [Design; and Rule 62-4.070(3), F.A.C.]

14. Specific Condition 9 of Section 3.

The applicant expressed concerns of conducting baseline emissions test while injecting lime directly into the boiler due to its potential impact on the fly ash characteristics and Electro Static Precipitator (ESP). The third baseline test will be included in the post construction testing. The Department concurs with the applicant and the condition will read:

Baseline Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct a baseline performance tests at permitted capacity to evaluate ~~potential changes in~~ SAM emissions. A b~~B~~aseline performance tests shall be conducted using current coal (0.8 weight percent sulfur). ~~Three baseline performance tests shall be conducted~~. The ~~first~~ baseline performance test shall be conducted prior to the installation of the AQCS ~~with no lime injection~~. ~~The second baseline performance test shall be conducted prior to installation of AQCS with lime injection into the boiler. The third baseline performance test shall be done within 45 days of completing AQCS construction with lime injection into the CDS reactor~~. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to ~~each~~ the test and shall submit a test report summarizing the emission tests and results within 45 days of the completion of the ~~each~~ performance test.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

15. Specific Condition 10 of Section 3.

The applicant expressed concerns of having precise requirements of conducting post Air Quality Control Systems (AQCS) performance tests. Due to complexity of the system, the applicant believes it is more appropriate to defer the details of the SAM evaluation and testing protocols to a later date to allow sufficient time to work with the technology provider to develop testing procedures and conditions as appropriate for the project. The applicant has proposed to submit a testing protocol by November 30, 2008, which shall include testing for the process variables that the Department was interested in. The applicant also proposed to change the requirement of conducting performance test to no later than 180 days after the first flue gas flows through the entire AQCS, instead of within 120 days of completing construction of Unit 2 AQCS. The Department concurs with the applicant and will also include language to conduct the test required in Specific Condition 9, which the applicant wanted to defer to this condition. The condition will read:

Post- AQCS Construction Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions and demonstrate that there is no PSD-significant emissions increase of SAM as a result of the installation of

the AQCS. Post- AQCS construction tests shall evaluate both current (up to 0.8 weight percent) and higher sulfur (up to 2.5 weight percent) coals~~, alternate lime injection locations, and various boiler/AQCS operating configurations. Within 120 days of completing construction of Unit 2 AQCS systems, the permittee shall conduct a series of performance tests on Unit 2 to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of lime injection on reducing SAM emissions and results in the development of correlation curves based on injection rates, operating conditions and emissions.~~

~~a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1 hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect of SAM emissions on such parameters as the SO_2 emission rate prior to the SCR catalyst (and CDS system), the unit load, the flue gas flow rate, the ammonia injection rate and the current catalyst oxidation rate.~~

a. ~~b~~ ~~Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions intended for Unit 2. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: SCR reactor in service without lime injection in the CDS, and SCR reactor in service under varying operating conditions and levels of lime injection in the CDS.~~ No later than November 30, 2008, the permittee shall submit to the Department for review and approval a SAM Evaluation and Testing Plan which shall include as a minimum the following:

- Evaluation of factors affecting SAM generation (e.g., fuel type, emission control devices, operating conditions, etc.).
- Determination of the SO_2 to SO_3 conversion rates across the SCR.
- Evaluation of the hydrated lime injection rates required to mitigate SAM emissions.
- Testing protocol (e.g., methods, number of runs, operating scenarios, annual tests, etc.).

b. Testing shall be conducted no later than 180 days after the first flue gas flow through the entire AQCS.

c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing operating conditions ~~the following: identify each set of operating conditions evaluated, identify each operating parameter evaluated, identify the relative influence of each operating parameter, describe how the adjustment to the lime injection rate be made based on the selected parameters,~~ and provideing details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions. ~~The test results shall be used to adjust the lime injection system and estimate SAM emissions.~~

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

16. Specific Condition 11 of Section 3.

The applicant wanted to remove the details specified in the specific condition for conducting annual tests for the same reasons as specified in Item 15 and have it included in the SAM Evaluation and Testing Plan required by Specific Condition 10. The applicant commented that the Department can consider requiring the annual test to be converted to a test every five years based on the results of the initial tests. The Department concurs and the condition will read:

Annual Tests – Hydrated Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection rates ~~correlation curves~~ as necessary. The Department may re-evaluate this requirement based on the results of the initial testing. The protocol for the performance tests shall be submitted to the Department no later than November 30, 2008. ~~At least six representative 1-hour test runs shall be conducted on Unit 2. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests conducted, the results of the tests, the catalyst oxidation rate, and the updated series of related lime injection correlation curves~~. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

17. Specific Condition 13 of Section 3.

The applicant wanted to add a different method for measuring SAM. The proposed method is a National Council for Air and Stream Improvement (NCASI) Method 8A. This method eliminates the potential for interference from SO_2. EPA approved the use of Method 8A in December 1996. The Department will add the NCASI Method 8A as an alternate for measuring SAM emissions. The condition will read:

Test Methods: Required tests shall be performed in accordance with the following reference methods or other Department approved methods upon request by permittee:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the sulfuric acid mist emissions can also be determined with the National Council for Air and Stream Improvement (NCASI) Method 8A. Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

18. Specific Condition 14 of Section 3.

The Department will add a permitting note at the end of the condition to explain that the control equipment will not be fully functional during startup and shutdown until certain operational constraints is met. Once the control equipment is fully functional the boiler shall be able to comply with the emission limits. The applicant agreed with the Department's position that the State excess emissions rule (62-210.700, F.A.C.) cannot be used to vary the requirements of the federal NSPS requirements of 40 CFR 60, Subpart D. The condition will read:

Startup, Shutdown and Malfunction: Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in

excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

[Rule 40 CFR 60.8(c)]

{Permitting Note: Boiler startup or shutdown may exceed two hours due to operational constraints of the control equipment, which include:

a. During boiler startup and shutdown, the SCR system is fully functional once the boiler flue gas temperature at the SCR reactor inlet stabilizes to 613° F or greater.

b. During boiler startup and shutdown, the CDS system is fully functional once the following sequential criteria are met:

- The flue gas flow rate at the outlet of the baghouse stabilizes at approximately 1.5 million pounds per hour or greater for a minimum of 6 hours;
- The boiler flue gas temperature at the CDS inlet stabilizes at 230° F or greater; and
- Water has been injected into the reactor for a minimum of 2 hours.}

19. Specific Condition 17 of Section 3.

The applicant noted that the CDS system will be fully operational when higher sulfur coals are being burned and the lime injection rates will be determined by the inlet and outlet SO_2 concentrations. The lime injection rates for SAM control will be significantly lower than required for SO_2 control. Continuous lime addition may not be required for SAM control because of the large amount of lime that will be in the system at any given time. Therefore, lime consumption rather than continuous monitoring of the lime injection rate may be more appropriate. The Department concurs with the applicant and the condition will read:

Operational Data: The permittee shall ~~continuously~~ monitor and record the hydrated lime ~~injection~~ consumption rate for SAM emissions control when the unit is combusting compliance coal (approximately up to 0.8 weight percent sulfur) and the CDS is not fully operational . [Rule 62-4.070(3), F.A.C.]

20. Specific Condition 18 of Section 3.

The applicant wanted to change the language to be consistent with the language used in previous conditions and wanted to add a condition of retaining records for a period of 5 years. The Department will not add the condition for retaining records for 5 years as it is already part of Specific Condition 19, but will change the word monitor to evaluate for consistency. The Department will also add some language to be consistent with the stated rule requirements. The condition will read:

Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

a. The permittee shall ~~monitor~~ evaluate the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years following resumption of regular operations after completing construction on the unit's emission control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

a. Name, address and telephone number of the owner or operator of the major stationary source;

b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

d. Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

[Rule 62-212.300(1)(e), F.A.C.]

21. Specific Condition 19 of Section 3.

The applicant wanted to delete the requirements for computing SAM emissions. The Department will leave the condition as is as all the requirements listed in the condition are based on Rule 62-210.370, F.A.C.

22. Extension of the Expiration Date.

The applicant requested to extend the expiration date of the construction permit to September 30, 2011 from September 30, 2009 per Rule 62-4.210(2) and (3), F.A.C. The Department will extend the date to provide the necessary time for GRU to conduct the testing and finish the turbine efficiency improvement project.

23. Technical Evaluation and Preliminary Determination.

The applicant submitted changes to the technical evaluation and preliminary determination to comply with the changes proposed in the permit. The Department will make those changes and issue a revised technical evaluation and preliminary determination concurrently with the final permit.

CONCLUSION

The final action of the Department is to issue the Final Permit with the revisions, corrections, and clarifications as described above.

Memorandum

Florida Department of
Environmental Protection

TO: Joseph Kahn

THRU: Trina Vielhauer
Jeff Koerner

FROM: Syed Arif

DATE: August 13, 2007

SUBJECT: Air Permit No. 0010006-005-AC
Gainesville Regional Utilities
Deerhaven Generating Station – Unit 2

Attached for your approval and signature is the Final Permit for Gainesville Regional Utilities, Deerhaven Generating Station located in Gainesville, Alachua County.

The Final permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Installation of the SCR system will result in collateral generation of SAM as particulate matter. The potential increase of SAM generation is a result of the oxidation of sulfur dioxide to sulfur trioxide (SO_3) and the subsequent reaction of SO_3 and water to form SAM. The permit requires the injection of hydrated lime in the CDS when burning low-sulfur coal to reduce SAM emissions to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will react with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter. With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Public Notice was published on July 6, 2007 in the Gainesville Sun. No comments were received from the public, EPA Region 4, or the National Park Service. Comments were submitted by the applicant resulting in minor changes as described in the final determination. The permittee submitted a request for extension of time until August 27, 2007, to file a petition for an administrative hearing. The permittee withdrew this request on August 10, 2007.

We recommend your approval and signature.

JK/sa

Attachments

Friday, Barbara

From: Forney.Kathleen@epamail.epa.gov

Sent: Tuesday, August 14, 2007 10:19 AM

To: Friday, Barbara

Cc: Little.James@epamail.epa.gov; Forney.Kathleen@epamail.epa.gov

Subject: Re: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

We Received this pemit.
Thanks

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

Friday, Barbara

From: Dee_Morse@nps.gov
Sent: Monday, August 13, 2007 6:58 PM
To: Friday, Barbara
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Return Receipt

Your document:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
was received by:	Dee Morse/DENVER/NPS
at:	08/13/2007 04:58:26 PM

Friday, Barbara

From: Mailer-Daemon@ectinc.com
Sent: Monday, August 13, 2007 1:47 PM
To: Friday, Barbara
Subject: Confirm: `FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station' received

A message which requested delivery confirmation recently arrived at this server. This server honors all delivery confirmation requests whether generated from local mail traffic or from mail received via an outside source (such as SMTP/POP).

Message-ID: <1900D374FE4CCB4AB8DEB001320338BABA7E04@tlhexsmb5.floridadep.net>
To : tdavis@ectinc.com
From : Barbara.Friday@dep.state.fl.us
Subject : FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Date : Mon, 13 Aug 2007 13:38:14 -0400

Receiving Domain: ectinc.com

Friday, Barbara

From: Tom Davis [tdavis@ectinc.com]
Sent: Monday, August 13, 2007 1:41 PM
To: Friday, Barbara
Subject: RE: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

---

From: Friday, Barbara [mailto:Barbara.Friday@dep.state.fl.us]
Sent: Monday, August 13, 2007 1:38 PM
To: alfordkc@gru.com; jonynasye@gru.com; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; tdavis@ectinc.com; Halpin, Mike
Cc: Arif, Syed
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

To: alfordkc@gru.com; jonynasye@gru.com; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike

Cc: Arif, Syed

Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Attachments: grutepd.pdf; grufd.pdf; grugc.pdf; grunoticeoffinalpermit.pdf; grupermit.pdf; grupermitsignaturepage.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: System Administrator
To: Halpin, Mike; Arif, Syed
Sent: Monday, August 13, 2007 1:38 PM
Subject: Delivered:FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was delivered to the following recipient(s):

Halpin, Mike on 8/13/2007 1:38 PM
Arif, Syed on 8/13/2007 1:38 PM

Friday, Barbara

From: System Administrator
To: Kirts, Christopher
Sent: Monday, August 13, 2007 1:39 PM
Subject: Delivered:FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was delivered to the following recipient(s):

Kirts, Christopher on 8/13/2007 1:38 PM

Friday, Barbara

From: Exchange Administrator
Sent: Monday, August 13, 2007 1:39 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT140921.txt; FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station


ATT140921.txt
(284 B)


FINAL AC Permit
No.: 0010006-0...

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

dee_morse@nps.gov

Friday, Barbara

From: Exchange Administrator
Sent: Monday, August 13, 2007 1:39 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT140924.txt; FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station


ATT140924.txt
(284 B)


FINAL AC Permit
No.: 0010006-0...

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Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

tdavis@ectinc.com

Friday, Barbara

From: Mail Delivery System [MAILER-DAEMON@mseive02.rtp.epa.gov]
Sent: Monday, August 13, 2007 1:37 PM
To: Friday, Barbara
Subject: Successful Mail Delivery Report

Attachments: Delivery report; Message Headers


Delivery report.txt (690 B)


Message Headers.txt (2 KB)

This is the mail system at host mseive02.rtp.epa.gov.

Your message was successfully delivered to the destination(s) listed below. If the message was delivered to mailbox you will receive no further notifications. Otherwise you may still receive notifications of mail delivery errors from other systems.

The mail system

<forney.kathleen@epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46C096CF_13620_5123_1

<little.james@epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46C096CF_13620_5123_1

Friday, Barbara

From: Jonynas, Yolanta E [JONYNASYE@gru.com]
To: Friday, Barbara
Sent: Monday, August 13, 2007 1:41 PM
Subject: Read: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To: JONYNASYE@gru.com
Subject:

was read on 8/13/2007 1:41 PM.

Friday, Barbara

From: Halpin, Mike
To: Friday, Barbara
Sent: Monday, August 13, 2007 1:50 PM
Subject: Read: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was read on 8/13/2007 1:49 PM.

Friday, Barbara

From: Alford, Karen C [ALFORDKC@gru.com]
Sent: Monday, August 13, 2007 2:00 PM
To: Friday, Barbara
Cc: Jonynas, Yolanta E
Subject: RE: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Received - Thank you.

Karen C. Alford
Administrative Director
Energy Supply
Gainesville Regional Utilities
P.O. Box 147117, Station A137
Gainesville, FL 32614-7117
352-393-1730
352-334-2786 fax
www.gru.com

-----Original Message-----
From: Friday, Barbara [mailto:Barbara.Friday@dep.state.fl.us]
Sent: Monday, August 13, 2007 1:38 PM
To: Alford, Karen C; Jonynas, Yolanta E; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; tdavis@ectinc.com; Halpin, Mike
Cc: Arif, Syed
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Kirts, Christopher
To: Friday, Barbara
Sent: Monday, August 13, 2007 2:03 PM
Subject: Read: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was read on 8/13/2007 2:03 PM.

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

April 23, 2007

ELECTRONIC MAIL - RECEIVED RECEIPT REQUESTED
allengk@gru.com

Mr. George K. Allen,
Assistant General Manager – Energy Supply
City of Gainesville, GRU
P. O. Box 147117 (A132)
Gainesville, Florida 32614-7117

Re: DEP File No. 0010006-005-AC
Air Quality Control System Addition
Deerhaven Generating Station – Unit 2

Dear Mr. Allen:

The Department has received the additional information on March 30, 2007 in response to our request for information letter dated March 12, 2007. Based on review of this information, we have determined that additional information is needed in order to continue processing this application package. Please submit the information requested below to the Department's Bureau of Air Regulation:

1. Based on the response to our previous query whether lime will be added at all times into the Circulating Dry Scrubber (CDS) when Unit 2 is operating, please explain how sulfuric acid mist and hydrogen fluoride emissions will be controlled from Unit 2 during the times when lime is not added to the CDS.
2. The application has requested higher sulfur coal (up to 2.5 percent) to be burned in Unit 2. Please explain how excess emissions from start-up and shut-down procedures will be controlled keeping in mind that the current allowable coal sulfur content is only 0.8 percent.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days.

We will be happy to meet and discuss the details with you and your staff. I may be contacted at 850/921-9528.

Sincerely,

Syed Arif, P.E.
Bureau of Air regulation

/sa

cc: Jim Little, EPA (little.james@epa.gov)
D. Morse, NPS (dee_morse@nps.gov)
Chris Kirts, DEP-NED (christopher.kirts@dep.state.fl.us)
Yolanta E. Jonynas, GRU (jonynase@gru.com)
Tom W. Davis, P.E., ECT, Inc. (tdavis@ectinc.com)
Michael Halpin, OSC (michael.halpin@dep.state.fl.us)

Friday, Barbara

To: allengk@gru.com

Cc: 'Little.James@epamail.epa.gov'; Forney.Kathleen@epamail.epa.gov; dee_morse@nps.gov; Kirts, Christopher; jonynase@gru.com; 'tdavis@ectinc.com'; Halpin, Mike; Arif, Syed

Attachments: 0010006-005-AC City of Gainesville, GRU RAI.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: System Administrator
To: Kirts, Christopher
Sent: Monday, April 23, 2007 2:49 PM
Subject: Delivered:Delivery Status Notification (Success)

Your message

To: 'allengk@gru.com'
Cc: 'Little.James@epamail.epa.gov'; 'Forney.Kathleen@epamail.epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'jonynase@gru.com'; 'tdavis@ectinc.com'; Halpin, Mike; Arif, Syed
Subject:
Sent: 4/23/2007 2:49 PM

was delivered to the following recipient(s):

Kirts, Christopher on 4/23/2007 2:49 PM

Friday, Barbara

From: System Administrator
To: Halpin, Mike; Arif, Syed
Sent: Monday, April 23, 2007 2:49 PM
Subject: Delivered:Delivery Status Notification (Success)

Your message

To: 'allengk@gru.com'
Cc: 'Little.James@epamail.epa.gov'; 'Forney.Kathleen@epamail.epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'jonynase@gru.com'; 'tdavis@ectinc.com'; Halpin, Mike; Arif, Syed
Subject:
Sent: 4/23/2007 2:49 PM

was delivered to the following recipient(s):

Halpin, Mike on 4/23/2007 2:49 PM
Arif, Syed on 4/23/2007 2:49 PM

Friday, Barbara

From: Exchange Administrator
Sent: Monday, April 23, 2007 2:49 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT527955.txt; Untitled Attachment


ATT527955.txt
(284 B)


Untitled Attachment

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

tdavis@ectinc.com

Friday, Barbara

From: Exchange Administrator
Sent: Monday, April 23, 2007 2:49 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT527977.txt; Untitled Attachment


ATT527977.txt
(284 B)


Untitled Attachment

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

dee_morse@nps.gov

Friday, Barbara

From: Mail Delivery System [MAILER-DAEMON@mseive02.rtp.epa.gov]
Sent: Monday, April 23, 2007 2:49 PM
To: Friday, Barbara
Subject: Successful Mail Delivery Report

Attachments: Delivery report; Message Headers


Delivery report.txt (726 B)


Message Headers.txt (1 KB)

This is the mail system at host mseive02.rtp.epa.gov.

Your message was successfully delivered to the destination(s) listed below. If the message was delivered to mailbox you will receive no further notifications. Otherwise you may still receive notifications of mail delivery errors from other systems.

The mail system

<Forney.Kathleen@epamail.epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 462CFF8B_21889_150547_1

<Little.James@epamail.epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 462CFF8B_21889_150547_1

Friday, Barbara

From: Dee_Morse@nps.gov
Sent: Monday, April 23, 2007 3:07 PM
To: Friday, Barbara

Return Receipt

Your document:

was received by: Dee Morse/DENVER/NPS

at: 04/23/2007 01:06:40 PM

Friday, Barbara

From: Kirts, Christopher
To: Friday, Barbara
Sent: Monday, April 23, 2007 4:26 PM
Subject: Read:

Your message

To:	'allengk@gru.com'
Cc:	'Little.James@epamail.epa.gov'; 'Forney.Kathleen@epamail.epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'jonynase@gru.com'; 'tdavis@ectinc.com'; Halpin, Mike; Arif, Syed
Subject:	
Sent:	4/23/2007 2:49 PM

was read on 4/23/2007 4:26 PM.

Friday, Barbara

From: Halpin, Mike
To: Friday, Barbara
Sent: Monday, April 23, 2007 3:02 PM
Subject: Read:

Your message

To:	'allengk@gru.com'
Cc:	'Little.James@epamail.epa.gov'; 'Forney.Kathleen@epamail.epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'jonynase@gru.com'; 'tdavis@ectinc.com'; Halpin, Mike; Arif, Syed
Subject:	
Sent:	4/23/2007 2:49 PM

was read on 4/23/2007 3:02 PM.

Friday, Barbara

From: Forney.Kathleen@epamail.epa.gov
Sent: Monday, April 23, 2007 3:22 PM
To: Friday, Barbara
Cc: Little.James@epamail.epa.gov
Subject: Re:

Attachments: 0010006-005-AC City of Gainesville, GRU RAI.pdf

0010006-005-AC City of Gainesv...

We received this email.
Thanks,
katy

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

"Friday, Barbara" <Barbara.Friday@dep.state.fl.us>
04/23/2007 02:48 PM

To: <allengk@gru.com>
cc: James Little/R4/USEPA/US@EPA, Kathleen Forney/R4/USEPA/US@EPA, <dee_morse@nps.gov>, "Kirts, Christopher" <Christopher.Kirts@dep.state.fl.us>, <jonynase@gru.com>, <tdavis@ectinc.com>, "Halpin, Mike" <Mike.Halpin@dep.state.fl.us>, "Arif, Syed" <Syed.Arif@dep.state.fl.us>
Subject:

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent

e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,
DEP, Bureau of Air Regulation
(See attached file: 0010006-005-AC City of Gainesville, GRU RAI.pdf)

Florida Department of Environmental Protection

Memorandum

TO: Trina Vielhauer, Bureau of Air Regulation

THROUGH: Jeff Koerner, Air Permitting North Section

FROM: Syed Arif, Air Permitting North Section

DATE: June 26, 2007

SUBJECT: Draft Air Permit No. 0010006-005-AC
Gainesville Regional Utilities (GRU), Deerhaven Generating Station (DGS)
Installation of Air Quality Control Systems (AQCS)

This project is subject to minor source preconstruction review. Attached for your review are the following items:

- Written Notice of Intent to Issue Air Permit;
- Public Notice of Intent to Issue Air Permit;
- Technical Evaluation and Preliminary Determination;
- Draft Permit; and
- P.E. Certification.

The Draft Permit authorizes GRU to retrofit DGS Unit No. 2 with AQCS in order to comply with the requirements of EPA's Clean Air Interstate Rule. The proposed work will be conducted at DGS Unit 2, which is located in Alachua County, Florida. The Technical Evaluation and Preliminary Determination provide a detailed description of the project and the rationale for issuance. The P.E. certification briefly summarizes the proposed project. I recommend your approval of the attached Draft Permit.

Attachments

Florida Department of
Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

P.E. Certification Statement

Permittee:
Gainesville Regional Utilities (GRU)
Deerhaven Generating Station (DGS)

DEP File No. 0010006-005-AC

Project type: The applicant, GRU, submitted an application to the Department for the installation of air quality control systems (AQCS) on DGS Unit 2 in order to comply with the requirements of EPA's Clean Air Interstate Rule and the Clean Air Mercury Rule. The AQCS includes the following: selective catalytic reduction (SCR) system to decrease nitrogen oxides (NOx) emissions, circulating dry scrubber (CDS) to reduce sulfur dioxide (SO_2) emissions and a baghouse system to reduce particulate matter (PM) emissions.

While the addition of SCR will substantially decrease emissions of NOx, there is the potential for collateral increases in emissions of sulfuric acid mist (SAM) and PM. The potential increase of SAM emissions is a result of the oxidation of SO_2 to sulfur trioxide (SO_3) that is emitted as SAM after the CDS system. SAM emissions will also increase as a result of the proposed higher sulfur coals. Potential increases in SAM emissions will be minimized through the injection of alkaline reagent (lime) to react with SO_3 prior to the baghouse. The reactants, primarily particulate calcium compounds, will be collected in the fabric filter. The potential increase in PM from the reaction of lime and SO_3 will be collected in the CDS system and the fabric filter. There will be no emissions increase over the PSD significant emission rates from the installation of SCR and CDS.

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high- and intermediate-pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

Unit 2 is currently fired with low sulfur (0.8 weight percent sulfur) eastern bituminous coal. Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur). Overall, the project will decrease emissions due to the installation of AQCS systems, but the cold startup SO_2 emissions for Unit 2 will increase due to the firing of higher sulfur coal.

An air quality impact analysis was not required. No increase in ambient impacts due to the proposed permit modification is expected. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards.

The applicant's authorized representative and mailing address is: Mr. George K. Allen, Assistant General Manager – Energy Supply, GRU, Post Office Box 147117 (A132), Gainesville, Florida 32614-7117.

I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, meteorological and geological features).

Syed Arif 6/28/07

Syed Arif, P.E. Date
Registration Number: 51861

Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Phone (850) 488-0114
Fax (850) 922-6979

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

June 28, 2007

ELECTRONIC MAIL – RECEIVED RECEIPT REQUESTED

Mr. George K. Allen, Assistant General Manager/Energy Supply
City of Gainesville, GRU
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Re: Air Construction Permit No. 0010006-005-AC
Gainesville Regional Utilities, Deerhaven Generating Station (DGS)
Installation of Air Quality Control Systems

Dear Mr. Allen:

On February 23, 2007, you submitted an application requesting to retrofit DGS Unit No. 2 with air quality control systems in order to comply with the requirements of EPA's Clean Air Interstate Rule. This facility is located in Alachua County at 10001 NW 13th Street, Gainesville, Florida. Enclosed are the following documents:

- The Technical Evaluation and Preliminary Determination summarizes the Permitting Authority's technical review of the application and provides the rationale for making the preliminary determination to issue a Draft Permit.
- The proposed Draft Permit includes the specific conditions that regulate the emissions units covered by the proposed project.
- The Written Notice of Intent to Issue Air Permit provides important information regarding: the Permitting Authority's intent to issue an air permit for the proposed project; the requirements for publishing a Public Notice of the Permitting Authority's intent to issue an air permit; the procedures for submitting comments on the Draft Permit; the process for filing a petition for an administrative hearing; and the availability of mediation.
- The Public Notice of Intent to Issue Air Permit is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project.

If you have any questions, please contact the Project Engineer, Syed Arif, at 850-921-9528.

Sincerely,

Trina L Vielhauer

Trina Vielhauer, Chief
Bureau of Air Regulation

Enclosures

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

In the Matter of an
Application for Air Permit by:

Gainesville Regional Utilities
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative:
Mr. George K. Allen

Air Permit No. 0010006-005-AC
Facility ID No. 0010006
Deerhaven Generating Station
Installation of Air Quality Control Systems
Alachua County, Florida

Facility Location: Gainesville Regional Utilities operates Deerhaven Generating Station, which is located at 10001 NW 13th Street, Gainesville, Alachua County, Florida.

Project: The applicant proposes to retrofit Deerhaven Generating Station Unit 2 with air quality control systems. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address or phone number listed above.

Notice of Intent to Issue Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Permit (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at above address or phone number. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication may result in

the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of 14 days from the date of publication of the Public Notice. Written comments must be postmarked by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 14-day period. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this Written Notice of Intent to Issue Air Permit. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the attached Public Notice or within 14 days of receipt of this Written Notice of Intent to Issue Air Permit, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Written Notice of Intent to Issue Air Permit package (including the Public Notice, the Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by electronic mail with received receipt requested before the close of business on 6/29/07 to the persons listed below.

George K. Allen, GRU (allengk@gru.com)
Yolanta E. Jonynas, GRU (jonynasye@gru.com)
Jim Little, EPA (little.james@epa.gov)
Kathleen Forney, EPA (forney.kathleen@epa.gov)
D. Morse, NPS (dee_morse@nps.gov)
Chris Kirts, DEP-NED (christopher.kirts@dep.state.fl.us)
Tom W. Davis, P.E., ECT, Inc. (tdavis@ectinc.com)
Michael Halpin, OSC (michael.halpin@dep.state.fl.us)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

Mary F. Harvey (Clerk) 6/29/07 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Division of Air Resource Management, Bureau of Air Regulation
Draft Air Permit No. 0010006-005-AC
Gainesville Regional Utilities, Deerhaven Generating Station
Alachua County, Florida

Applicant: The applicant for this project is Gainesville Regional Utilities. The applicant's authorized representative and mailing address is: Mr. George K. Allen, Assistant General Manager – Energy Supply, Gainesville Regional Utilities, Post Office Box 147117 (A132), Gainesville, Florida 32614-7117.

Facility Location: Gainesville Regional Utilities, operates the existing Deerhaven Generating Station, which is located in Alachua County at 1001 NW 13th Street in Gainesville, Florida.

Project: The applicant proposes to install air quality control systems (AQCS) on Unit 2 in order to comply with the requirements of EPA's Clean Air Interstate Rule and Clean Air Mercury Rule. The AQCS includes the following: selective catalytic reduction system to decrease nitrogen oxides (NOx) emissions, circulating dry scrubber to reduce sulfur dioxide (SO_2) emissions and a baghouse system to reduce particulate matter (PM) emissions.

While the addition of selective catalytic reduction system will substantially decrease emissions of NOx, there is the potential for collateral increases in emissions of sulfuric acid mist (SAM) and PM. The potential increase of SAM emissions is a result of the oxidation of SO_2 to sulfur trioxide (SO_3) that is emitted as SAM after the circulating dry scrubber system. SAM emissions will also increase as a result of the proposed higher sulfur coals. Potential increases in SAM emissions will be minimized through the injection of alkaline reagent (lime) to react with SO_3 prior to the baghouse. The reactants, primarily particulate calcium compounds, will be collected in the fabric filter. The potential increase in PM from the reaction of lime and SO_3 will be collected in the circulating dry scrubber system and the fabric filter. There will be no emissions increase over the PSD significant emission rates from the installation of the AQCS.

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high and intermediate pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

Unit 2 is currently fired with low sulfur (0.8 weight percent sulfur) eastern bituminous coal. Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur). SO_2 emissions due to cold and warm startup will increase under worst-case condition by 25 tons per event due to non-availability of AQCS initially when firing higher sulfur coal. On an annual basis, SO_2 emissions will decrease by 7,139 tons per year.

The project is expected to reduce emissions of SO_2, NOx, PM and SAM as well as hydrogen fluoride and mercury. The estimated reduction for NOx is 3,262 tons per year. Because the project will not result in a significant increase in emissions, an air quality impact analysis was not required.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above. In addition, electronic copies of these documents are available on the following web site: http://www.dep.state.fl.us/air/eproducts/apds/default.asp.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of 14 days from the date of publication of the Public Notice. Written comments must be postmarked by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 14-day period. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address and telephone number of the petitioner; the name address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial rights will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon

which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Public Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available for this proceeding.

TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

City of Gainesville

Gainesville Regional Utilities

Deerhaven Generating Station
Unit 2, Installation of Air Quality Control Systems
Alachua County, Florida

DEP File Number
0010006-005-AC

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation

June 26, 2007

1. APPLICATION INFORMATION

APPLICANT

City of Gainesville
Gainesville Regional Utilities (GRU)
P.O. Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative: Mr. George K. Allen, Assistant General Manager – Energy Supply

FACILITY LOCATION

The applicant's facility, Deerhaven Generating Station (DGS) is located at 10001 NW 13th Street, Gainesville, Alachua County, Florida. UTM coordinates of the site are: Zone 17, 367.70 km E and 3292.60 km N. This location is approximately 80 km from the nearest Class I area, the Okefenokee Wilderness Area.

The facility consists of two steam boilers (Units No. 1 and 2) and associated steam turbines, a simple cycle combustion turbine (CT No. 3), two unregulated simple cycle combustion turbines (CT Nos. 1 and 2), a recirculating cooling water system, storage and handling facilities for coal, brine salt, fly ash and bottom ash, fuel oil storage tanks, water treatment facilities, a railcar maintenance facility and ancillary support equipment.

Emission control equipment presently installed on Unit 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

The standard industrial classification (SIC) code for the power plant is Major Group No. 49, Industry Group No. 4911.

REGULATORY CLASSIFICATION

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.). Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC).

The existing facility is major source of hazardous air pollutants (HAP).

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-210.200, F.A.C. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a Prevention of Significant Deterioration (PSD)-major source.

Unit 2 and CT No. 3 were certified pursuant to Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, Florida Statutes (F.S.).

MODIFICATION REQUEST

GRU submitted an application for a minor source air construction permit to retrofit DGS Unit 2 with air quality control systems (AQCS) as one means of complying with the requirements of EPA's Clean

Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) as implemented by the Department in Rules 62-296.470 and 62-296.480, F.A.C., respectively. The AQCS planned for DGS Unit 2 includes the following:

- Selective catalytic reduction (SCR) system to reduce NOx emissions.
- A circulating dry scrubber (CDS) to reduce SO_2 emissions.
- Baghouse (fabric filter) to reduce PM emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime and CDS by-product) handling and storage.

These emission control systems will also have the co-benefit of controlling mercury (Hg), hydrogen chloride (HCl), hydrogen fluoride (HF) and sulfuric acid mist (SAM) emissions. Provisions have been made in the design of the AQCS for activated carbon injection in the future if needed for additional Hg control. The primary purpose of the project is to limit emissions of SO_2, NOx and Hg to assist with CAIR and CAMR. While the addition of SCR will substantially decrease emissions of NOx, there is the potential for collateral increases in emissions of SAM and particulate matter (PM). The potential increase of SAM emissions is a result of the oxidation of SO_2 to sulfur trioxide (SO_3) that is emitted as SAM after the CDS system. SAM emissions will also increase as a result of the proposed higher sulfur coals. Potential increases in SAM emissions will be minimized through the injection of alkaline reagent (lime) to react with SO_3 prior to the baghouse. The reactants, primarily particulate calcium compounds, will be collected in the fabric filter. The potential increase in PM from the reaction of lime and SO_3 will be collected in the CDS system and the fabric filter. There will be no emissions increase over the PSD significant emission rates from the installation of SCR and CDS.

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high- and intermediate-pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine in order to recover power lost due to the parasitic load associated with the operation of the new AQCS. DGS Unit 2 is currently fired with low sulfur eastern bituminous coal. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 percent sulfur), and still comply with the New Source Performance Standards (NSPS) Subpart D of 40 CFR 60.

REVIEWING AND PROCESS SCHEDULE

02-23-2007: Date of Receipt of Application
03-12-2007: Department of Environmental Protection's (DEP's) 1st Completeness Request
03-30-2007: Applicant's response to DEP's 1st Completeness Request
04-23-2007: DEP's 2nd Completeness Request
05-15-2007: Applicant's response to DEP's 2nd Completeness Request
06-14-2007: DEP's 3rd Completeness Request
06-22-2007: Applicant's response to DEP's 3rd Completeness Request. Application complete

AQCS DESCRIPTION

Selective Catalytic Reactor

SCR is a process that uses catalyst to promote the conversion of NOx to nitrogen and water in the flue gas. The conversion occurs between the boiler economizer and the air heaters in a specially designed ductwork section called the SCR Reactor, which contains the catalyst. Ammonia vapor mixed with dilution air is injected into the flue gas upstream of the catalyst and is thoroughly mixed with the flue gas prior to the catalyst. As the flue gas passes over the catalyst, the nitrogen monoxide and nitrogen dioxide combine with the ammonia to form nitrogen and water.

Unit 2 will have two SCR reactors. The SCR system will tie into the ductwork at the outlet of the existing hot-side electrostatic precipitator which is expected to remain in-service after installation of the AQCS. Ammonia mixer plates and patented Delta Wing mixers will be located within the inlet duct to the two SCR reactors. The SCR outlet duct will connect to the existing air heaters.

The SCR system is designed so that flue gas flows through it whenever the Unit 2 is operating i.e., there are no bypasses. The SCR system contains instrumentation to measure flue gas pressures, temperatures and NOx concentrations at various locations in the ductwork and reactors. NOx control is initiated when the temperature at the outlet of the reactor reaches the minimum short-term operating temperature of 613°F and ammonia flow is started through the injection nozzles.

Unit 2 flue gas will flow through the three layers (two active and one future layer) of honeycomb catalyst. This SCR design provides sufficient space with margin to accommodate plate or honeycomb type catalyst and meet the performance requirements without using the spare catalyst level. The catalyst handling system will consist of a catalyst-rotating device, catalyst module lift device (supplied by the catalyst vendor), electric and manual hoists, and a catalyst cart and rail system. Provisions have been made in the catalyst design for removable test samples of catalyst material that can be used to monitor and predict catalyst activity during the catalyst life. The design life of the catalyst is 24,000 hours.

Gaseous arsenic is one of the predominant catalyst deactivation mechanisms in coal-fired SCR applications. Introducing calcium oxide (CaO) to the fuel reduces the gaseous arsenic in the flue gas and decreases its harmful effect on the catalyst. For the DGS Unit 2 SCR system, an addition rate of 0.51 weight percent CaO is expected to reduce the concentration of arsenic in the flue gas to within acceptable limits, subsequently ensuring the catalyst for a minimum 24,000 hours of operation. This optional CaO addition may be provided from lime or limestone.

A permanent sampling grid will be provided above and below the catalyst layers as well as between layers. These grids will allow sampling of the gas stream from outside the SCR while the unit is operating. A moveable NO_x probe will be provided in each SCR reactor inlet and outlet. A sampling/NO_x analyzer system will be connected to each probe to measure the inlet and outlet NO_x and provide a process control signal for the ammonia injection system.

A urea-based ammonia system will be provided to supply ammonia for the SCR catalyst to remove NO_x. The system is sized to produce ammonia for two SCRs at full load. The urea to ammonia system will use urea that is dissolved into water and the solution will be injected into heated in-line hydrolysers at a controlled rate and under conditions to provide the required amount of ammonia. The process will produce a gaseous mixture of ammonia, carbon dioxide and water vapor, which will be mixed into the flue gas stream.

The Unit 2 SCR control system is designed to achieve a target outlet NO_x emission rate of 0.07 pounds per million British thermal units (lb/MMBtu) with an ammonia slip concentration of no more than 5.0

parts per million at 3% oxygen (O_2). The target SCR controlled NO_x emission is ten times lower than the current NSPS Subpart D limit of 0.7 lb/MMBtu.

Circulating Dry SO_2 Scrubber

CDS will be installed down stream of the existing Unit 2 induced draft (ID) fans. This flue gas desulfurization (FGD) system will remove the acidic constituents of the flue gas, primarily SO_2 and SO_3 and to a lesser extent carbon dioxide (CO_2), HCl and HF, by reaction with hydrated lime. The system includes the CDS vessel, adsorbent preparation and injection, water injection, product recycle injection and a flue gas recycle system. To assure a high level of SO_2 removal, a portion of the solid products exiting the CDS vessel (i.e., primarily reaction products such as calcium sulfite ($CaSO_3$), calcium sulfate ($CaSO_4$), calcium carbonate ($CaCO_3$), calcium chloride ($CaCl_2$), calcium fluoride (CaF_2) and inerts) will be separated from the flue gas in the baghouse and recycled back into the CDS to maintain the fluidized bed, while the excess material will be pneumatically transported out of the system to a storage silo. The amount of solids recycled is dependent upon the differential pressure within the CDS and the volumetric flue gas flow rate.

In order to ensure that the CDS is constantly fluidized, a portion of the flue gas stream downstream of the two booster fans will be recirculated to the inlet duct of the CDS during boiler operation at reduced loads. The amount of flue gas recirculated is accomplished through the positions of the two recirculation dampers.

The CDS is designed so that flue gas flows through it whenever Unit 2 is operating (i.e., there are no bypasses). It contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork.

Unit 2 flue gas will first pass through a group of venturi nozzles. The venturi nozzles serve to accelerate the flue gas just prior to the injection of high-pressure water, recycled solids, and adsorbent (i.e., lime). The reactor acts as a fluidized bed, assuring maximum contact between the pollutants in the flue gas and the adsorbent solids. The reactor is characterized by high turbulences and optimal chemical and physical heat and mass transfer rates. Water is added to bring the flue gas closer to the saturation temperature where the SO_2 absorption is most effective. The high dust load leaving the reactor is captured in the baghouse (fabric filter).

SO_2 will be measured at the inlet and outlet of the CDS reactor. These measurements will be used to vary the quantity of fresh lime that is introduced into the reactor. The final residue of the CDS process is a moist product which may be landfilled or potentially re-utilized.

Hydrated lime, $Ca(OH)_2$, is the adsorbent used in the CDS process. Lime will be delivered to the DGS via truck or rail and subsequently hydrated to increase its reactivity before injection in the CDS. Within the hydrator, the lime is mixed with water and agitated until the hydration reaction is complete. The quantity of fresh lime that is introduced into the CDS is controlled by inlet and outlet SO_2 concentrations.

SAM emissions can also be controlled by injecting lime into the CDS reactor without water injection and with no ash recirculating provided the baghouse is in-service. SAM emissions will be neutralized by lime in the CDS reactor and will be collected as particulate calcium compounds by the downstream fabric filter. To evaluate potential changes in SAM emissions, GRU proposes to conduct both baseline (prior to installation of the AQCS) and post-AQCS stack testing. Baseline stack testing would be conducted using compliance coal while the post-AQCS testing will evaluate both compliance and higher sulfur coals, alternate lime injection locations, and various boiler/AQCS operating configurations. The tests will serve to document the impact of lime injection on reducing SAM emissions, and to develop correlations between lime injection rates and SAM emission rates.

The DGS Unit 2 CDS control system is designed to achieve a target outlet SO_2 emission rate of 0.12 lb/MMBtu. The target CDS controlled SO_2 emission is ten times lower than the current NSPS Subpart D limit of 1.2 lb/MMBtu.

Baghouse

For particulate removal, one pulse-jet baghouse containing ten (10) compartments will be installed between the outlet of the CDS and inlet of the booster fans at DGS Unit 2. The fabric filter is designed so that flue gas flows through it whenever the DGS Unit 2 is operating (i.e., there are no bypasses).

Particulate contained in the raw flue gas as well as reaction products from the CDS are captured in the pulsejet fabric filter. The pulsejet fabric filter is multi-compartmented, consisting of two parallel trains with centrally located inlet and outlet plenums. Each parallel train of compartments is served by an air slide utilizing heated air. The air slide conveys a significant portion of the collected particulate back to the CDS to maintain a high solids environment and improve overall reagent utilization. The balance of the collected particulate goes to surge bins (one per air slide) from which it is pneumatically conveyed to a common ash silo equipped with redundant pug mills. The ash can then be loaded into trucks.

Each compartment will contain one cylindrical bag bundle with 984 filter bags per bundle. This equates to a total of 9,840 bags installed, with an additional 2 percent included as startup spares. The filter bags for this project will be fabricated from heavy weight 18 oz/yd nominal weight polyphenyl sulfide (PPS), self supported with fused seam. The design air-to-cloth ratio is 4:1 or less with one compartment off-line for maintenance.

The pulsejet fabric filter utilizes bags fabricated from felted PPS fabric that is appropriate for this application. During operation the incoming particulate laden flue gas passes from outside of each bag creating a filter cake. With the passage of time, this cake thickens and tends to increase pressure drop. An automatic cleaning system is utilized to dislodge this filter cake, thus maintaining the desired overall pressure drop. The motive force for cleaning is pressurized air that is introduced at the top of the bags, just above the tubesheet. This flow of pressurized air travels counter to the normal flow of flue gas, thus dislodging the accumulated filter cake and assisting its downward drop into the collecting hoppers below. Redundant low-pressure positive displacement blowers provide the pressurized air.

Two 50 percent booster fans are provided for the DGS Unit 2 AQCS. The fans serve two functions. They provide the additional motive force to overcome the additional pressure drop imposed on the system by the addition of the SCRs, the CDS, and the baghouse. They also allow the CDS to operate at reduced Unit 2 loads by recycling a portion of flue gas from the baghouse outlet to the CDS vessel inlet, thereby keeping the solids bed in the vessel fluidized. The discharge of the booster fans ties into the ductwork upstream of the stack.

The DGS Unit 2 fabric filter control system is designed to achieve a target outlet filterable PM emission rate of 0.015 lb/MMBtu. The target fabric filter controlled PM emission is 6.7 times lower than the current NSPS Subpart D limit of 0.1 lb/MMBtu.

Urea, Lime and CDS By-Product Handling and Storage

Reagents associated with the DGS Unit 2 AQCS include urea for the SCR NO_x control system and lime for the SO_2 CDS control system. Solid materials generated by the DGS Unit 2 AQCS consist of the reaction products (primarily calcium sulfate, calcium sulfite, unreacted lime and inerts) from the SO_2 CDS control system. A discussion of the handling and storage of the AQCS reagents and by-product are provided in the following sections.

Urea

Granular or prilled urea will be delivered by truck and transferred pneumatically directly to the urea to ammonia dissolver tank where the urea is dissolved in water. The urea/water solution will then be injected into a heated in-line reactor at controlled rates to produce the appropriate amounts of gaseous ammonia and water vapor. The gaseous ammonia and water vapor stream will then be injected into the SCR control system. Accordingly, there will be no emissions associated with the unloading and processing of urea.

Lime

The lime unloading and storage system includes equipment for the pneumatic unloading of pebble lime from railcars or trucks, transport to a storage silo, and transport from the storage silo into two lime day bins.

Lime will be received in 100 ton railcars that have bottom hopper outlets. Lime may also be received in 25 ton maximum capacity trucks that have self-unloading blower systems. A roofed enclosure with partial walls parallel to the track for wind and rain protection is provided to protect the unloading operation from weather exposure.

For railcar unloading, unloading pans are provided that are clamped to each of three hopper outlet flanges, and a vacuum conveying system removes lime from the railcar hopper, one hopper section at a time, into a filter receiver. From the filter receiver, lime is fed through an airlock, into an airlock hopper, which discharges through another airlock into a positive pressure pneumatic conveyor. The vacuum and pressure conveying systems each have two blowers, one blower is spare.

The vacuum conveyor system is also designed to unload two positive pressure pneumatic trucks by having the truck discharge line connect to the vacuum conveyor line. The unloading building also provides for one or two self-unloading pressure differential trucks to unload. Two independent conveying pipes and hoses are provided so both trucks can unload at the same time.

The positive pressure lime conveyor discharges into the lime storage silo. The silo has a vibrating bin outlet, to assure continuous flow from the silo and has a bin vent to exhaust filtered air from the silo. From the vibrating bin discharger, lime discharges through a diverter gate to either of two airlock hoppers. Each hopper feeds an independent positive pressure conveyor that transports lime into either of two lime day bins. Two blowers are provided; one acts as a spare.

The positive pressure conveyor discharges lime into either of two day bins, selected by a diverter in the convey line. Both day bins are provided with a bin vent filter. Two conveying pipes with hoses to connect to self-unloading pressure differential trucks are also provided to use as emergency sources of lime for the day bins.

Pebble lime from the day bins is conveyed to hydrators equipped with scrubbers where it is wetted to approximately 1 to 2 percent moisture. Hydrated lime is then conveyed by a positive pressure pneumatic conveyor into the hydrated lime silo. A bin vent filter is provided for the silo to vent filtered conveying air from the silo. Hydrated lime discharges from the silo through an airlock, and then into a feeder hopper, which discharges through another airlock into the conveying line. A positive pressure conveyor transports hydrated lime to the turbo reactor. The conveyor has two blowers with one acting as a spare.

PM emission sources associated with the lime handling and storage system consist of: (1) railcar unloading filter receiver, (2) lime storage silo, (3) two lime day bin silos, (4) two lime hydrator scrubbers, and (5) hydrated lime storage silo. The railcar unloading filter receiver and each of the storage silos will be equipped with bin vent fabric filters designed to achieve an outlet PM concentration of 0.01 grains per dry standard cubic foot (gr/dscf).

CDS Byproduct

A portion of the CDS byproducts will be collected by the CDS fabric filter and pneumatically transferred to a CDS byproduct storage silo which will be equipped with a bin vent fabric filter designed to achieve an outlet PM concentration of 0.01 gr/dscf.

CDS byproduct will then be transferred into two pin mixers where it will be mixed with water prior to being loaded into trucks. There are no significant PM emissions associated with the wet pin mixer operation.

Calcium Oxide Addition System for Fuel Conditioning

Calcium oxide in the form of lime or limestone may be added to the coal conveying system, as needed, to condition the fuel and enhance the life of the SCR catalyst.

2. PROJECT EMISSIONS

The existing DGS is located in an attainment area and is classified as a *major facility.* A modification to an existing major facility located an attainment area which has a net emissions increase equal to or exceeding the significant emission rates listed in Rule 62-210.200(277), F.A.C., will be subject to PSD review.

For changes to existing emission units, such as the Unit 2 AQCS, the determination of a net emission increase is based on a comparison of actual-to-projected actual emission rates. A significant emissions increase of a PSD pollutant will occur if the difference between the *baseline actual emissions* and *projected actual emissions* equals or exceeds the significant emissions rate for that pollutant. As defined by Rule 62-210.200(36), F.A.C., baseline actual emissions for an existing electric utility steam generating unit means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by the Department. Baseline actual emissions include fugitive emissions, to the extent quantifiable, as well as emissions associated with startups and shutdowns.

Projected actual emissions, as defined by Rule 62-210.200(248), F.A.C., means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. Emissions that the unit could have accommodated during the 24-month baseline period and that are unrelated to the modification are excluded. As noted previously, there will be no changes to the existing Unit 2 electrical steam generator and no increase in maximum heat input to the boiler or steam flow capability of the turbine. Since Unit 2 is a base load unit, there will also be no change in Unit 2 utilization (i.e., capacity factor) due to the AQCS project. Accordingly, the applicable period for determining projected actual emissions for the Unit 2 AQCS project is the 5 years following installation of the additional emission controls.

The Unit 2 AQCS project will result in substantial reductions in actual emissions of NOx, SO_2, PM/PM_{10}, HF and SAM. The Department has reasonable assurance that PM/PM_{10} emissions will not increase due to the existing electrostatic precipitator as well as additional particulate control with the baghouse system. No changes are planned to the Unit 2 combustion process. Accordingly, no change in actual emissions of combustion related pollutants (i.e., CO and VOC) will result due to the AQCS

project. Baseline actual emissions, projected actual emissions and net change in emissions are listed in the following tables:

TABLE 1 – PAST ACTUAL EMISSIONS & 2-YEAR AVERAGES

Year	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
2002	7,147.4	3,315.9	270.6	181.3	83.3	27.0	0.051
2003	7,678.8	3,666.3	308.3	206.5	83.0	29.0	0.044
2004	6,951.7	3,322.8	116.9	78.3	80.3	25.3	0.038
2005	8,042.9	3,932.5	96.9	64.9	103.3	33.0	0.025
2006	8,119.3	3691.9	151.0	101.2	93.5	29.9	0.045
02-03 Average	N/A	N/A	289.4	193.9	N/A	N/A	N/A
05-06 Average	8,081.1	3812.2	N/A	N/A	98.4	31.4	0.035

TABLE 2 – PROJECTED ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Projected Emissions	942.6	549.9	117.8	108.4	30.7	3.1	0.0070
AQCS Material Handling	N/A	N/A	6.0	6.0	N/A	N/A	N/A
AQCS By-Product Truck Traffic	N/A	N/A	Neg.	Neg.	N/A	N/A	N/A
Totals	942.6	549.9	123.8	114.4	30.7	3.1	0.0070

TABLE 3 – ESTIMATED NET CHANGE IN ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Net Change	-7,138.5	-3,262.3	-165.6	-79.5	-67.7	-28.3	-0.028

3. STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

Unit 2 is subject to the SO_2, NOx and PM standards in 40 CFR 60, Subpart D. According to 40 CFR 60.8(c), operations during periods of startup, shutdown, and malfunction do not constitute representative conditions for performance testing, and emissions in excess of an applicable standard during such periods are not considered to be violations unless otherwise specified in the standard. Since Subpart D does not contain language indicating that the emissions standards apply at all times, emissions in excess of the Subpart D emissions standards during startup, shutdown, and malfunction periods are not considered violations pursuant to 40 CFR 60.8(c).

Since the facility is proposing to use higher sulfur coals, startup emissions will be higher compared to startup emissions presently. The Department considered requiring the facility to use lower sulfur coal for startup, but storage pile space constraints, segregation of different grades of coal, logistical handling issues for multiple types of coal negated that approach.

Even though the emission limits in Subpart D does not apply during startup, shutdown, and malfunction, the reporting provisions in 40 CFR 60.7(c) requires owners and operators to report emissions in excess of the standards, including startup, shutdown and malfunction. In addition, 40 CFR 60.11(d) requires that owners and operators maintain and operate affected facilities in a manner to minimize emissions at all times. Because of this requirement, excess emission reports are reviewed in order to determine whether source owners and operators have taken adequate steps to minimize emissions during startup, shutdown, and malfunction.

4. RULE APPLICABILITY

Prevention of Significant Deterioration

New Source Review under PSD regulations is not applicable to the proposed project as the net increase in emissions due to this modification is less than the PSD significant emission rates listed in Rule 62-210.200, F.A.C. The net increase in emissions is determined based on the difference between the projected future actual emissions and the baseline actual emissions.

Federal and State Emission Standards

The proposed project is subject to the applicable provisions of Chapter 403, F.S., Chapters 62-4, 62-210, 62-212 and 62-296, F.A.C. The facility is located in an area designated attainment or maintenance for all criteria pollutants in accordance with F.A.C. Rule 62-204.340, F.A.C. The project is subject to the monitoring, record keeping and reporting requirements of Rule 62-212.300(1)(e), F.A.C. The draft permit authorizes the construction of the AQCS for Unit 2 and establishes specific monitoring conditions to determine whether the project resulted in significant net emissions increases.

The emission units are regulated under Acid Rain, Phase II and Phase I; NSPS – 40 CFR 60 Subpart D, Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After August 17, 1971, adopted and incorporated by reference in Rule 62.204-800, F.A.C.

5. AIR QUALITY ANALYSIS

According to the application and our review, the proposed project does not require an air quality analysis because there will be no net significant emissions increases.

6. CONCLUSION

Based on the foregoing technical evaluation of the application and information submitted by GRU, the Department has made a preliminary determination that the proposed project will comply with all applicable federal and state air pollution regulations.

DRAFT PERMIT

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative:
Mr. George K. Allen, Assistant General Manager
Energy Supply

Permit No.:	0010006-005-AC
Facility ID No.:	0010006
Project:	Installation of Air Quality Control Systems
Expires:	September 30, 2009

PROJECT AND LOCATION

This permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The Deerhaven Generating Station is an existing electrical generating plant (SIC No. 4911) located at 10001 NW 13th Street in Gainesville, Alachua County, Florida. The UTM coordinates are: Zone 17; 365.7 km E; 3292.6 km N.

STATEMENT OF BASIS

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of SCR nor its operation. However, installation and operation of additional lime injection system is required to reduce sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the Code of Federal Regulations (CFR). The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

CONTENTS

Section 1. General Information
Section 2. Administrative Requirements
Section 3. Emissions Unit Specific Conditions
Appendix GC. Construction Permit General Conditions

Executed in Tallahassee, Florida

(DRAFT)

Joseph Kahn, Director
Division of Air Resource Management

(Date)

FACILITY DESCRIPTION

The City of Gainesville, GRU operates an existing electrical generating plant at the Deerhaven Generating Station (DGS). This plant consists of two steam boilers (Unit Nos. 1 and 2) and associated steam turbines; a simple cycle combustion turbine (CT No. 3); two unregulated simple cycle combustion turbines (CT Nos. 1 and 2); a recirculating cooling water system; storage and handling facilities for coal; brine salt; fly ash and bottom ash; fuel oil storage tanks; water treatment facilities; a railcar maintenance facility and ancillary equipments. Boiler No. 2 has a nominal nameplate rating of 251 megawatts (MW), electric. Emission control equipment currently installed on Boiler No. 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

PROJECT DESCRIPTION

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation.

Installation of the SCR system will result in collateral increases in emissions of SAM and particulate matter (PM/PM_{10}). The potential increase of SAM emissions is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) that is emitted as SAM after the CDS system. The permit requires the injection of lime in the CDS to reduce SAM emissions. The lime reacts with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

REGULATORY CLASSIFICATION

Title III: The existing facility is a major source of hazardous air pollutants (HAPs).

Title IV: The existing facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a major stationary in accordance with Rule 62-212.400, F.A.C.

NSPS: The existing facility operates units subject to the New Source Performance Standards of 40 CFR 60.

RELEVANT DOCUMENTS

The permit request and additional information received to make it complete are not a part of this permit; however, the information is listed in the technical evaluation which is issued concurrently with this permit.

1. Permitting Authority: All documents related to applications for permits regarding construction and operation shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be sent to the Department's Northeast District Office.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to Northeast District Office.

3. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and Title 40, Part 60 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

4. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

5. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

6. Title V Permit: This permit authorizes modification of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

7. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by increasing its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction has not yet commenced on the source or modification. [Rule 62-212.400(12)(c), F.A.C.]

The specific conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
005	Steam Boiler - Unit 2

Unit 2 is a fossil fuel-fired steam generator with a nominal nameplate rating of 251 MW. Authorized fuels include pulverized coal, natural gas and/or distillate fuel oils (Nos. 1 or 2) with emissions exhausted through a 350 feet stack. The maximum heat input to Unit 2 is 2,428 MMBtu/hour. Unit 2 is a dry bottom, wall-fired boiler with a hot-side electrostatic precipitator to control particulate matter. Unit 2 began commercial operation in 1981. Opacity, nitrogen oxides (NOx) and SO_2 emissions are continuously monitored.

PREVIOUS APPLICABLE REQUIREMENTS

1. Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements. The facility remains subject to all of the requirements specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

AUTHORIZED WORK

2. SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: ammonia storage; ammonia flow control unit; ammonia injection grid; three layers (two active and one future layer) of honeycomb catalyst; an SCR reactor chamber; and other ancillary equipment. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

3. CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. The system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. The system contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork. SO_2 will be measured at the inlet and outlet of the CDS reactor. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

4. Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. Design Information: Each compartment will contain one cylindrical bag bundle with 984 filter bags per bundle. A total of 9,840 bags will be installed, with an additional 2 percent included as startup spares. The filter bags are fabricated from heavy weight 18 oz/yd nominal weight polyphenyl sulfide fabric. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

5. Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR is not required by this permit. As necessary, the permittee shall operate the lime injection system for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (98 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

PERFORMANCE REQUIREMENTS

6. Annual SAM Emissions Projections: For this project, the permittee projected that actual annual emissions due to the project would not exceed the baseline actual emissions of SAM (98 tons/year). The permittee

shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

7. Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed 98 tons per year. The permittee shall install and operate the lime injection system at a frequency and injection rate for SAM control to satisfy this requirement. An automated control system will be used to adjust the lime flow rate for the given set of operating conditions based on the most recent correlation curves based on performance testing. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

8. Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv). Annual testing of ammonia shall be conducted and corrective measures taken if measured values exceed 2 ppmv. [Design; and Rule 62-4.070(3), F.A.C.]

EMISSIONS PERFORMANCE TESTING

9. Baseline Performance Tests – Lime Injection for SAM Emissions Control: The permittee shall conduct baseline performance tests at permitted capacity to evaluate potential changes in SAM emissions. Baseline performance tests shall be conducted using current coal (0.8 weight percent sulfur). Three baseline performance tests shall be conducted. The first baseline performance test shall be conducted prior to installation of AQCS with no lime injection. The second baseline performance test shall be conducted prior to installation of AQCS with lime injection into the boiler. The third baseline performance test shall be done within 45 days of completing AQCS construction with lime injection into the CDS reactor. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to each test and shall submit a test report summarizing the emission tests and results within 45 days of the completion of the each performance test.

   [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

10. Post- AQCS Construction Performance Tests – Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions. Post- AQCS construction tests shall evaluate both current and higher sulfur (up to 2.5 weight percent) coals, alternate lime injection locations, and various boiler/AQCS operating configurations. Within 120 days of completing construction of Unit 2 AQCS systems, the permittee shall conduct a series of performance tests on Unit 2 to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of lime injection on reducing SAM emissions and results in the development of correlation curves based on injection rates, operating conditions and emissions.

    a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect of SAM emissions on such parameters as the SO_2 emission rate prior to the SCR catalyst (and CDS system), the unit load, the flue gas flow rate, the ammonia injection rate and the current catalyst oxidation rate.

    b. Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions intended for Unit 2. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: SCR reactor in service without lime injection in the CDS, and SCR reactor in service under varying operating conditions and levels of lime injection in the CDS.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing the following: identify each set of operating conditions evaluated, identify each operating parameter evaluated, identify the relative influence of each operating parameter, describe how the adjustment to the lime injection rate be made based on the selected parameters, and provide details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions. The test results shall be used to adjust the lime injection system and estimate SAM emissions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

11. Annual Tests – Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection correlation curves as necessary. At least six representative 1-hour test runs shall be conducted on Unit 2. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests conducted, the results of the tests, the catalyst oxidation rate, and the updated series of related lime injection correlation curves. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

12. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. [Rule 62-297.310(7)(a)9, F.A.C.]

13. Test Methods: Required tests shall be performed in accordance with the following reference methods:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

14. Startup, Shutdown and Malfunction: Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

[Rule 40 CFR 60.8(c)]

15. Emissions: The permittee at all times, including periods of startup, shutdown, and malfunction shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility.

[Rule 40 CFR 60.11(d)]

NOTIFICATIONS, RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each sulfuric acid mist test run, the report shall also indicate the lime injection rate for SAM emissions control, unit load, and unit heat input rate. [Rule 62-297.310(8), F.A.C.]

17. Operational Data: The permittee shall continuously monitor and record the lime injection rate for SAM emissions control. [Rule 62-4.070(3), F.A.C.]

18. Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

    a. The permittee shall monitor the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years after completing construction on unit's control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

        a. Name, address and telephone number of the owner or operator of the major stationary source;

        b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

        d. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

19. SAM Emissions Computation and Reporting: The permittee shall compute SAM emissions in accordance with the following requirements.

    a. For each year of reporting required, emissions shall be computed based on the controlled and uncontrolled emissions factors determined during the required annual emissions test. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

    b. With appropriate supporting test data, multiple emission factors may be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

    c. The permittee shall compute emissions by multiplying the appropriate controlled or uncontrolled emission factor by the annual heat input rate for the period over which the emissions are computed. The uncontrolled emissions factor shall be used if the minimum lime injection rate established for the latest test is not met.

    d. The permittee shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the Department or Compliance Authority for any regulatory purpose.

    [Rule 62-210.370, F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S. the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
    a. Have access to and copy any records that must be kept under the conditions of the permit;
    b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
    c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

    Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
    a. a description of and cause of non-compliance; and
    b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

    The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:
( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:
    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
    c. Records of monitoring information shall include:
        - the date, exact place, and time of sampling or measurements;
        - the person responsible for performing the sampling or measurements;
        - the dates analyses were performed;
        - the person responsible for performing the analyses;
        - the analytical techniques or methods used; and
        - the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, July 10, 2007 8:51 AM
To: Adams, Patty
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

-----Original Message-----
From: Dee_Morse@nps.gov [mailto:Dee_Morse@nps.gov]
Sent: Monday, July 09, 2007 6:11 PM
To: Harvey, Mary
Subject: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Return Receipt

Your document:	City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT
was received by:	Dee Morse/DENVER/NPS
at:	07/09/2007 04:11:17 PM

Friday, Barbara

From: Harvey, Mary
Sent: Monday, July 09, 2007 10:19 AM
To: Adams, Patty
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Jonynas, Yolanta E [mailto:JONYNASYE@gru.com]
Sent: Monday, July 09, 2007 8:16 AM
To: Harvey, Mary
Subject: Read: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Your message

To: JONYNASYE@gru.com
Subject:

was read on 7/9/2007 8:16 AM.

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, July 05, 2007 9:39 AM
To: Adams, Patty
Subject: FW: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Allen, George K (Chip) [mailto:ALLENGK@gru.com]
Sent: Tuesday, July 03, 2007 4:28 PM
To: Harvey, Mary
Subject: Read: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Your message

To: ALLENGK@gru.com
Subject:

was read on 7/3/2007 4:28 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Monday, July 02, 2007 3:40 PM
To: Adams, Patty; Arif, Syed
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Allen, George K (Chip) [mailto:ALLENGK@gru.com]
Sent: Monday, July 02, 2007 3:05 PM
To: Harvey, Mary
Subject: Read: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Your message

To: ALLENGK@gru.com
Subject:

was read on 7/2/2007 3:05 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Monday, July 02, 2007 9:23 AM
To: Adams, Patty; Arif, Syed
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Halpin, Mike
Sent: Friday, June 29, 2007 4:43 PM
To: Harvey, Mary
Subject: Read: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Your message

To:	Halpin, Mike
Cc:	Arif, Syed
Subject:	FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT
Sent:	6/29/2007 4:13 PM

was read on 6/29/2007 4:43 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Monday, July 02, 2007 9:23 AM
To: Adams, Patty; Arif, Syed
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Tom Davis [mailto:tdavis@ectinc.com]
Sent: Friday, June 29, 2007 7:25 PM
To: Harvey, Mary
Subject: RE: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Friday, June 29, 2007 4:09 PM
To: George K. Allen, GRU; Yolanta E. Jonynas, GRU; Jim Little, EPA; Kathleen Forney, EPA; D. Morse, NPS; Kirts, Christopher; Tom W. Davis, P.E., ECT, Inc.; Michael Halpin, OSC
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

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http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Monday, July 02, 2007 9:21 AM
To: Adams, Patty; Arif, Syed
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

-----Original Message-----
From: Forney.Kathleen@epamail.epa.gov [mailto:Forney.Kathleen@epamail.epa.gov]
Sent: Monday, July 02, 2007 8:07 AM
To: Harvey, Mary
Subject: Re: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

We got this... Thanks

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

"Harvey, Mary" <Mary.Harvey@dep.state.fl.us>

06/29/2007 04:08 PM

To: "George K. Allen, GRU" <allengk@gru.com>, "Yolanta E. Jonynas, GRU" <jonynasye@gru.com>, James Little/R4/USEPA/US@EPA, Kathleen Forney/R4/USEPA/US@EPA, "D. Morse, NPS" <dee_morse@nps.gov>, "Kirts, Christopher" <Christopher.Kirts@dep.state.fl.us>, "Tom W. Davis, P.E., ECT, Inc." <tdavis@ectinc.com>, "Michael Halpin, OSC" <michael.halpin@dep.state.fl.us>

cc: "Arif, Syed" <Syed.Arif@dep.state.fl.us>, "Adams, Patty" <Patty.Adams@dep.state.fl.us>, "Gibson, Victoria" <Victoria.Gibson@dep.state.fl.us>

Subject: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,
DEP, Bureau of Air Regulation

********** ATTACHMENT NOT DELIVERED **********

This Email message contained an attachment named
0010006.005.AC.D_pdf.zip
which may be a computer program. This attached computer program could contain a computer virus which could cause harm to EPA's computers, network, and data. The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced into the EPA network. EPA is deleting all computer program attachments sent from the Internet into the agency via Email.

If the message sender is known and the attachment was legitimate, you should contact the sender and request that they rename the file name extension and resend the Email with the renamed attachment. After receiving the revised Email, containing the renamed attachment, you can rename the file extension to its correct name.

For further information, please contact the EPA Call Center at
(866) 411-4EPA (4372). The TDD number is (866) 489-4900.

********** ATTACHMENT NOT DELIVERED
****

Friday, Barbara

From: Harvey, Mary

Sent: Friday, June 29, 2007 4:09 PM

To: 'George K. Allen, GRU'; 'Yolanta E. Jonynas, GRU'; 'Jim Little, EPA'; 'Kathleen Forney, EPA'; 'D. Morse, NPS'; Kirts, Christopher; 'Tom W. Davis, P.E., ECT, Inc.'; 'Michael Halpin, OSC'

Cc: Arif, Syed; Adams, Patty; Gibson, Victoria

Subject: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Attachments: 0010006.005.AC.D_pdf.zip

Dear Sir/Madam:

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The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Friday, June 29, 2007 4:11 PM
To: 'Kathleen Forney, EPA'; 'Jim Little, EPA'
Cc: Arif, Syed; Adams, Patty
Subject: FW: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT
Attachments: grugc - Facility #0010006-005-AC-Draft.PDF; gruint - Facility #0010006-005-AC-Draft.PDF; grupermit - Facility #0010006-005-AC-Draft.PDF; grupn - Facility #0010006-005-AC-Draft.PDF; grutepd - Facility #0010006-005-AC-Draft.PDF; Signed Documents - GRU - Facility #0010006-005-AC-DRAFT.pdf

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From: Harvey, Mary
Sent: Friday, June 29, 2007 4:09 PM
To: 'George K. Allen, GRU'; 'Yolanta E. Jonynas, GRU'; 'Jim Little, EPA'; 'Kathleen Forney, EPA'; 'D. Morse, NPS'; Kirts, Christopher; 'Tom W. Davis, P.E., ECT, Inc.'; 'Michael Halpin, OSC'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: City of Gainesville. GRU - Facility #0010006-005-AC-DRAFT

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, June 21, 2007 4:11 PM
To: Adams, Patty
Subject: FW: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Bates, Timothy C [mailto:BatesTC@gru.com]
Sent: Thursday, June 21, 2007 2:11 PM
To: Harvey, Mary
Subject: Read: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

Your message

To: BatesTC@gru.com
Subject:

was read on 6/21/2007 2:11 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Wednesday, June 20, 2007 9:44 AM
To: Adams, Patty
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Taylor, P. Joan [mailto:TAYLORPJ@gru.com] **On Behalf Of** Allen, George K (Chip)
Sent: Wednesday, June 20, 2007 9:08 AM
To: Harvey, Mary
Subject: RE: Ltr.- City of Gainesville, GRU - Mr. George Allen

per your request, here is our "reply" verifying receipt.

P. Joan Taylor, Executive Assistant Sr.
Gainesville Regional Utilities
Energy Supply
P.O. Box 147117 A132
Gainesville, Fl 32614-7117
352-393-1710

"Go Florida Gators"

-----Original Message-----
From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Thursday, June 14, 2007 1:58 PM
To: Allen, George K (Chip); Jim Little, EPA; D. Morse, NPS; Kirts, Christopher; Yolanta E. Jonynas, GRU; Tom W. Davis, P.E., ECT, Inc.; Michael Halpin, OSC
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: Ltr.- City of Gainesville, GRU - Mr. George Allen

Dear Sir/Madam:

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The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, June 19, 2007 12:42 PM
To: Adams, Patty
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

-----Original Message-----
From: Dee_Morse@nps.gov [mailto:Dee_Morse@nps.gov]
Sent: Tuesday, June 19, 2007 12:26 PM
To: Harvey, Mary
Subject: Ltr.- City of Gainesville, GRU - Mr. George Allen

Return Receipt

Your document:	Ltr.- City of Gainesville, GRU - Mr. George Allen
was received by:	Dee Morse/DENVER/NPS
at:	06/19/2007 10:26:20 AM

http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Friday, June 15, 2007 9:33 AM
To: Adams, Patty
Subject: RE: Ltr.- City of Gainesville, GRU - Mr. George Allen

Patty read this message before I email Kathleen at EPA. Do you think this is to stiff.

Mary

Kathy - I will forward your emails to the permitting engineers and they can make that decision.

Thanks,
Mary

-----Original Message-----
From: Forney.Kathleen@epamail.epa.gov [mailto:Forney.Kathleen@epamail.epa.gov]
Sent: Thursday, June 14, 2007 4:10 PM
To: Harvey, Mary
Cc: Little.James@epamail.epa.gov; Adams, Patty
Subject: Fw: Ltr.- City of Gainesville, GRU - Mr. George Allen

Hey Mary,

We received this message. I know you send all the permits to me now, but can you also add me to any emails that have any kind of permitting coorespondance (especially the one that you would like a reply notice back on).

Thanks
Katy

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

----- Forwarded by Kathleen Forney/R4/USEPA/US on 06/14/2007 04:06 PM -----

----- Forwarded by James Little/R4/USEPA/US on 06/14/2007 04:06 PM -----

"Harvey, Mary" <Mary.Harvey@dep.state.fl.us>		To
06/14/2007 01:58 PM	<allengk@gru.com>, James Little/R4/USEPA/US@EPA, "D. Morse, NPS" <dee_morse@nps.gov>, "Kirts, Christopher" <Christopher.Kirts@dep.state.fl.us>, "Yolanta E. Jonynas, GRU" <jonynase@gru.com>, "Tom W.	

Davis, P.E., ECT, Inc."
<tdavis@ectinc.com>, "Michael
Halpin, OSC"
<michael.halpin@dep.state.fl.us>
cc
"Arif, Syed"
<Syed.Arif@dep.state.fl.us>,
"Adams, Patty"
<Patty.Adams@dep.state.fl.us>,
"Gibson, Victoria"
<Victoria.Gibson@dep.state.fl.us>
Subject
Ltr.- City of Gainesville, GRU -
Mr. George Allen

Dear Sir/Madam:

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Thank you,
DEP, Bureau of Air Regulation

(See attached file: Letter-George K. Allen - DEP #0010006-005-AC.pdf)

Friday, Barbara

From: Harvey, Mary

Sent: Thursday, June 14, 2007 1:58 PM

To: 'allengk@gru.com'; 'Jim Little, EPA'; 'D. Morse, NPS'; Kirts, Christopher; 'Yolanta E. Jonynas, GRU'; 'Tom W. Davis, P.E., ECT, Inc.'; 'Michael Halpin, OSC'

Cc: Arif, Syed; Adams, Patty; Gibson, Victoria

Subject: Ltr.- City of Gainesville, GRU - Mr. George Allen

Attachments: Letter-George K. Allen - DEP #0010006-005-AC.pdf

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, June 14, 2007 2:00 PM
To: Halpin, Mike
Cc: Adams, Patty; Arif, Syed
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen
Attachments: Letter-George K. Allen - DEP #0010006-005-AC.pdf

---

From: Harvey, Mary
Sent: Thursday, June 14, 2007 1:58 PM
To: 'allengk@gru.com'; 'Jim Little, EPA'; 'D. Morse, NPS'; Kirts, Christopher; 'Yolanta E. Jonynas, GRU'; 'Tom W. Davis, P.E., ECT, Inc.'; 'Michael Halpin, OSC'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: Ltr.- City of Gainesville, GRU - Mr. George Allen

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, June 14, 2007 2:13 PM
To: Adams, Patty; Arif, Syed
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Halpin, Mike
Sent: Thursday, June 14, 2007 2:12 PM
To: Harvey, Mary
Subject: Read: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

Your message

To:	Halpin, Mike
Cc:	Adams, Patty; Arif, Syed
Subject:	FW: Ltr.- City of Gainesville, GRU - Mr. George Allen
Sent:	6/14/2007 2:00 PM

was read on 6/14/2007 2:12 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, June 14, 2007 2:14 PM
To: Adams, Patty; Arif, Syed
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Tom Davis [mailto:tdavis@ectinc.com]
Sent: Thursday, June 14, 2007 2:08 PM
To: Harvey, Mary
Subject: RE: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Thursday, June 14, 2007 1:58 PM
To: allengk@gru.com; Jim Little, EPA; D. Morse, NPS; Kirts, Christopher; Yolanta E. Jonynas, GRU; Tom W. Davis, P.E., ECT, Inc.; Michael Halpin, OSC
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: Ltr.- City of Gainesville, GRU - Mr. George Allen

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: Harvey, Mary
Sent: Thursday, June 14, 2007 2:14 PM
To: Adams, Patty; Arif, Syed
Subject: FW: Ltr.- City of Gainesville, GRU - Mr. George Allen

---

From: Kirts, Christopher
Sent: Thursday, June 14, 2007 2:13 PM
To: Harvey, Mary
Subject: Read: Ltr.- City of Gainesville, GRU - Mr. George Allen

Your message

To:	'allengk@gru.com'; 'Jim Little, EPA'; 'D. Morse, NPS'; Kirts, Christopher; 'Yolanta E. Jonynas, GRU'; 'Tom W. Davis, P.E., ECT, Inc.'; 'Michael Halpin, OSC'
Cc:	Arif, Syed; Adams, Patty; Gibson, Victoria
Subject:	Ltr.- City of Gainesville, GRU - Mr. George Allen
Sent:	6/14/2007 1:58 PM

was read on 6/14/2007 2:13 PM.

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

June 14, 2007

ELECTRONIC MAIL - RECEIVED RECEIPT REQUESTED
allengk@gru.com

Mr. George K. Allen,
Assistant General Manager – Energy Supply
City of Gainesville, GRU
P. O. Box 147117 (A132)
Gainesville, Florida 32614-7117

Re: DEP File No. 0010006-005-AC
Air Quality Control System Addition
Deerhaven Generating Station – Unit 2

Dear Mr. Allen:

The Department has received the additional information on May 15, 2007 in response to our request for information letter dated April 23, 2007. Based on review of this information, we have determined that additional information is needed in order to continue processing this application package. Please submit the information requested below to the Department's Bureau of Air Regulation:

1. Please provide cold start-up procedures for Unit 2. In providing this information indicate the fuel used in different stages of start-up procedure. Indicate the time consumed for each phase of fuel change during the start-up. Also, provide historical start-up data for Unit 2 for the last three years (2003-2006) in terms of how many cold and warm start-ups were conducted. Provide the time it took for the unit to bring on-line for each of those start-ups.

2. Provide information on operational difficulties in starting up with compliance (0.8 weight percent sulfur) coal. What difficulties can be expected if two different grades of coal are required to be on site?

3. Please provide emissions analyses for SO_2 during start-up for compliance coal as well as high sulfur (2.5 weight percent) coal.

4. Provide information on critical parameters for the AQCS equipments for start-up requirements. The critical parameters should include temperature, pressure, gas flow rates and time, etc.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days.

We will be happy to meet and discuss the details with you and your staff. I may be contacted at 850/921-9528.

Sincerely,

Syed Arif

Syed Arif, P.E.
Bureau of Air regulation

/sa

cc: Jim Little, EPA (little.james@epa.gov)
D. Morse, NPS (dee_morse@nps.gov)
Chris Kirts, DEP-NED (christopher.kirts@dep.state.fl.us)
Yolanta E. Jonynas, GRU (jonynase@gru.com)
Tom W. Davis, P.E., ECT, Inc. (tdavis@ectinc.com)
Michael Halpin, OSC (michael.halpin@dep.state.fl.us)

ECT
Environmental Consulting & Technology, Inc.

RECEIVED
MAR 30 2007
BUREAU OF AIR REGULATION

March 29, 2007

Mr. Syed Arif, P.E.
Florida Department of Environmental Protection
Division of Air Resource Management
111 South Magnolia Drive, Suite 23
Tallahassee, Florida 32301

Re: Gainesville Regional Utilities
Deerhaven Generating Station Unit 2
Air Quality Control System Addition
DEP File No. 010006-005-AC
Responses to Request for Additional Information

Dear Mr. Arif:

Gainesville Regional Utilities (GRU) received your letter dated March 12, 2007 requesting additional information with regard to the addition of emission control equipment to Deerhaven Generating Station (DGS) Unit 2. On behalf of GRU, this correspondence provides a response to each specific issue raised by the Department of Environmental Protection (Department). For your convenience, the Department's comments and our responses are provided below.

Department Comment No. 1

Please provide a flow diagram of Unit 2 including any control equipment as it exists now. Also, provide a flow diagram showing all the changes taking place due to the proposed project. Include in the flow diagram material balance flow rates for all the criteria pollutants.

GRU Response:

Emission control equipment presently installed on Unit 2 consists of a hot-side electrostatic precipitator (ESP) for control of particulate matter (PM). As described in the air construction permit application submitted to the Department, additional emission control equipment proposed for Unit 2 includes Selective Catalytic Reduction (SCR) to control NO_x emissions, a circulating dry scrubber (CDS) to reduce SO_2 emissions, and a fabric filter (FF) to control emissions of PM. The existing hot-side ESP will remain in service. A flow diagram showing the current and proposed Unit 2 emission control equipment is attached (Attachment 1). The flow diagram also provides estimates of criteria pollutant emission rates as the boiler exhaust stream passes through the emission control equipment.

Department Comment No. 2

Please provide the capacity factors for Unit 2 based on heat input for the period 2002-2006. Explain the reasons for a less than 80 percent capacity factor for any year. Additionally, provide the maximum hourly heat input rate for Unit 2 during the same period. Provide the heat input rate to Unit 2 during annual compliance test for particulate matter (PM) during the same period of 2002-2006. Show the calculations in arriving at the heat input numbers for the period 2002-2006 as listed Table 6-1 of the application.

3701 Northwest
98th Street
Gainesville, FL
32606

(352)
332-0444

FAX (352)
332-6722

GRU Response:

Unit 2 has a net generation capability of approximately 228 megawatts (MW) resulting in a maximum annual net generation capacity of 1,997,280 MW based on continuous operation (i.e., 8760 hours/yr). Unit 2 capacity factors for the 2002 through 2006 period are provided in the following table:

Year	Net Generation (MWh/yr)	Capacity Factor (%)
2002	1,265,583	63
2003	1,350,868	68
2004	1,180,414	59
2005	1,546,277	77
2006	1,381,787	69

The capacity factors reflect the general demand for electricity, planned and unplanned unit outages, unit load limitations, and purchases of electricity from other utilities during the particular year. .

Unit 2 heat input data (based on fuel consumption and heat content) during the annual PM compliance tests is provided in the following table:

Date of Compliance Test	Average Heat Input (10^6 Btu/hr)
06/18/02	2,219
06/23/03	2,376
06/08/04	2,390
08/15/05	2,393
07/20/06	2,209

The baseline annual heat input data shown in Table 6-1 of the submitted air construction permit application was obtained from the EPA Clean Air Markets Division (CAMD) website and reflects GRU hourly CEMs data reported to EPA pursuant to the Acid Rain Program. The EPA CAMD website can be accessed at http://cfpub.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Department Comment No. 3

The application states that the selective catalytic reduction (SCR) system will be designed so that flue gas flows through it whenever Unit 2 is operating, i.e., there are no bypasses. Does this imply that ammonia injection to the SCR will always be on whenever Unit 2 is operating?

GRU Response:

In air construction permits for similar projects (e.g., Progress Energy Florida Crystal River Units 4 and 5), the Department states that "Because CAIR and CAMR afford the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation" (i.e., injection of reagents such as ammonia or lime).

Per our telephone conversation, CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants. Therefore, GRU is not required by regulation to install nor operate the proposed air quality control system (AQCS) to meet CAIR requirements.

Department Comment No. 4

The application states that the Circulating Dry Scrubber (CDS) system to control SO_2 and SO_3 emissions will be designed so that flue gas flows through it whenever Unit 2 is operating, i.e., there are no bypasses. Does this imply that hydrated lime will be introduced into the scrubber at all times when Unit 2 is operating?

GRU Response:

Please see response to Department Comment No. 3 above.

Department Comment No. 5

Please explain where hydrogen fluoride (HF) and sulfuric acid mist (SAM) emissions are being formed and what steps are being taken to mitigate them.

GRU Response:

Coal combusted in Unit 2 contains trace amounts of fluoride compounds. During the combustion process, hydrogen fluoride (HF) aerosols are formed, a portion of which may be adsorbed on fly ash or bottom ash.

EPA (reference Section 1.1 of AP-42) estimates that approximately 0.7 percent of the sulfur contained in coal combusted in pulverized coal-fired boilers will be oxidized to SO_3 during the combustion process. The SCR NO_x control system planned for Unit 2 will also catalytically oxidize a small portion of the exhaust stream SO_2 to SO_3. SO_3 readily reacts with water to form sulfuric acid mist (SAM) aerosols. Accordingly, any SO_3 formed during the combustion of coal in Unit 2 or by the SCR control system will be converted to SAM.

Both HF and SAM are acid gas aerosols that can be neutralized by reaction with an alkaline reagent. Alkaline sorbent injection is an established control technology for reducing emissions of acid gases such as HF and SAM. As stated in the Unit 2 AQCS air construction permit application on Page 6-3, the CDS proposed for Unit 2 will employ an alkaline reagent (i.e., lime) that is projected to reduce HF and SAM emissions by over 90 percent. HF and SAM that are neutralized by lime in the CDS will be collected as particulate calcium compounds by the downstream fabric filter. Reductions in actual Unit 2 HF and SAM emissions are estimated to be approximately 28 and 67 tons per year, respectively.

Department Comment No. 6

Please provide the calculations in arriving at the actual HF and SAM emissions for the period 2002-2006. How does it compare with the emissions number obtained by doing material balance calculations? Please provide those calculations as well.

GRU Response:

As stated in the Unit 2 AQCS air construction permit application on Page 6-2, baseline (2002-2006) HF and SAM emissions were estimated using regulatory and industry guidance developed for to the Toxic Release Inventory (TRI) regulatory program.

HF is calculated by using the concentration of fluorine in the coal based upon analysis results and the quantity of coal combusted. It is assumed that all of the HF created by combustion is released from the stack. Details of the calculation are shown below:

$$\frac{\text{tons of coal}}{\text{yr}} \times \frac{\text{2000 lbs.}}{\text{1 ton}} \times \frac{\text{lbs. of F}}{\text{10}^6\text{ lbs. of coal}} \times \frac{\text{MW of HF}}{\text{MW of F}} = \frac{\text{lbs. of HF}}{\text{yr}}$$

H_2SO_4 (aerosol) is calculated by using the concentration of sulfur in the coal based upon analysis results and the quantity of coal combusted as provided in Estimating Total Sulfuric Acid Emissions from Coal-Fired Power Plants (Southern Company Services, Inc.) included herein as Attachment 2. These estimating procedures were developed specifically for tangentially-fired and dry-bottom wall-fired boilers such as Unit 2.

Additional assumptions about the type of particulate control device at the plant (i.e., hot-side ESP and air heater) are used to estimate the amount H_2SO_4 (aerosol) released. For purposes of the TRI reports, the following equation is used for the release estimate for sulfuric acid mist:

E = (K)(F1)(F2)(E2) See pg. 6 and Example 3 on pg. 16

Where:

K = molecular weight and units conversion constant = 3,063	See pg. 5
F1 = Fuel impact factor for eastern bituminous coal = 0.008	See Table 3, pg. 9
F2 = Technology impact factor for control devices = (1*0.50) = 0.5	See Table 4, pg. 10
E2 = SO_2 emissions calculated from coal burned in tons/year	See pg. 5 and 6

As noted above in the response to FDEP Comment No. 5, the CDS proposed for Unit 2 will employ an alkaline reagent that is projected to reduce HF and SAM emissions by over 90 percent. Reductions in actual Unit 2 HF and SAM emissions are estimated to be approximately 28 and 68 tons per year, respectively. Accordingly, the use of a CDS achieving 90 percent removal of HF and SAM provides reasonable assurance that emission increases of these two pollutants will not occur due to installation of the Unit 2 AQCS.

Department Comment No. 7

Please explain why the highest heat input for the year 2006 was used in determining the projected actual emissions instead of using the annual average for the period 2005-2006.

GRU Response:

To conservatively estimate future projected actual emissions, the highest annual heat input over the 2002-2006 five year period was used consistent with the Rule 62-210.200(247), F.A.C. definition of *projected actual emissions*. Use of the average heat input for the 2002-2006 period would result in a slightly lower estimate of future projected actual emissions.

Department Comment No. 8

Please provide emissions data for CO. How will the change affect CO emissions? How is the baseline actual CO emissions determined and how will the projected actual CO emissions be monitored?

GRU Response:

Unit 2 CO emissions, based on Annual Operating Report (AOR) data, for the 2002-2006 period are provided in the following table.

Year	Unit 2 CO Emissions (ton/year)
2002	151
2003	163
2004	141
2005	192
2006	173

As noted on Page 6-2 of the air construction permit application, no changes are planned to the DGS Unit 2 combustion process. Accordingly, no change in actual emissions of combustion related pollutants such as CO will result due to the AQCS project. There are no requirements to monitor CO emissions from Unit 2. GRU will continue to provide Unit 2 actual annual CO emissions in the AORs submitted to the Department in March of each year based on fuel usage and fuel-specific AP-42 emission factors.

As requested, a professional engineer certification is attached (Attachment 3). GRU understands that with the submission of this additional information, the Department will continue processing the air construction permit application for the DGS Unit 2 AQCS project. The AQCS planned for DGS Unit 2 will achieve target NO_x, SO_2, and PM emission rates that are approximately ten times lower than current Unit 2 emission limits. Accordingly, the Department's continued expeditious processing of the Unit 2 AQCS air construction permit application will be appreciated.

If you have any further questions regarding this matter, please contact me at (352) 332-0444, Ext. 351.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

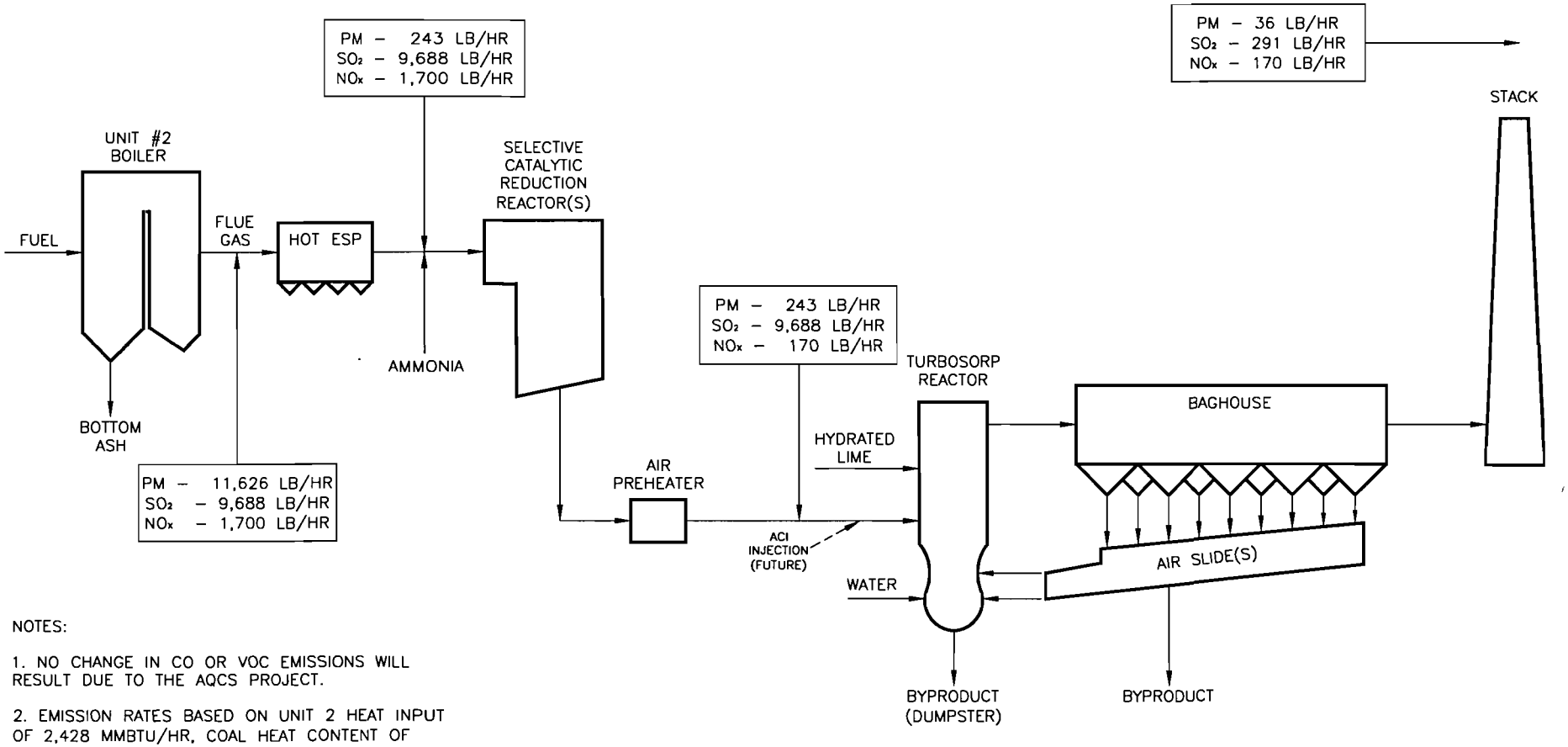
Thomas W. Davis, P.E.
Principal Engineer

Attachments

cc: Chris Kirts, FDEP Northeast District
Yolanta Jonynas, GRU
Doug Beck, GRU
Angela Morrison Uhland, Hopping Green & Sams, P.A

ATTACHMENT 1

DGS UNIT 2 AQCS FLOW DIAGRAM



NOTES:

1. NO CHANGE IN CO OR VOC EMISSIONS WILL RESULT DUE TO THE AQCS PROJECT.

2. EMISSION RATES BASED ON UNIT 2 HEAT INPUT OF 2,428 MMBTU/HR, COAL HEAT CONTENT OF 12,531 BTU/LB, AND COAL COMBUSTION RATE OF 96.9 TONS/HR.

3. BOILER OUTLET PM EMISSIONS BASED ON A COAL ASH CONTENT OF 12% AND AP-42 FACTOR (LB PM/TON COAL) OF 10 X % ASH.

4. BOILER OUTLET SO_2 EMISSIONS BASED ON A COAL SULFUR CONTENT OF 2.5% AND ASSUMED COMPLETE OXIDATION OF FUEL SULFUR TO SO_2.

5. BOILER OUTLET NO_x EMISSIONS BASED ON 0.7 LB/MMBTU.

6. STACK PM, NO_x AND SO_2 EMISSIONS RATE BASED ON CONTROLLED RATES OF 0.015, 0.07, AND 0.12 LB/MMBTU RESPECTIVELY

DH2 PROCESS FLOW DIAGRAM WITH AIR QUALITY CONTROL SYSTEM

STRATEGIC PLANNING DEPARTMENT
GAINESVILLE REGIONAL UTILITIES
PO BOX 147117
GAINESVILLE, FL 32614-7117

GRU™ More than Energy™

Estimating Total Sulfuric Acid Emissions from Coal-Fired Power Plants

R. Hardman
R. Stacy
Southern Company Services

E. Dismukes, retired
Southern Research Institute

September 1998

REVISED[1]

K. Harrison
L. Monroe
Southern Company Services

[1] Revised September 1998. Based on feedback from technical review, some calculations in this document have been revised since the original publication [1] and since the August 1998, version.

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ABSTRACT

This paper presents a method for estimating both the *manufacturing* threshold value and *release* of sulfuric acid (H_2SO_4) from coal-fired boilers. The U. S. Environmental Protection Agency's Toxic Release Inventory (TRI) reporting system requires that, beginning in 1998, electric utilities estimate their emissions of over 600 chemical compounds. "Sulfuric acid aerosol[EPA]" is one of the compounds included in the TRI. EPA defines sulfuric acid aerosols as "includ[ing] mists, vapors, gas, fog, and other airborne forms of any particle size." Since this definition is technically inaccurate but necessary to follow EPA requirements, these forms of sulfuric acid will be identified as aerosol[EPA] to avoid confusion. In coal-fired plants, the chemical H_2SO_4 is created in the ductwork downstream of the boiler by the combination of water vapor and sulfur trioxide (SO_3), both of which are manufactured during the coal combustion process. The TRI reporting rules do not require the collection of any new data. The estimation method presented herein uses data and information already available at most coal-fired plants. These factors include the SO_2 emissions level from either continuous emissions monitors (CEMs) or fuel data, the type of fuel being burned, and the particulate control device(s) used to control dust emissions. Although this method could be applied to many types of coal-fired boilers, the estimates contained herein were developed specifically for dry-bottom, wall-fired and tangentially fired boilers.

Introduction

Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as the Toxic Release Inventory (TRI), requires facilities that "manufacture," "process" or "otherwise use" a listed chemical above certain threshold amounts to report their annual releases of the chemical to EPA and state agencies. The TRI reporting requirements are triggered if a facility "manufactures" or "processes" more than 25,000 pounds of a listed chemical or "otherwise uses" more than 10,000 pounds of a listed chemical in a given calendar year. TRI releases are reported on a report called the "Form R."

Sulfuric acid is a listed TRI chemical. In June 1995, the U. S. Environmental Protection Agency (EPA) modified the list of chemicals subject to the EPCRA § 313 reporting requirements so that only aerosol forms of sulfuric acid would be subject to the TRI reporting requirements[2]. EPA defines sulfuric acid aerosols as "includ[ing] mists, vapors, gas, fog, and other airborne forms of any particle size." Since this definition is technically inaccurate but necessary to follow EPA requirements, these forms of sulfuric acid will be identified as aerosol^{EPA} to avoid confusion.

Beginning on July 1, 1999, certain coal- and oil-fired electric power plants will be required to report annual releases of TRI chemicals that they manufacture, process or otherwise use above threshold amounts. Under EPA's EPCRA § 313 regulations, coal- and oil-fired electric utilities are deemed to "manufacture" sulfuric acid aerosol^{EPA}. Thus, electric utilities will have to submit TRI reports on sulfuric acid aerosol^{EPA} releases if they "manufacture" more than 25,000 pounds of the chemical in a given reporting year[3].

In coal-fired power plants, sulfuric acid (H_2SO_4) is created in the ductwork downstream of the boiler by the combination of water vapor and sulfur trioxide (SO_3), both of which are manufactured during the coal combustion process. This paper presents a method for estimating the total aerosol^{EPA} amount of H_2SO_4 *manufactured* in coal-fired utility boilers. Also, this paper provides a method of estimating the amount of sulfuric acid aerosol^{EPA} *released* if the unit's production of H_2SO_4 aerosol^{EPA} exceeds the threshold, making this amount the reportable quantity.

Following the presentation of the proposed prediction method, supporting information regarding the impact of fuel grade on the formation of SO_3, the conversion of SO_3 to H_2SO_4, and the effect of particulate control equipment on H_2SO_4 collection are presented. Then, trends are presented which provide insight on the volume of H_2SO_4 aerosol^{EPA} emitted by power plants of varying sizes, efficiencies, and configurations. The effect of coal sulfur content is also shown. Finally, sample calculations are provided. Although this method could be applied to many types of coal-fired boilers, the estimates contained herein were developed specifically for dry-bottom wall-fired and tangentially-fired boilers. Cyclone fired boilers may be added in a future version of this paper.

THRESHOLD DETERMINATION AND RELEASE PREDICTION METHOD

TRI reporting is required for sulfuric acid aerosol^{EPA} only if any of the three activity thresholds (manufacture, process or otherwise use) is exceeded in a given calendar year. The quantity of sulfuric acid aerosol^{EPA} which is released to the environment does not determine whether a reporting requirement has been triggered. If an activity threshold is not exceeded, no Form R report is required, regardless of the amount of sulfuric acid aerosol^{EPA} released. All sulfuric acid aerosol^{EPA} manufactured, processed or otherwise used is to be counted toward threshold

determinations. However, electric utilities are likely to be concerned only with the "manufacture" of sulfuric acid aerosol^{EPA}. This includes any amount of sulfuric acid aerosol^{EPA} that may be generated in closed systems or that is generated in stacks prior to or after being treated by scrubbers [3].

The following relationship is proposed to estimate the total H_2SO_4 aerosol^{EPA} *manufactured* in a coal-fired utility boiler:

$$E1 = K \bullet F1 \bullet E2$$

where, E1 = total H_2SO_4 aerosol^{EPA} *manufactured*, lbs/yr
K = Molecular weight and units conversion constant = 98.07 / 64.04 • 2000 = 3,063
98.07 = Molecular weight of H_2SO_4; 64.04 = Molecular weight of SO_2
Conversion from tons per year to pounds per year – multiply by 2000.
F1 = Fuel Impact Factor
E2 = Sulfur dioxide (SO_2) emissions either: (1) recorded by a continuous emissions monitor and corrected for positive flow bias and bias due to wall effects, tons/yr, or (2) calculated from coal burn data, tons/yr.

In the derivation of this relationship, the following assumptions are made:

- SO_3 concentrations are proportional to SO_2 concentrations.
- The grade of coal being burned impacts the rate of conversion from SO_2 to SO_3.
- All SO_3 that forms is converted to H_2SO_4 aerosol^{EPA}.
- The boiler is wall-fired or tangentially-fired.
- The rate of SO_3 formation is independent of the boiler firing rate (unit load).

The rate of SO_2 emissions as derived from continuous emissions monitor (CEM) data follows. If any flue gas desulfurization (FGD) equipment is used, however, then the calculation of SO_2 mass rate from coal burn mass rate must be used. A correction method accounting for flow bias and wall effects on SO_2 emissions reported by a CEM has been proposed, as well [4]. The following relationship is used to correct SO_2 mass rate from the CEM:

$$E2 = E3\left[1 - \frac{\left(C_1 R^2 + C_2 R + C_3\right)}{100}\right]$$

where, E2 = Corrected SO_2 mass rate, tons/yr
E3 = CEM-derived SO_2 mass rate, tons/yr
C_1 = 0.0264 (non-axial flow bias factor)
C_2 = 0.183 (non-axial flow bias factor)
C_3 = 1.5 (wall effects bias factor)
R = Stack/duct average resultant angle (or swirl angle) from site verification tests, degrees.

The relationship is derived from knowledge of (1) an inherent bias resulting from CEM installations in non-axial flow situations, and (2) bias introduced from poor velocity sampling at the stack/duct wall. Both of the errors can be attributed to the required use of EPA Methods 1 and 2 for CEM flow monitor setup and validation under the guidelines described in 40 CFR Part 60, Appendix A. Supporting information for and derivation of the correction factors are presented in the previously mentioned reference [4].

The mass rate of SO_2 produced by combustion can also be calculated from the coal burn data [5]. The following relationship is used to estimate the rate of SO_2 emissions:

$$E2 = K1 \bullet K2 \bullet C1 \bullet S1$$

where, E2 = SO_2 mass rate, tons/yr
C1 = Coal burn, tons/yr
S1 = Coal sulfur weighted average, %
K1 = Molecular weight and units conversion constant = (64.04)/(100 • 32.06) = 0.02
64.04 = molecular weight of SO_2; 32.06 = molecular weight of S;
100 = conversion of % S to fraction
K2 = Sulfur conversion to SO_2, implicit from EPA AP-42 [5]
= 0.95 for bituminous coals
= 0.875 for subbituminous coals
= 0.55 to 0.85 for lignite, based on the Na content

When the estimate of total H_2SO_4 aerosol^{EPA} *manufactured* by a facility exceeds 25,000 pounds per year, the facility is required to estimate how much of this H_2SO_4 aerosol^{EPA} is *released* in airborne form to the atmosphere. This amount, then, is the reportable quantity.

The following relationship is proposed to predict the quantity of H_2SO_4 aerosol^{EPA} *released*:

$$E1' = K \bullet F1 \bullet F2 \bullet E2$$

where, E1'= total H_2SO_4 aerosol^{EPA} *released*, lbs/yr
F2 = Technology Impact Factor.

In the derivation of this relationship, the additional assumption made is that the type of particulate control device at the plant impacts the airborne emissions of H_2SO_4 aerosol^{EPA}.

Supporting information and specific values for the Fuel Impact Factor (F1) and the Technology Impact Factor (F2) are provided in the section below. Following this, applications of this relationship to various plant configurations and sample calculations are provided.

SUPPORTING INFORMATION

Fuel Impact Factor (F1)

In coal-fired electric utility boilers, gaseous sulfur-bearing compounds are generated during the combustion process. The majority of the sulfur in the coal combines with oxygen to form SO_2. However, a small minority of the sulfur is further oxidized to form SO_3. The formation of SO_3 is a complex process that is not thoroughly understood even after many years of investigation [6, 7]. The rate of formation is dependant upon a number of factors such as the sulfur content of the fuel, firing method, amount of excess air, and the presence of some form of catalyst.

Three mechanisms have been proposed to explain the oxidation of SO_2 to SO_3 [8, 9].

1. Oxidation of SO_2 in the flame by atomic oxygen
   $SO_2 + O \leftrightarrow SO_3$

2. Oxidation of SO_2 by molecular oxygen
   $SO_2 + \frac{1}{2}O_2 \leftrightarrow SO_3$

3. Catalytic oxidation via molecular oxygen.

This last mechanism is a result of catalytic oxidation of SO_2 to SO_3 by both ash particles and metal heat transfer surfaces. This oxidation occurs at the temperature found in the convective section of utility boilers.

In the literature, varying and sometimes conflicting estimates exist regarding the conversion of SO_2 to SO_3. For example, in one publication the conversion rate is estimated to vary from 3 to 5 percent, from 1.25 to 5 percent, and from 1 to 4 percent, depending on the section of the book being read [10]. In other reports, which focused on the performance of cold-side electrostatic precipitators, the ratio of SO_2 to SO_3 at the air heater outlet is presented. These ratios are lower since a portion of the SO_3 generated during the coal combustion process condenses onto the cold sections of the air heater baskets as the flue gas temperature drops. For example, in one evaluation average flue gas SO_3 concentrations dropped from 25 ppm to 11 ppm (56 percent) across a hot-side electrostatic precipitator and an air heater [11]. Other reports, such as an EPA documented ratio of 0.4 percent [12], confirm these results. The same EPA study reports that the SO_3 levels from six different power stations varied from undetectable levels to 0.67 percent of the SO_2 concentration (Table 1). Other full-scale experimental results based on measurements during 16 field tests showed concentrations ranging from 0.1 to 0.41 percent of the SO_2 levels (Table 2) [13]. In both of these examples, the SO_3 concentrations with western coals were lower than the SO_3 concentrations when burning eastern coals. Laboratory analyses have confirmed the directly proportional relationship between the SO_2 to SO_3 conversion rate and the sulfur content of the fuel [14].

Table 1. SO_2 and SO_3 Measurements from 6 Different Power Plants At the Air Heater Outlet/ESP Inlet

Station Number	SO_2, ppm	SO_3, ppm	SO_3 / SO_2 ratio
1 (western coal)	262	<1	<0.0038
5 (western coal)	480	<1	<0.0021
13 (western coal)	430	<1	<0.0023
3 (eastern coal)	2440	6-9	0.0025 – 0.0037
4 (eastern coal)	755	2-3	0.0026 – 0.0040
7 (eastern coal)	600	3-4	0.0050 – 0.0067

Table 2. Ratio of SO_3/SO_2 Based on In Situ Measurements for 16 Field Tests At the Air Heater Outlet/ESP Inlet

	SO_3 / SO_2 ratio	
Coals Burned	**average**	**Standard deviation**
9 eastern bituminous coals	0.0041	0.0027
7 western subbituminous and lignite coals	0.0011	0.0005

The threshold determination requires that the total amount of H_2SO_4 aerosol[EPA] *manufactured* during the combustion process be estimated. Since the air heater removes around 50% of the sulfuric acid formed, the threshold calculation should be made on the amount of SO_3 and H_2SO_4 entering the air heater. There is very limited data on the actual amount of SO_3 and H_2SO_4 entering the air heater, however. For the purposes of this estimation procedure, the 56 percent capture in an air heater [10] mentioned earlier and engineering judgement is combined to assume a generic 50% capture of H_2SO_4 in an air heater for bituminous coals. However, the Western bituminous coals and the subbituminous coals produce fly ash that reacts with the SO_3 and which accounts for the lower conversion rates seen in Tables 1 and 2. The low amount of H_2SO_4 in the air heater from these coals' flue gas will substantially increase the sulfuric acid dewpoint. Thus the air heater capture for these fuels is judged to be 10%. More data is being sought to collaborate these air heater capture levels.

Based on the data provided in Tables 1 and 2 along with the air heater capture efficiencies stated above, proposed values for the Fuel Impact Factor (F1) are provided in Table 3. In proposing these factors, corroborating and/or conflicting information regarding the Fuel Impact Factor for these and other fuels is sought. These values should only apply to dry bottom wall-fired and tangentially fired boilers. Cyclone boilers are known to produce higher levels of H_2SO_4, probably because of higher temperatures and more fine fly ash to catalyze the reaction. Thus, cyclones would have higher Fuel Impact Factors.

Table 3. Fuel Impact Factors for Various Coals

Coal	F1
Eastern bituminous	0.008
Western bituminous	0.00111
Powder River Basin	0.000556

Formation of Sulfuric Acid (H_2SO_4)

Sulfur trioxide is a hygroscopic material and will absorb moisture at temperatures well above the its dewpoint, resulting in the formation of a sulfuric acid mist (H_2SO_4) [15, 16, 17]. By definition, a hygroscopic material has solvent properties, and its moisture content will approach equilibrium with the moisture content of the surrounding air. The temperature slightly affects the degree of absorption, but the relative humidity of the surrounding air is the principal property that influences the moisture content of a hygroscopic material. In the flue gas, SO_3 exists as a dry vapor at temperatures above 600°F [18]. At temperatures approximately 400°F, SO_3 and water combine to form sulfuric acid:

$$SO_3 + H_2O \leftrightarrow H_2SO_4$$

The kinetics of the reaction is fast, ensuring that in the flue gas below 400°F, all of the SO_3 is present as H_2SO_4. Although varying degrees of association occur from 400°F to 600°F, the equilibrium shifts away from the H_2SO_4 as the temperature increases.

Technology Impact Factor (F2)

As mentioned above, the air heaters downstream of a coal-fired boiler will remove some portion of the total H_2SO_4 produced in that plant; the amount removed, however, depends on the coal type being fired. While electrostatic precipitators (ESPs) and baghouses function primarily to remove particulates from the flue gas stream, in the process, they also remove acid gases that have condensed onto the particulate matter. Since hot-side ESPs function at temperatures where SO_3 exists as a dry vapor, no SO_3 condenses in these devices. However, in cold-side ESPs and baghouses, SO_3 condensation occurs. As the flue gas temperature is reduced, SO_3 adsorbs on the fly ash to form an acid layer on the surface of the ash particles that allows electrical currents to flow more easily, thereby lowering the ash resistivity. The amount of SO_3 interacting with the fly ash increases as the temperature falls [19].

Little definitive data are available describing the SO_3/H_2SO_4 collection rate in cold-side particulate collection equipment. However, anecdotal evidence suggests that SO_3 condensation and acid mist collection do occur. For example, in flue gas from the combustion of low-sulfur coal (low native SO_3 concentrations), SO_3 injection systems are used for flue gas treatment to improve particulate collection efficiency. The SO_3 injection rate is controlled to provide optimal performance with minimal SO_3 utilization. In doing this, SO_3 injection is increased to the point where no appreciable increases in ESP performance occur (i.e., no additional H_2SO_4 is being adsorbed by the ash). With respect to baghouses, the dust cake on the bags acts as a barrier filter through

which all H_2SO_4 must pass. It is assumed that a majority of the H_2SO_4 is adsorbed by the fly ash as it passes through the dust cake.

Wet scrubbers tend to remove only a portion of the H_2SO_4 that enters due to the condensation of H_2SO_4 into an acid mist during the quenching of the flue gas. A portion of the nucleated sulfuric acid droplets escapes capture by the alkaline chemicals in the scrubber. A value of 50% capture of sulfuric acid in a wet scrubbing system is suggested for this estimation procedure. However, more data on the range of this value is sought. Conversely, dry scrubbing systems with a baghouse installed tend to remove virtually all of the sulfuric acid from the flue gas. A 1% escape of sulfuric acid is assumed for making this estimate. Again, more data is sought to collaborate this value.

Technology Impact Factors (F2) for ESPs, air heaters, baghouses, and FGD systems are proposed in Table 4. **In sites where multiple devices are installed, the individual factors should be multiplied together to account for the total reduction in H_2SO_4.** This resultant should then be used as the F2 Factor. These factors are engineering estimates based on available data and operational experience. In proposing these factors, corroborating and/or conflicting information is sought.

Table 4. Technology Impact Factors for Control Devices

Particulate Control Device	**F2**
Air Heater – bituminous coal	0.50
Air Heater – Western bituminous and subbituminous coals	0.90
Hot-side electrostatic precipitator	1.00
Cold-side electrostatic precipitator	0.75
Baghouse	0.10
Wet Scrubber	0.50
Spray Dryer-Baghouse	0.01

The fate of H_2SO_4 collected by these devices depends on whether the device is an air heater, a particulate control device, or an SO_2 scrubbing system. In an air heater, the acid normally condenses on the metal surfaces of the air heater where it can react with the metal to form salts or capture fly ash from the flue gas forming a deposit. Some portion of the H_2SO_4 captured reacts with the fly ash collected to form salts (thus destroying the acid), and the unreacted remainder of the sulfuric acid is present as a liquid mixed with the ash. Similarly, the sulfuric acid collected along with the ash in a cold-side ESP or a baghouse will partially react with the ash to form salts and the unreacted remainder will be a liquid which forms a physical mixture with the fly ash. However, a scrubbing system will typically neutralize all of the H_2SO_4 captured, and the captured acid is destroyed.

Other Impacts

In addition to the factors considered above, the following site-specific characteristics may impact H_2SO_4 emissions rates. These factors are not considered in this proposed method.

1. NOx reduction catalysts. Typically, catalysts used to reduce NOx emissions increase flue gas SO_3 concentrations. Results from a U.S. Department of Energy-sponsored evaluation of several different catalysts treating flue gas from the combustion of high-sulfur U.S. coals reported average SO_3 oxidation levels of 0.31 percent [20].
2. Ammonia injection systems. Ammonia injection systems are used to improve the performance of cold-side electrostatic precipitators and in NOx controls technologies (selective catalytic reduction and selective non-catalytic reduction.) At temperatures below approximately 500° F, ammonia preferentially reacts with SO_3 to form ammonium sulfate and ammonium bisulfate. These reactions can act to reduce the presence of SO_3 (and subsequently H_2SO_4) in the flue gas stream.
3. SO_3 injection systems. SO_3 injection systems (sometimes called sulfur burners) are used to improve the particulate collection capabilities of cold-side electrostatic precipitators. The SO_3 is injected into the flue gas upstream of the ESP. The SO_3 reacts with moisture in the flue gas to create H_2SO_4, which improves the resistivity of the fly ash making it easier to collect. Some of the H_2SO_4 (~1 ppm) generated by the sulfur burners may slip through the ESP resulting in higher plant H_2SO_4 emissions levels.
4. Natural gas co-firing. Since natural gas does not contain sulfur, co-firing or reburning natural gas in a boiler will reduce the amount of SO_3 produced.

H_2SO_4 EMISSIONS PROJECTIONS

Based on the relationship proposed above, trends can be developed which demonstrate the variation in H_2SO_4 aerosol^{EPA} emissions levels that occur in coal-fired plants with varying characteristics (Table 5). Unit size and coal-sulfur content will obviously impact the total H_2SO_4 aerosol^{EPA} emissions (Figure 1). In both of these cases, the increase (or decrease) in H_2SO_4 aerosol^{EPA} is proportional to the change in unit capacity or coal-sulfur content. The type of fuel burned also impacts H_2SO_4 aerosol^{EPA} emissions (Figure 2). However, the relationship is not directly proportional to the coal-sulfur content. The heating value of PRB coal is lower that the heating value of most Eastern bituminous coals. As a result, a greater amount of PRB fuel is required to provide a heat input comparable to an Eastern bituminous coal.

Although not shown graphically, a decrease in unit heat rate, an increase in the fuel heat content, and/or a decrease in the capacity factor will decrease aerosol^{EPA} emissions of H_2SO_4. The conversion from a hot-side ESP to a cold-side ESP or baghouse also will decrease H_2SO_4 aerosol^{EPA} emissions. In the same manner, the conversion from a cold-side ESP to a baghouse will decrease H_2SO_4 aerosol^{EPA} emissions.

Table 5. Coal-fired plant characteristics that impact H_2SO_4 aerosol[EPA] emissions

Unit size	100 to 900 MW		
Coal sulfur content, %	0.5 – 3.0		
Boiler type	Tangentially fired or wall-fired, (dry bottom)		
NOx controls	No post-combustion controls		
Flue gas treatment	None (no NH_3 injection or sulfur burners)		
Heat rate	9,500 Btu/kW-hr		
Capacity factor	65 percent		
Particulate control	Hot-side ESP, cold-side ESP, or baghouse		
Coal Ranks	**Eastern Bituminous**	**Western Bituminous**	**Powder River Basin**
Sulfur content, %	0.5 – 3.0	0.7	0.3
Heating value, Btu/lb	12,000	12,000	8,000

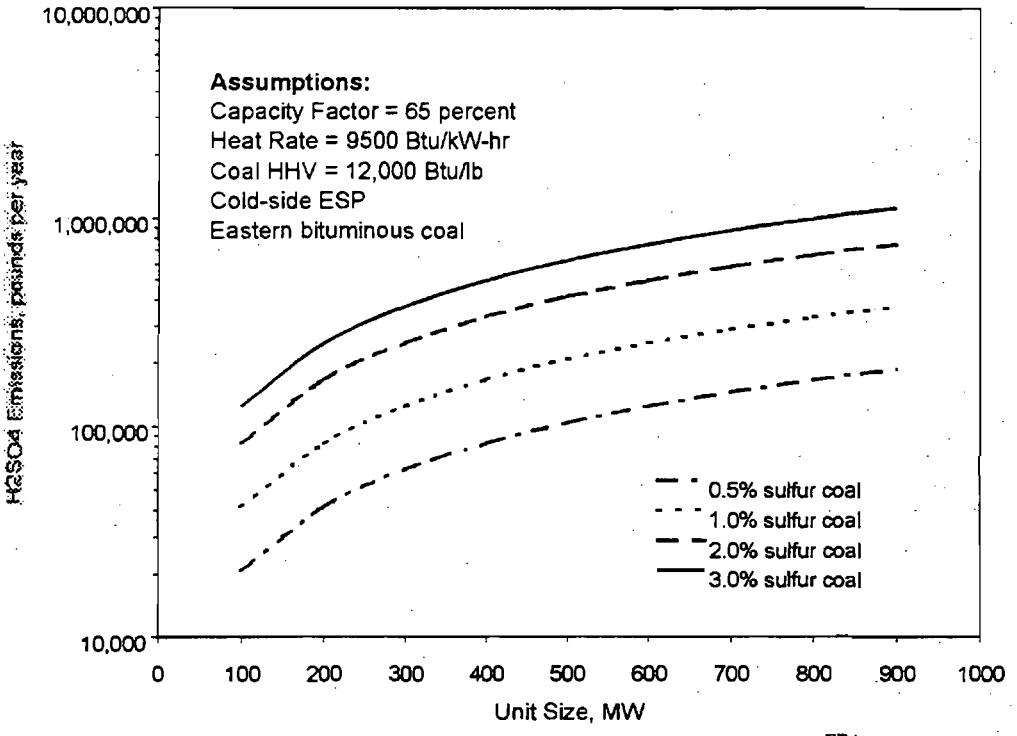

Figure 1. Effect of fuel sulfur content and unit size on H_2SO_4 aerosol[EPA] emissions (log-linear scale)

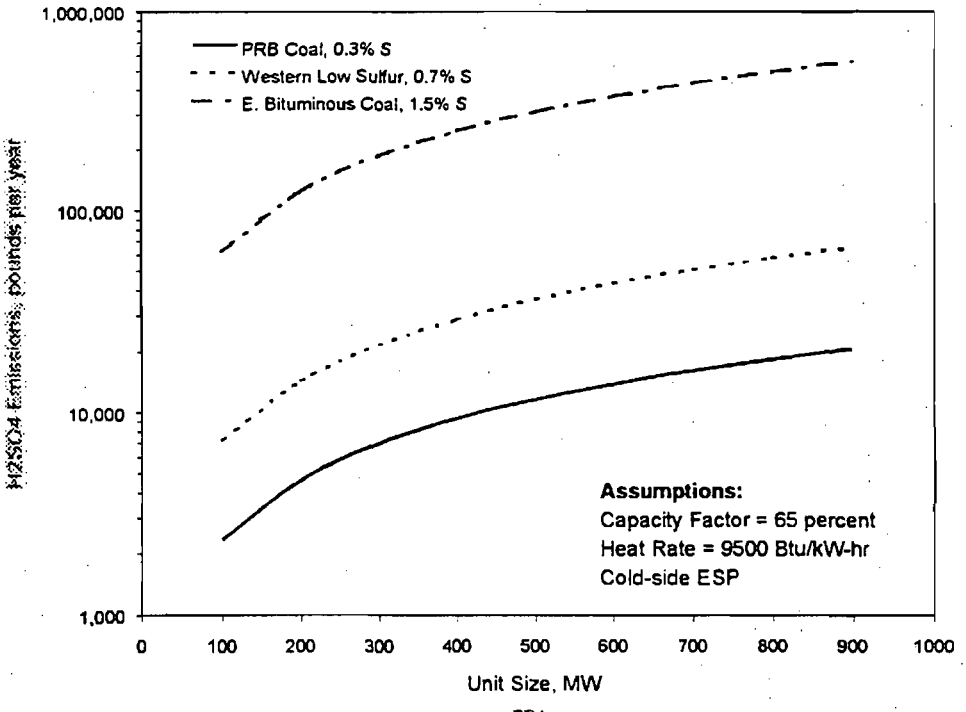

Figure 2. Effect of fuel type on H_2SO_4 aerosol[EPA] emissions (log-linear scale)

Example Calculations

This section presents a series of sample calculations based on the assumptions provided above.

Example 1. A 700-MW coal-fired boiler equipped with a baghouse and a cold-side electrostatic precipitator burns an Eastern bituminous coal. SO_2 emissions are 37,000 tons per year. Flue gas flow reference method site verification testing indicates an average flow resultant angle of 9.2°.

Solution 1. First, calculate the corrected SO_2 emissions rate. Then, determine if the unit meets the threshold requirement for reporting.

$$E2 = E3\left[1 - \frac{\left(C_1 R^2 + C_2 R + C_3\right)}{100}\right]$$

$$E2 = 37{,}000\left[1 - \frac{\left((0.0264)(9.2^\circ)^2 + (0.183)(9.2^\circ) + 1.5\right)}{100}\right]$$

$E2 = 34{,}995$ tons SO_2/yr

$E1 = K \bullet F1 \bullet E2$

$E1 = 3063 \bullet 0.008 \bullet 34{,}995 = 857{,}517$ lbs H_2SO_4/yr

The amount of H_2SO_4 aerosol[EPA] manufactured by the unit is well over the threshold, therefore, the amount released should be estimated and reported. Incorporate the combined technology factors for the air heater, baghouse, and cold-side ESP into the equation to account for the reductions through these devices. The result is the amount of H_2SO_4 aerosol[EPA] that should be reported on Form R.

$E1' = K \bullet F1 \bullet F2 \bullet E2$

$E1' = 3063 \bullet 0.008 \bullet (0.5 \bullet 0.75 \bullet 0.1) \bullet 34{,}995 = 32{,}157$ lbs/yr

Where F2 = Air Heater • Cold-Side ESP • Baghouse

$F2 = (0.5 \bullet 0.75 \bullet 0.1) = 0.0375$

Example 2. A 600-MW coal-fired boiler equipped with a baghouse burns a PRB coal. SO_2 emissions are 14,000 tons per year. The average flow resultant angle is 8.4°.

Solution 2. Calculate the corrected SO_2 emissions rate. Then determine if the unit meets the threshold requirement for reporting.

$$E2 = E3\left[1 - \frac{\left(C_1R^2 + C_2R + C_3\right)}{100}\right]$$

$$E2 = 14{,}000\left[1 - \frac{\left((0.0264)(8.4^\circ)^2 + (0.183)(8.4^\circ) + 1.5\right)}{100}\right]$$

$E2 = 13{,}314$ tons SO_2/yr

$E1 = K \bullet F1 \bullet E2$

$E1 = 3063 \bullet 0.000556 \bullet 13{,}314 = 22{,}674$ lbs H_2SO_4/yr

The amount of H_2SO_4 aerosol[EPA] produced does not exceed the threshold requirement for reporting. Therefore, the utility is not required to estimate the amount released and does not have to report the emissions from this site on Form R.

Example 3. ***(SO_2 tonnage rates are unavailable).*** A 250-MW coal-fired boiler equipped with a hot-side electrostatic precipitator burns an Eastern bituminous coal. The flue gas SO_2 concentration is 770 ppm corrected to 3% O_2. The heat input for the unit is 18,993,100 MBtu/year. The average resultant angle is 9.1°.

Solution 3. First, convert SO_2 concentration to an emissions rate [21] and correct for CEM bias. Then, determine if the threshold for H_2SO_4 aerosol[EPA] has been exceeded.

$$SO_2\left(\frac{\text{lb}}{\text{MBtu}}\right) = \text{Conversion Factor} \bullet \text{Fuel Factor} \bullet SO_2 \text{ Concentration} \bullet O_2 \text{ Correction}$$

$$SO_2\left(\frac{\text{lb}}{\text{MBtu}}\right) = 1.660 \times 10^{-7}\left(\frac{\text{lb}}{\text{scf} \cdot \text{ppm}}\right) \bullet 9780\left(\frac{\text{scf}}{\text{MBtu}}\right) \bullet 770 \text{ ppm} \bullet \frac{20.9}{(20.9 - 3)}$$

$SO_2 = 1.46$ lb/MBtu

$$SO_2\left(\frac{\text{tons}}{\text{yr}}\right) = SO_2\left(\frac{\text{lb}}{\text{MBtu}}\right) \bullet \text{Heat input}$$

$$SO_2\left(\frac{\text{tons}}{\text{yr}}\right) = 1.46\left(\frac{\text{lbs}}{\text{MBtu}}\right) \bullet 18{,}993{,}100\left(\frac{\text{MBtu}}{\text{yr}}\right) \bullet \frac{1}{2000}\left(\frac{\text{ton}}{\text{lbs}}\right)$$

$SO_2 = 13{,}800$ tons/yr

$$E2 = E3\left[1 - \frac{\left(C_1R^2 + C_2R + C_3\right)}{100}\right]$$

$$E2 = 13{,}800\left[1 - \frac{\left((0.0264)(9.1^\circ)^2 + (0.183)(9.1^\circ) + 1.5\right)}{100}\right]$$

$E2 = 13{,}060$ tons SO_2/yr

$E1 = K \bullet F1 \bullet E2$
$E1 = 3063 \bullet 0.008 \bullet 13{,}060 = 320{,}022$ lbs H_2SO_4/yr

The 25,000 lbs/yr threshold has been exceeded, therefore a release estimate must be made and the result reported on Form R.

$E1' = K \bullet F1 \bullet F2 \bullet E2$
$E1' = 3063 \bullet 0.008 \bullet (1.0 \bullet 0.5) \bullet 13{,}060 = 160{,}011$ lbs H_2SO_4/yr

Where F2 = Hot-Side ESP • Air Heater
$F2 = (1.0 \bullet 0.5) = 0.5$

Example 4. A 500-MW coal-fired boiler equipped with a cold-side electrostatic precipitator and a wet scrubber burns an Eastern bituminous coal. The coal used in the reporting year is 1,126,938 tons with a weighted average sulfur concentration of 2.0%.

Solution 4. First, find SO_2 production rate. Then estimate H_2SO_4 aerosol[EPA] threshold requirement for reporting and calculate emissions if over the threshold limit.

$E2 = K1 \bullet K2 \bullet C1 \bullet S1$
$E2 = 0.02 \bullet 0.95 \bullet 1{,}126{,}938 \bullet 2.0 = 42{,}824$ tons SO_2/yr

$E1 = K \bullet F1 \bullet E2$
$E1 = 3063 \bullet 0.008 \bullet 42{,}824 = 1{,}049{,}351$ lbs H_2SO_4/yr

The 25,000 lbs/yr aerosol[EPA] threshold has been exceeded, therefore a release estimate must be made and the result reported on Form R.

$E1' = K \bullet F1 \bullet F2 \bullet E2$
$E1' = 3063 \bullet 0.008 \bullet (0.5 \bullet 0.75 \bullet 0.5) \bullet 42{,}824 = 196{,}755$ lbs H_2SO_4/yr

Where F2 = Air Heater • Cold-Side ESP • Wet Scrubber
$F2 = 0.5 \bullet 0.75 \bullet 0.5 = 0.1875$

Conclusions

This paper presents a method for predicting both the sulfuric acid aerosol[EPA] *manufacturing* threshold value and the *release* of sulfuric acid aerosol[EPA] from coal-fired power plants. The calculation, limited at present to dry-bottom wall-fired or tangentially-fired boilers, is based on the unit's SO_2 emission rate as recorded by either (1) a continuous emissions monitor and corrected for positive flow bias and for bias due to wall effects or (2) the total coal tonnage burned and the average sulfur content. The method estimates the total amount of sulfuric aerosol[EPA] *manufactured* by using a fixed conversion of SO_2 to SO_3, based on the rank of the coal being burned. The method also predicts the release of sulfuric acid aerosol[EPA] by accounting for the amount of H_2SO_4 captured by the air heater, particulate control device(s), and any flue gas desulfurization equipment installed at the facility. While the process presented herein could have application to any type of coal-fired boiler, the SO_3 conversion rates presented are specific to dry bottom, wall-fired and tangentially-fired boilers. Due to their different combustion characteristics, the H_2SO_4 aerosol[EPA] emissions characteristics of other boiler types may be higher or lower.

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ATTACHMENT 2

ESTIMATING TOTAL SULFURIC ACID EMISSIONS FROM COAL-FIRED POWER PLANTS

ATTACHMENT 3

PROFESSIONAL ENGINEER CERTIFICATION

ATTACHMENT 3

GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION
UNIT 2 AIR QUALITY CONTROL SYSTEM PROJECT

Professional Engineer Certification

Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:

(1) To the best of my knowledge, the information provided in response to the Department's Request for Additional Information dated March 12, 2007 regarding the Gainesville Regional Utilities (GRU) air construction permit application for the installation of emission control equipment on Deerhaven Generating Station Unit 2 is true, accurate, and complete based on my review of material provided by GRU engineering and environmental staff; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this submittal are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of air pollutants not regulated for an emissions unit, based solely upon the materials, information and calculations provided with this certification.

Signature

3/29/07
Date

Thomas W. Davis, P.E.

(seal)

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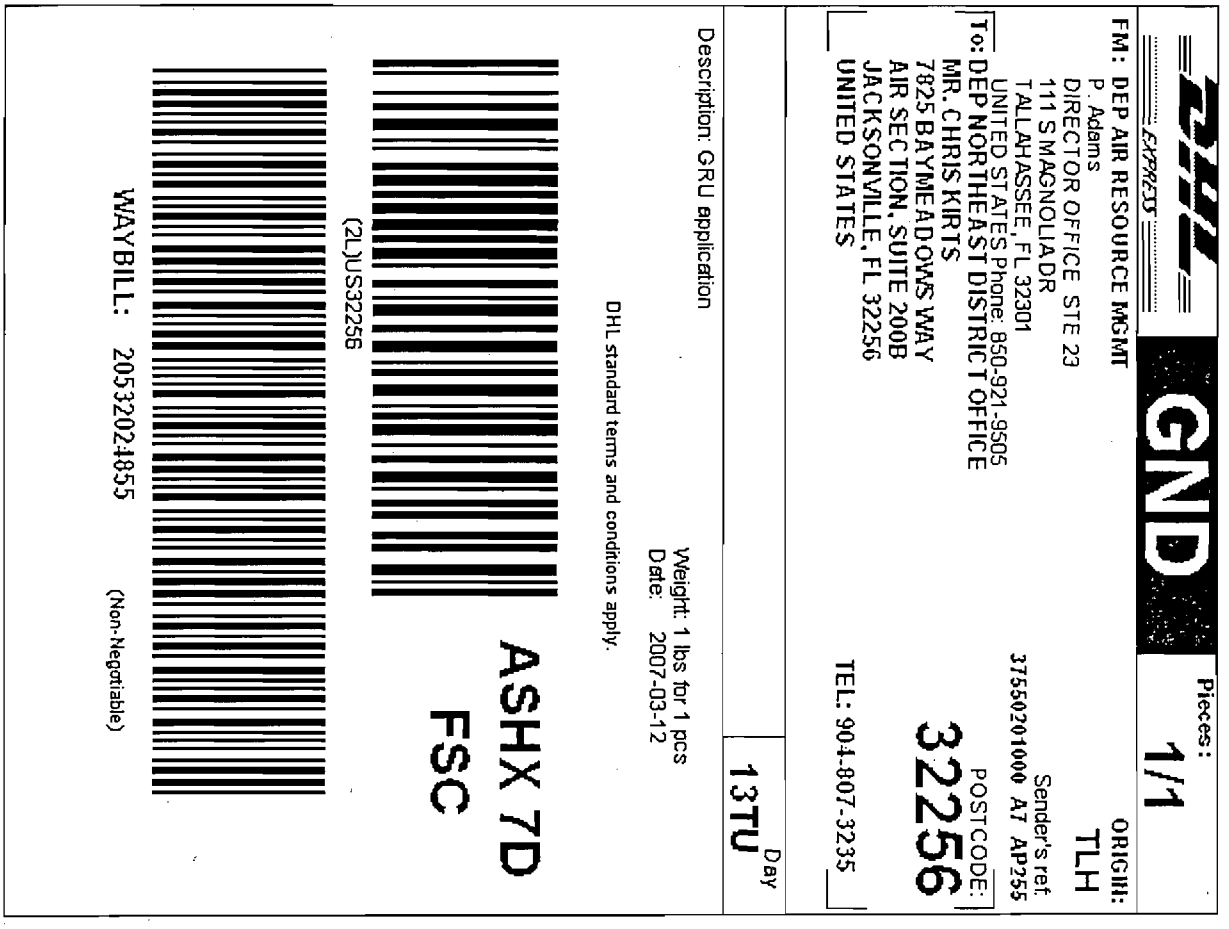

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Phone#: 904-807-3235

Sent By: P. Adams
Phone#: 850-921-9505

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GAINESVILLE REGIONAL UTILITIES
STRATEGIC PLANNING

Via Overnight Delivery

February 22, 2007

Mr. Jeff Koerner
Florida Dept. of Environmental Protection
Bureau of Air Regulation
Air Permitting North
111 So. Magnolia Drive
Tallahassee, FL 32301

Re: Gainesville Regional Utilities
Deerhaven Generating Station – Unit 2
Air Construction Permit Application - Air Quality Control System Addition

Dear Mr. Koerner:

Enclosed are four (4) copies of the air construction permit application for the above-referenced project.

If you have any questions pertaining to this application or the project please contact me at jonynasye@gru.com or 352-393-1284. If I am not available please contact Mr. Tom Davis (ECT) at Tdavis@ectinc.com or 352-332-0444 or Mr. Tim Bates at Batestc@gru.com or 352-393-1751.

Sincerely,

Yolanta E. Jonynas

Yolanta E. Jonynas
Licensing Manager

xc: C. Allen, GRU
T. Bates, GRU
D. Beck, GRU
R. Embry, GRU, wo. enc.
C. Kirts, FDEP – NE District
R. Klemans, GRU, wo. enc.
D. Mallery, GRU, wo. enc.
D. Moffet, GRU
R. Nance, GRU, wo. enc.
E. Walters, GRU, wo. enc.
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DH2AQCSACPermitapp022107

DEERHAVEN GENERATING STATION

UNIT 2 AIR QUALITY CONTROL SYSTEM PROJECT

SELECTIVE CATALYTIC REDUCTION
DRY FLUE GAS DESULFURIZATION
FABRIC FILTER

APPLICATION FOR AIR CONSTRUCTION PERMIT

Prepared for:

GRU™
More than Energy™

Gainesville, Florida

Prepared by:

ECT

Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 051174-0700

February 2007

TABLE OF CONTENTS

Section		Page
1.0	INTRODUCTION	1-1
2.0	SITE LOCATION AND DESCRIPTION	2-1
	2.1 SITE LOCATION	2-1
	2.2 SITE DESCRIPTION	2-1
3.0	PROJECT OVERVIEW	3-1
	3.1 STEAM TURBINE UPGRADE	3-1
	3.2 FUELS	3-1
4.0	REGULATORY STATUS OF UNIT 2	4-1
	4.1 AIR PERMITS	4-1
	4.2 NEW SOURCE REVIEW	4-1
	4.3 NEW SOURCE PERFORMANCE STANDARDS	4-1
	4.4 ACID RAIN PROGRAM/CAIR/CAMR/CLEAN AIR VISIBILITY RULE	4-1
5.0	DESCRIPTION OF EMISSION CONTROL SYSTEMS	5-1
	5.1 SELECTIVE CATALYTIC REDUCTION	5-1
	5.2 CIRCULATING DRY SO_2 SCRUBBER	5-3
	5.3 FABRIC FILTER	5-6
	5.4 UREA, LIME, AND CDS BY-PRODUCT HANDLING AND STORAGE	5-8
6.0	NEW SOURCE REVIEW APPLICABILITY	6-1
	6.1 BASELINE ACTUAL EMISSIONS	6-2
	6.2 PROJECTED ACTUAL EMISSIONS	6-2
7.0	AMBIENT AIR QUALITY IMPACT SCREENING ANALYSIS	7-1

APPENDICES

APPENDIX A—FDEP APPLICATION FOR AIR PERMIT—LONG FORM
APPENDIX B—FUEL CHARACTERISTICS

LIST OF TABLES

Table		Page
6-1	Analysis of Net Emission Rates	6-4
6-2	Unit 2 Historical PM Stack Test Data	6-5
7-1	Stack Parameters and Emission Rates	7-2
7-2	SCREEN3 Model Results	7-3

LIST OF FIGURES

Figure		Page
2-1	General Area Map	2-2

1.0 INTRODUCTION

The City of Gainesville, Gainesville Regional Utilities (GRU) operates a nominal 251 megawatt (MW) coal-fired steam electrical generating unit (EGU) at its Deerhaven Generating Station (DGS) located in Gainesville, Alachua County, Florida. Operation of DGS Unit 2 is currently authorized by Florida Department of Environmental Protection (FDEP) Title V Final Permit No. 0010006-003-AV. Final Permit No. 0010006-003-AV was issued with an effective date of January 1, 2005, and an expiration date of December 31, 2009.

In March 2005 the U.S. Environmental Protection Agency (EPA) promulgated the Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) to limit emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and mercury (Hg) from electric generating units by means of a two-phase cap and trade system. On June 29, 2006, the Florida Environmental Regulatory Commission (ERC) adopted modified versions of these EPA rules. Specifically, Florida opted into EPA's cap and trade model rule but made modifications to the methodology for allocating NO_x and mercury allowances to individual units to address Florida-specific issues. On January 5, 2006, GRU received approval from the Gainesville City Commission to retrofit DGS Unit 2 with air quality control systems (AQCS) as one means of complying with the new regulations by the required deadlines recognizing that the purchase of emission credits (allowances) is also a viable option for complying with the requirements. CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants. Therefore, GRU is not required by regulation to install nor operate the proposed AQCS to meet CAIR requirements.

The emission control equipment planned for DGS Unit 2 includes the following air quality control systems:

- Selective catalytic reduction (SCR) system to reduce NO_x emissions.
- A circulating dry scrubber (CDS) to reduce (SO_2) emissions.

- Baghouse (fabric filter) to reduce particulate matter (PM) emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime, and CDS by-product) handling and storage.

These emission control systems will also have the co-benefit of controlling Hg, hydrogen chloride (HCl), hydrogen fluoride (HF), and sulfuric acid mist (H_2SO_4 mist) emissions. The emission control systems planned for DGS Unit 2 will result in a significant reduction in actual emission rates. Following installation and operation of the DGS Unit 2 AQCS, controlled emission rates will be well below the current FDEP and EPA allowable rates. Provisions have been made in the design of the AQCS for activated carbon injection in the future if needed for additional mercury control.

This air construction permit application constitutes GRU's request for FDEP approval to retrofit the emission controls systems described above for DGS Unit 2. GRU plans to commence construction on the DGS Unit 2 AQCS retrofit project in July of this year with a target completion date of April 2009. The AQCS is anticipated to be fully operational by mid-May 2009. To attain this schedule, FDEP's expeditious processing of this air construction permit application will be appreciated.

The remainder of this air construction permit application is organized as follows:

- Section 2.0—Site Location and Description
- Section 3.0—Project Overview
- Section 4.0—Regulatory Status of Unit 2
- Section 5.0—Description of Emission Control Systems
- Section 6.0—New Source Review Applicability
- Section 7.0—Ambient Air Quality Impact Screening Analysis

Appendix A provides FDEP's Application for Air Permit—Long Form (FDEP Form No. 62-210.900[1] Effective 02/02/06).

2.0 SITE LOCATION AND DESCRIPTION

2.1 SITE LOCATION

The DGS is located at 10001 Northwest 13th Street in Gainesville, Alachua County, Florida. Figure 2-1 shows the site location and nearby prominent geographical features, and the location of the DGS within the state of Florida.

2.2 SITE DESCRIPTION

The DGS includes two fossil fuel-fired steam EGUs (Unit 1 and 2) and other components as described below. Unit 1 has a nominal generation capacity of 75 MW and commenced commercial operation in 1972. Unit 2 has a nominal generation capacity of 251 MW and commenced commercial operation in 1981. Unit 1 is fired with natural gas, residual fuel oils (Nos. 4, 5, or 6), distillate fuel oils (Nos. 1 and 2), propane (for ignition during startups), on-specification used oil, or any combinations of these fuels. Unit 2 is primarily fired with coal but may also fire natural gas or distillate fuel oils (Nos. 1 and 2), or any combination of these fuels.

Major components of the DGS include the following:

- Coal receiving, storage, handling, and feed preparation equipment.
- One natural gas/fuel oil-fired boiler (Unit 1).
- One coal-fired boiler (Unit 2) equipped with PM control equipment.
- Three simple-cycle combustion turbines, one equipped with low-NO_x burners and a steam injection system. These are fired with natural gas or distillate fuel.
- Fly ash handling equipment.
- Water treatment facilities.

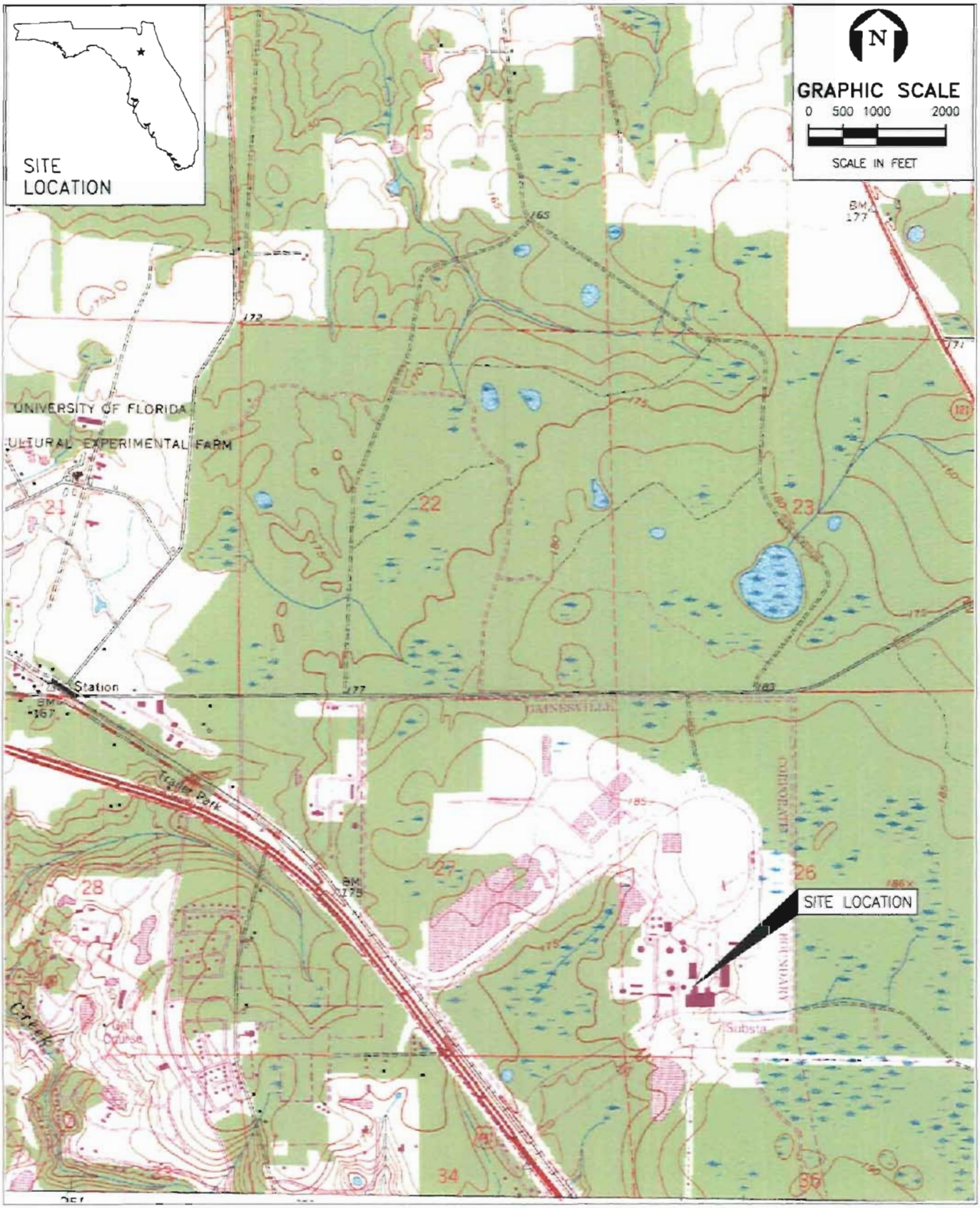

FIGURE 2-1.

GENERAL AREA MAP

DEERHAVEN GENERATING STATION

Sources: USGS Quad: Alachua, FL, 1993; ECT, 2006.

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3.0 PROJECT OVERVIEW

The DGS Unit 2 AQCS retrofit project includes the installation of emission control systems, refurbishment of the existing Unit 2 steam turbine, and use of a bituminous coal with higher sulfur and ash content than is currently being used. A detailed description of the proposed emission control systems is provided in Section 4.0 of this report. Discussions of the steam turbine upgrade and proposed fuels are provided in the following sections.

3.1 STEAM TURBINE REFURBISHMENT

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high- and intermediate pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine in order to recover power lost due to the parasitic load associated with the operation of the new AQCS.

There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine. Likewise, the capacity factor of Unit 2 will not increase as a result of the steam turbine refurbishment since Unit 2 is a base load unit.

3.2 FUELS

DGS Unit 2 is currently fired with low sulfur eastern bituminous coal to comply with the SO_2 emission limitations of New Source Performance Standard Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971.

Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blends, including medium sulfur coal, and comply with the NSPS Subpart D, CAIR, and CAMR requirements, as well as achieving significant reductions in actual SO_2 emissions. Accordingly, the Unit 2 AQCS project will provide the flexibility to burn a blend of coals up to a medium sulfur coal.

4.0 REGULATORY STATUS OF UNIT 2

Key air quality related regulatory requirements applicable to DGS Unit 2 are briefly described in the following sections.

4.1 AIR PERMITS

DGS Unit 2 was initially constructed and operated under the authority of Florida Power Plant Siting Act (FPPSA) Certification No. PA 74-04 dated May 16, 1978. Initial Title V Air Operation Permit No. 0010006-01-AV, issued with an effective date of January 1, 2000 and an expiration date of December 31, 2004, authorized continued operation of the DGS, including Unit 2. This air operation permit was subsequently revised in June 2002 and recently renewed in 2005. The current DGS Title V Air Operation Permit, Permit No. 0010006-003-AV, was issued with an effective date of January 1, 2005 and an expiration date of December 5, 2009.

4.2 NEW SOURCE REVIEW

DGS Unit 2 commenced initial operation after December 27, 1977 and therefore consumes increment under the Prevention of Significant Deterioration (PSD) New Source Review (NSR) regulatory program.

4.3 NEW SOURCE PERFORMANCE STANDARDS

DGS Unit 2 is subject to NSPS Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971. As required by NSPS Subpart D, the unit is equipped with continuous emissions monitoring systems (CEMS) for measuring NO_x and opacity.

4.4 ACID RAIN PROGRAM/CAIR/CAMR/CLEAN AIR VISIBILITY RULE

DGS Unit 2 is regulated under the Acid Rain Program (ARP) under Phase I (NO_x Early Election) and Phase II. As required by the ARP DGS Unit 2 is equipped with continuous emissions monitoring systems (CEMS) for measuring SO_2, NO_x, CO_2, and opacity.

In addition to the above requirements, DGS Unit 2 will be subject to the future effective requirements of the CAIR and CAMR as previously noted.

DGS Unit 2 is not subject to the requirements of the Regional Haze Rule (a/k/a the Clean Air Visibility Rule [CAVR]).

5.0 DESCRIPTION OF EMISSION CONTROL SYSTEMS

Descriptions of the SCR, CDS, and fabric filter emission controls systems planned for DGS Unit 2 are provided in the following sections. Descriptions of the urea, lime, and CDS by-product management systems are also provided.

5.1 SELECTIVE CATALYTIC REDUCTION

OVERVIEW

The selective catalytic reduction (SCR) NO_x removal process functions by reacting NO_x contained in the flue gas with ammonia in the presence of a catalyst at a temperature between 613 and 800 degrees Fahrenheit (°F) to produce nitrogen (N_2) and water (H_2O). NH_3 is injected upstream of the catalyst bed where the following primary reactions take place:

$$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O \quad (1)$$

$$4NH_3 + 2NO_2 + O_2 \rightarrow 3N_2 + 6H_2O \quad (2)$$

The DGS Unit 2 SCR system will tie into the ductwork at the outlet of the existing hot-side electrostatic precipitator which is expected to remain in-service after installation of the AQCS. Ammonia mixer plates and patented Delta Wing™ mixers will be located within the inlet duct to the two SCR reactors. The SCR outlet duct will connect to the existing air heaters.

The SCR system is designed so that flue gas flows through it whenever the DGS Unit 2 is operating i.e., there are no bypasses. The SCR system contains instrumentation to measure flue gas pressures, temperatures and NO_x concentrations at various locations in the ductwork and reactors. NO_x control is initiated when the temperature at the outlet of the reactor reaches the minimum short-term operating temperature specified by the catalyst vendor and ammonia flow is started through the injection nozzles.

CATALYST SYSTEM

The DGS Unit 2 flue gas will flow through the three layers (two active and one future layer) of honeycomb catalyst. This SCR design provides sufficient space with margin to

accommodate plate or honeycomb type catalyst and meet the performance requirements without using the spare catalyst level. The catalyst handling system will consist of a catalyst-rotating device, catalyst module lift device (supplied by the catalyst vendor), electric and manual hoists, and a catalyst cart and rail system. Provisions have been made in the catalyst design for removable test samples of catalyst material that can be used to monitor and predict catalyst activity during the catalyst life. The design life of the catalyst is 24,000 hours.

Gaseous arsenic is one of the predominant catalyst deactivation mechanisms in coal-fired SCR applications. Introducing calcium oxide (CaO) to the fuel reduces the gaseous arsenic in the flue gas and decreases its harmful effect on the catalyst. For the DGS Unit 2 SCR system, an addition rate of 0.51 weight percent CaO is expected to reduce the concentration of arsenic in the flue gas to within acceptable limits, subsequently ensuring the catalyst for a minimum 24,000 hours of operation. This optional CaO addition may be provided from lime or limestone.

A permanent sampling grid will be provided above and below the catalyst layers as well as between layers. These grids will allow sampling of the gas stream from outside the SCR while the unit is operating. A moveable NO_x probe will be provided in each SCR reactor inlet and outlet. A sampling/NO_x analyzer system will be connected to each probe to measure the inlet and outlet NO_x and provide a process control signal for the ammonia injection system.

AMMONIA SYSTEM

A urea-based ammonia system will be provided to supply ammonia for the SCR catalyst to remove NO_x. The system is sized to produce ammonia for two SCRs at full load. The urea to ammonia (U2A) system will use urea that is dissolved into water and the solution will be injected into heated in-line hydrolysers at a controlled rate and under conditions to provide the required amount of ammonia. The process will produce a gaseous mixture of ammonia, carbon dioxide and water vapor, which will be mixed into the flue gas stream.

STARTUP AND SHUTDOWN PROCEDURES

The objective of the SCR startup is to warm the reactor in a controlled procedure to the minimum catalyst operating temperature before injecting ammonia. The minimum and maximum catalyst operating temperatures for the DGS Unit 2 SCR system are 613°F and 800°F, respectively. When the temperature of the SCR reactor outlet and the last catalyst layer reaches the minimum operating temperature for ammonia injection, the ammonia control valve is permitted to open.

When the SCR system is to be shut down, the flow of ammonia is stopped and the ammonia injection piping purged with steam. Once the ammonia has been purged from the piping and the catalyst, DGS Unit 2 can be shutdown using current shutdown procedures.

SCR PERFORMANCE

The DGS Unit 2 SCR control system is designed to achieve a target outlet NO_x emission rate of 0.07 pounds per million British thermal units ($lb/10^6$ Btu) with an ammonia slip concentration of no more than 5.0 parts per million at 3% O_2. The target SCR controlled NO_x emission is ten times lower than the current NSPS Subpart D limit of 0.7 $lb/10^6$ Btu.

5.2 CIRCULATING DRY SO_2 SCRUBBER

OVERVIEW

The Circulating Dry Scrubber (CDS) will be installed down stream of the existing DGS Unit 2 induced draft (ID) fans. This flue gas desulfurization (FGD) system will remove the acidic constituents of the flue gas, primarily SO_2 and SO_3 and to a lesser extent CO_2, HCl and HF, by reaction with hydrated lime. The system includes the CDS vessel, adsorbent preparation and injection, water injection, product recycle injection and a flue gas recycle system. To assure a high level of SO_2 removal, a portion of the solid products exiting the CDS vessel (i.e., primarily reaction products such as $CaSO_3$, $CaSO_4$, $CaCO_3$, $CaCl_2$ and CaF_2 and inerts) will be separated from the flue gas in the baghouse and recycled to the vessel inlet at a high ratio to the inlet solids.

The dominant CDS equations are as follows:

$$Ca(OH)_2 + SO_2 \leftrightarrow CaSO_3 \times \tfrac{1}{2}H_2O + \tfrac{1}{2}H_2O \quad (1)$$

$$Ca(OH)_2 + SO_3 \leftrightarrow CaSO_4 \times \tfrac{1}{2}H_2O + \tfrac{1}{2}H_2O \quad (2)$$

$$CaSO_3 \times \tfrac{1}{2}H_2O + \tfrac{1}{2}O_2 \leftrightarrow CaSO_4 \times \tfrac{1}{2}H_2O \quad (3)$$

$$Ca(OH)_2 + CO_2 \leftrightarrow CaCO_3 + H_2O \quad (4)$$

$$Ca(OH)2 + 2HCI = CaCl2 + 2H20 \quad (5)$$

$$Ca(OH)2 + 2HF = CaF2 + 2H2O \quad (6)$$

The CDS is designed so that flue gas flows through it whenever the DGS Unit 2 is operating (i.e., there are no bypasses). It contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork.

The DGS Unit 2 flue gas will first pass through a group of venturi nozzles. The venturi nozzles serve to accelerate the flue gas just prior to the injection of high-pressure water, recycled solids, and adsorbent (i.e., lime). The reactor acts as a fluidized bed, assuring maximum contact between the pollutants in the flue gas and the adsorbent solids. The reactor is characterized by high turbulences and optimal chemical and physical heat and mass transfer rates. Water is added to bring the flue gas closer to the saturation temperature where the SO_2 absorption is most effective. The high dust load leaving the reactor is captured in the baghouse (fabric filter).

SO_2 will be measured at the inlet and outlet of the CDS reactor. These measurements will be used to vary the quantity of fresh lime that is introduced into the reactor. The final residue of the CDS process is a moist product (following the addition of water in the pin mixers described below in Section 5.4) which may be landfilled or potentially re-utilized.

SORBENT PREPARATION AND INJECTION

Hydrated lime, $Ca(OH)_2$, is the adsorbent used in the CDS process. Lime (CaO) will be delivered to the DGS via truck or rail and subsequently hydrated to increase its reactivity before injection in the CDS. Within the hydrator, the lime is mixed with water and agi-

tated until the hydration reaction is complete. The quantity of fresh lime that is introduced into the CDS is controlled by inlet and outlet SO_2 concentrations.

ASH RECYCLE

A portion of the material captured in the baghouse will be recycled back into the CDS to maintain the fluidized bed, while the excess material will be pneumatically transported out of the system to a storage silo. The amount of solids recycled is dependent upon the differential pressure within the CDS and the volumetric flue gas flow rate.

FLUE GAS RECIRCULATION

In order to ensure that the CDS is constantly fluidized, a portion of the flue gas stream downstream of the two booster fans will be recirculated to the inlet duct of the CDS during boiler operation at reduced loads. The amount of flue gas recirculated is accomplished through the positions of the two recirculation dampers.

CDS STARTUP AND SHUTDOWN

The objective of the CDS start-up is to warm the reactor in a controlled procedure to the minimum inlet temperature and minimum flue gas flow rates. When the minimum temperature and flow rate have been achieved, the four sub-systems of the CDS (sorbent injection, ash recirculation, flue gas recirculation and water injection) are placed into automatic mode.

A normal shutdown sequence for the CDS system occurs as follows:

- Shutdown the process water injection system.
- Shutdown the product recirculation system.
- Shutdown the lime sorbent dosing system (after baghouse bags are coated with fresh lime).

Fuel firing can continue without the CDS in service, but SO_2 removal will cease without the fluidized bed, lime sorbent and water injection systems in operation. Once the boiler is shut down, standard NFPA purge requirement clear the CDS and ductwork of any potentially explosive gases.

CDS PERFORMANCE

The DGS Unit 2 CDS control system is designed to achieve a target outlet SO_2 emission rate of 0.12 lb/10^6 Btu. The target CDS controlled SO_2 emission is ten times lower than the current NSPS Subpart D limit of 1.2 lb/10^6 Btu.

5.3 FABRIC FILTER

OVERVIEW

For particulate removal, one pulse-jet baghouse containing ten (10) compartments will be installed between the outlet of the CDS and inlet of the booster fans at DGS Unit 2. The fabric filter is designed so that flue gas flows through it whenever the DGS Unit 2 is operating; i.e., there are no bypasses.

Particulate contained in the raw flue gas as well as reaction products from the CDS are captured in the pulsejet fabric filter. The pulsejet fabric filter is multicompartmented, consisting of two parallel trains with centrally located inlet and outlet plenums. Each parallel train of compartments is served by an air slide utilizing heated air. The air slide conveys a significant portion of the collected particulate back to the CDS to maintain a high solids environment and improve overall reagent utilization. The balance of the collected particulate goes to surge bins (one per air slide) from which it is pneumatically conveyed to a common ash silo equipped with redundant pug mills The ash can then be loaded into trucks.

FABRIC FILTER BAGS

Each compartment will contain one cylindrical bag bundle with 984 filter bags per bundle. This equates to a total of 9,840 bags installed, with an additional 2 percent included as startup spares. The filter bags for this project will be fabricated from heavy weight 18 oz/yd nominal weight PPS, self supported with fused seam. The design air-to-cloth ratio is 4:1 or less with one compartment off-line for maintenance.

BAG CLEANING SYSTEM

The pulsejet fabric filter utilizes bags fabricated from felted polyphenyl sulfide fabric that is appropriate for this application. During operation the incoming particulate laden flue gas passes from outside of each bag creating a filter cake. With the passage of time, this cake thickens and tends to increase pressure drop. An automatic cleaning system is utilized to dislodge this filter cake, thus maintaining the desired overall pressure drop. The motive force for cleaning is pressurized air that is introduced at the top of the bags, just above the tubesheet. This flow of pressurized air travels counter to the normal flow of flue gas, thus dislodging the accumulated filter cake and assisting its downward drop into the collecting hoppers below. Redundant low-pressure positive displacement blowers provide the pressurized air.

STARTUP AND SHUTDOWN PROCEDURES

Before starting the baghouse system, the compressed air and ash removal (air slide) systems must be in operation. With the baghouse control system in manual, boiler load is increased until the minimum baghouse inlet temperature is achieved. Module inlet and outlet dampers are opened and the control system is placed into automatic mode. The system can be operated at low flow (approximately 50 percent) to monitor baghouse differential pressure. When differential pressure is acceptable, the flue gas flow can be increased to design conditions by increasing fan motor speed.

Shutdown of the baghouse system begins by placing the baghouse into manual mode. The dust removal system (including air slides) continues to operate to remove particulate from the baghouse hoppers. Once the boiler is shut down, standard NFPA purge requirements clear the baghouse of any potentially explosive gases. The compressed air system to the baghouse continues to operate after the boiler is shut down. While DGS Unit 2 is down, the filter bags do not have to be cleaned as the remaining cake will protect the bags during the next startup. The normal shutdown procedure for the air slide system occurs in the opposite order of start up.

BOOSTER FANS

Two 50 percent booster fans are provided for the DGS Unit 2 AQCS. The fans serve two functions. They provide the additional motive force to overcome the additional pressure drop imposed on the system by the addition of the SCRs, the CDS, and the baghouse. They also allow the CDS to operate at reduced Unit 2 loads by recycling a portion of flue gas from the baghouse outlet to the CDS vessel inlet, thereby keeping the solids bed in the vessel fluidized. The discharge of the booster fans ties into the ductwork upstream of the stack.

FABRIC FILTER PERFORMANCE

The DGS Unit 2 fabric filter control system is designed to achieve a target outlet filterable PM emission rate of 0.015 lb/10^6 Btu. The target fabric filter controlled PM emission is 6.7 times lower than the current NSPS Subpart D limit of 0.1 lb/10^6 Btu.

5.4 UREA, LIME, AND CDS BY-PRODUCT HANDLING AND STORAGE

OVERVIEW

Reagents associated with the DGS Unit 2 AQCS include urea for the SCR NO_x control system, and lime for the SO_2 CDS control system. Solid materials generated by the DGS Unit 2 AQCS consist of the reaction products (primarily calcium sulfate, calcium sulfite, unreacted lime and inerts) from the SO_2 CDS control system. A discussion of the handling and storage of the AQCS reagents and by-product are provided in the following sections.

UREA

Granular or prilled urea will be delivered by truck and transferred pneumatically directly to the urea to ammonia (U2A) dissolver tank where the urea is dissolved in water. The urea/water solution will then be injected into a heated in-line reactor at controlled rates to produce the appropriate amounts of gaseous ammonia and water vapor. The gaseous ammonia and water vapor stream will then be injected into the SCR control system. Accordingly, there will be no emissions associated with the unloading and processing of urea.

LIME

The lime unloading and storage system includes equipment for the pneumatic unloading of pebble lime from railcars or trucks, transport to a storage silo, and transport from the storage silo into two lime day bins.

Lime will be received in 100 ton railcars that have bottom hopper outlets. Lime may also be received in 25 ton maximum capacity trucks that have self-unloading blower systems. A roofed enclosure with partial walls parallel to the track for wind and rain protection is provided to protect the unloading operation from weather exposure.

For railcar unloading, unloading pans are provided that are clamped to each of three hopper outlet flanges, and a vacuum conveying system removes lime from the railcar hopper, one hopper section at a time, into a filter receiver. From the filter receiver, lime is fed through an airlock, into an airlock hopper, which discharges through another airlock into a positive pressure pneumatic conveyor. The vacuum and pressure conveying systems each have two blowers, one blower is spare.

The vacuum conveyor system is also designed to unload two positive pressure pneumatic trucks by having the truck discharge line connect to the vacuum conveyor line. The unloading building also provides for one or two self-unloading pressure differential trucks to unload. Two independent conveying pipes and hoses are provided so both trucks can unload at the same time.

The positive pressure lime conveyor discharges into the lime storage silo. The silo has a vibrating bin outlet, to assure continuous flow from the silo and has a bin vent to exhaust filtered air from the silo. From the vibrating bin discharger, lime discharges through a diverter gate to either of two airlock hoppers. Each hopper feeds an independent positive pressure conveyor that transports lime into either of two lime day bins. Two blowers are provided, one acts as a spare.

The positive pressure conveyor discharges lime into either of two day bins, selected by a diverter in the convey line. Both day bins are provided with a bin vent filter. Two con-

veying pipes with hoses to connect to self-unloading pressure differential trucks are also provided to use as emergency sources of lime for the day bins.

Pebble lime from the day bins is conveyed to hydrators equipped with scrubbers where it is wetted to approximately 1 to 2 percent moisture. Hydrated lime is then conveyed by a positive pressure pneumatic conveyor into the hydrated lime silo. A bin vent filter is provided for the silo to vent filtered conveying air from the silo. Hydrated lime discharges from the silo through an airlock, and then into a feeder hopper, which discharges through another airlock into the conveying line. A positive pressure conveyor transports hydrated lime to the turbo reactor. The conveyor has two blowers, with one acting as a spare.

PM emission sources associated with the lime handling and storage system consists of: (1) railcar unloading filter receiver, (2) lime storage silo, (3) two lime day bin silos, (4) two lime hydrator scrubbers, and (5) hydrated lime storage silo. The railcar unloading filter receiver and each of the storage silos will be equipped with bin vent fabric filters designed to achieve an outlet PM concentration of 0.01 grains PM per dry standard cubic foot (gr PM/dscf).

CDS BYPRODUCT

A portion of the CDS byproducts will be collected by the CDS fabric filter and pneumatically transferred to a CDS byproduct storage silo which will be equipped with a bin vent fabric filter designed to achieve an outlet PM concentration of 0.01 gr PM/dscf.

CDS byproduct will then be transferred into two pin mixers where it will be mixed with water prior to being loaded into trucks. There are no significant PM emissions associated with the wet pin mixer operation.

CALCIUM OXIDE ADDITION SYSTEM FOR FUEL CONDITIONING

Calcium oxide in the form of lime or limestone may be added to the coal conveying system, as needed, to condition the fuel and enhance the life of the SCR catalyst.

6.0 NEW SOURCE REVIEW APPLICABILITY

The existing DGS is located in an attainment area and is classified as a *major facility.* A modification to an existing major facility located an attainment area which has a net emissions increase equal to or exceeding the significant emission rates listed in Rule 62-210.200(277), F.A.C., will be subject to PSD NSR.

For changes to existing emission units, such as the DGS Unit 2 AQCS, the determination of a net emission increase is based on a comparison of actual-to-projected actual emission rates. A significant emissions increase of a PSD pollutant will occur if the difference between the *baseline actual emissions* and *projected actual emissions* equals or exceeds the significant emissions rate for that pollutant. As defined by Rule 62-210.200(36), F.A.C., baseline actual emissions for an existing electric utility steam generating unit means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by FDEP. Baseline actual emissions include fugitive emissions, to the extent quantifiable, as well as emissions associated with startups and shutdowns.

Projected actual emissions, as defined by Rule 62-210.200(247), F.A.C., means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. Emissions that the unit could have accommodated during the 24-month baseline period and that are unrelated to the modification are excluded. As noted previously in Section 3.1, there will be no changes to the existing DGS Unit 2 electrical steam generator and no increase in maximum heat input to the boiler or steam flow capability of the turbine. Since DGS Unit 2 is a base load unit, there will also be no change in Unit 2 utilization (i.e., capacity factor) due to the AQCS project. Accordingly, the applicable period for determining projected

actual emissions for the DGS Unit 2 AQCS project is the 5 years following installation of the additional emission controls.

The DGS Unit 2 AQCS project will result in substantial reductions in actual emissions of NO_x, SO_2, PM/PM_{10}, fluorides (i.e., HF) and H_2SO_4. No changes are planned to the DGS Unit 2 combustion process. Accordingly, no change in actual emissions of combustion related pollutants (i.e., CO and VOC) will result due to the AQCS project. Discussions of baseline actual emissions and projected actual emissions are provided in the following sections.

6.1 BASELINE ACTUAL EMISSIONS

As an ARP affected emission unit, DGS Unit 2 is equipped with CEMS for measuring SO_2, NO_x, CO_2, and opacity. The ARP CEMS data was used to develop baseline actual emissions for SO_2 and NO_x. GRU conducts annual stack testing of DGS Unit 2 for filterable PM using EPA Reference Method 5. This stack test data (i.e., the average emission rate in $lb/10^6$ MMBtu) together with the annual heat input was used to develop baseline actual emissions for PM. Baseline actual emissions of Hg and the PSD acid gases (i.e., HF and H_2SO_4) were developed using GRU emission estimates prepared pursuant to the Toxic Release Inventory (TRI) regulatory program.

6.2 PROJECTED ACTUAL EMISSIONS

As noted previously, there will be no change in DGS Unit 2 utilization due to the AQCS project. Projected DGS Unit 2 actual annual emissions during the 5 year period following installation of the AQCS for SO_2, NO_x, and PM were estimated using the AQCS target emission rates (in units of $lb/10^6$ Btu) previously shown in Section 5.0 and the highest DGS Unit 2 heat input over the 2002 to 2006 period (i.e., the 2006 heat input). The projected actual emissions also include PM/PM_{10} emissions associated with the AQCS material handling activities. As previously noted in Section 5.3, the final residue of the CDS process is a dry product which may be landfilled or potentially re-utilized. If landfilled onsite, approximately nine trucks per day will transport the CDS byproduct to the onsite landfill. Fugitive PM/PM_{10} emissions associated with this activity will be negligible.

DGS Unit 2 currently combusts coal containing approximately 0.8 weight percent sulfur to comply with the requirements of NSPS Subpart D. As noted in Section 3.2, a blend of coals, including medium sulfur coal, may be combusted in the future following installation of the AQCS project. The DGS Unit 2 AQCS will be capable of removing over 90 percent of H_2SO_4 and HF. Projected actual emissions of H_2SO_4 were conservatively estimated by applying a ratio of 3.125 to the historical 2-year (2004 to 2005) average actual H_2SO_4 emission rate and applying the AQCS H_2SO_4 removal efficiency of 90 percent. The 3.125 ratio represents the use of medium sulfur coal containing 2.5 weight percent sulfur compared to the current coal sulfur content of 0.8 weight percent. No significant changes in coal fluoride or mercury contents are expected. Accordingly, projected actual emissions of HF and Hg were estimated using the historical 2 year (2004 to 2005) average actual HF and Hg emission rates and applying AQCS removal efficiencies of 90 percent (for HF) and 80 percent (for Hg).

Table 6-1 provides a summary of baseline and projected actual emission rates. Details of the GRU DGS Unit 2 PM stack test data are provided in Table 6-2. As shown in Table 6-1, there will be a net reduction in all PSD pollutants due to the DGS Unit 2 AQCS. Accordingly, the DGS Unit 2 AQCS project is not subject to PSD NSR.

Table 6-1. Analysis of Net Emission Rates

A. Baseline Actual Emissions

Year	Heat Input (10^6 Btu/yr)	SO_2 (ton/yr)	NO_x (ton/yr)	PM (ton/yr)	PM_{10}[1] (ton/yr)	H_2SO_4 (ton/yr)	HF (ton/yr)	Hg (ton/yr)
2002	14,157,614	7,147.4	3,315.9	270.6	181.3	83.3	27.0	0.051
2003	14,976,624	7,678.8	3,666.3	308.3	206.5	83.0	29.0	0.044
2004	13,331,383	6,951.7	3,322.8	116.9	78.3	80.3	25.3	0.038
2005	15,642,246	8,042.9	3,932.5	96.9	64.9	103.3	33.0	0.025
2006	15,710,352	8,119.3	3,691.9	151.0	101.2	93.5	29.9	0.045
02 - 03 Average	N/A	N/A	N/A	289.4	193.9	N/A	N/A	N/A
05 - 06 Average	15,676,299	8,081.1	3,812.2	N/A	N/A	98.4	31.4	0.035

B. Projected Actual Emissions[2]

	Heat Input (10^6 Btu/yr)	SO_2[3] (ton/yr)	NO_x[3] (ton/yr)	PM[3] (ton/yr)	PM_{10}[4] (ton/yr)	H_2SO_4[5] (ton/yr)	HF[6] (ton/yr)	Hg[7] (ton/yr)
2006 Heat Input	15,710,352	942.6	549.9	117.8	108.4	30.7	3.1	0.0070
AQCS Material Handling	N/A	N/A	N/A	6.0	6.0	N/A	N/A	N/A
AQCS By-Product Truck Traffic	N/A	N/A	N/A	Neg.	Neg.	N/A	N/A	N/A
Totals	15,710,352	942.6	549.9	123.8	114.4	30.7	3.1	0.0070

C. Estimated Net Change in Actual Emissions[2]

	SO_2 (ton/yr)	NO_x (ton/yr)	PM (ton/yr)	PM_{10} (ton/yr)	H_2SO_4 (ton/yr)	HF (ton/yr)	Hg (ton/yr)
	-7,138.5	-3,262.4	-165.6	-79.5	-67.6	-28.3	-0.028
PSD Significant Emission Rate	40	40	25	15	7	3	0.1

[1] PM_{10} assumed equal to 67% of PM per AP-42, Table 1.1-6 for bituminous coal-fired units equipped with an ESP.

[2] Based on use of AQCS. Projected actual emissions will remain approximately the same as baseline actual emissions if current fuel is combusted and the AQCS is not in use.

[3] Emissions based on 2006 heat input and target AQCS performance for SO_2 (0.12 lb/10^6Btu), NO_x (0.07 lb/10^6Btu), and PM (0.015 lb/10^6Btu).

[4] PM_{10} assumed equal to 92% of PM per AP-42, Table 1.1-6 for bituminous coal-fired units equipped with a baghouse.

[5] Based on use of medium (2.5% S) sulfur coal and AQCS H_2SO_4 mist control efficiency of 90%.

[6] Based on AQCS HF control efficiency of 90%.

[7] Based on AQCS Hg control efficiency of 80%.

Sources: ECT, 2007.
GRU, 2007.

Table 6-2. Unit 2 Historical PM Stack Test Data

Soot Blowing	14	hours/day
Non-Soot Blowing	10	hours/day

Year	Soot Blowing ($lb/10^6$ Btu)	Non-Soot Blowing ($lb/10^6$ Btu)	Weighted Average* ($lb/10^6$ Btu)
2002	0.0446	0.0318 0.0268	0.0382
2003	0.0535	0.0240 0.0238	0.0412
2004	0.0190	0.0160 0.0150	0.0175
2005	0.0127	0.0097 0.0142	0.0124
2006	0.0215	0.0145 0.0176	0.0192

*Based on 14 hours/day of soot blowing and 10 hours per day of non-soot blowing.

Sources: ECT, 2007.
GRU, 2007.

7.0 AMBIENT AIR QUALITY IMPACT SCREENING ANALYSIS

Dispersion modeling, using a conservative screening methodology, was conducted to assess maximum DGS Unit 2 ambient air quality impacts for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and particulate matter less than ten microns (PM_{10}) for current conditions and following installation of the AQCS. This assessment of ambient air quality impacts was performed since the DGS Unit 2 stack temperature and velocity will be lower then current levels following installation and operation of the AQCS.

The ambient air quality impact assessment was conducted using the EPA SCREEN3 (Version dated 96043) dispersion model. The SCREEN3 model employs a suite of hypothetical worst-case meteorological conditions and receptors located downwind (i.e., the SCREEN3 model does not consider actual wind directions) to generate estimates of maximum air quality impacts. The SCREEN3 model was developed by EPA to provide conservative estimates of air quality impacts; i.e., the model will over-estimate air quality impacts compared to refined modeling.

The DGS Unit 2 screening modeling analysis evaluated air quality impacts for: (a) current DGS Unit 2 stack parameters and allowable emission rates; i.e., NSPS Subpart D limits, and (b) future DGS Unit 2 stack parameters and expected emissions following installation of the AQCS.

Table 7-1 provides the current and future DGS Unit 2 stack parameters and emission rates. The SCREEN3 model results are summarized in Table 7-2. The screening model results demonstrate that maximum ambient air quality impacts due to emissions from DGS Unit 2 are currently well below the National and Florida Ambient Air Quality Standards and will be significantly lower following installation of the AQCS.

Table 7-1. Stack Parameters and Emission Rates

Unit	Heat Input (10^6 Btu/hr)
2	2,428

A. Current Stack Data and Allowable Emissions*

Stack	UTM Coordinates		Elevation		NO_x			PM			SO_2		
	Easting (m)	Northing (m)	(ft)	(m)	(lb/10^6 Btu)	(g/s)	(lb/hr)	(lb/10^6 Btu)	(g/s)	(lb/hr)	(lb/10^6 Btu)	(g/s)	(lb/hr)
Unit 2	365,700	3,292,600	185.0	56.388	0.7	214.1	1,699.6	0.1	30.6	242.8	1.2	367.1	2,913.6

Stack	Height		Diameter		Temperature		Area		Flow Rate		Velocity	
	(ft)	(m)	(ft)	(m)	(°F)	(K)	(ft^2)	(m^2)	(ft^3/min)	(m^3/min)	(ft/sec)	(m/s)
Unit 2	350.0	106.7	18.5	5.6	352.0	450.9	268.80	24.97	766,500	21,705	47.53	14.49

B. Future Stack Data and Expected Emissions†

Stack	UTM Coordinates		Elevation		NO_x			PM			SO_2		
	Easting (m)	Northing (m)	(ft)	(m)	(lb/10^6 Btu)	(g/s)	(lb/hr)	(lb/10^6 Btu)	(g/s)	(lb/hr)	(lb/10^6 Btu)	(g/s)	(lb/hr)
Unit 2	365,700	3,292,600	185.0	56.388	0.07	21.4	170.0	0.015	4.6	36.4	0.12	36.7	291.4

Stack	Height		Diameter		Temperature		Area		Flow Rate		Velocity	
	(ft)	(m)	(ft)	(m)	(°F)	(K)	(ft^2)	(m^2)	(ft^3/min)	(m^3/min)	(ft/sec)	(m/s)
Unit 2	350.0	106.7	18.5	5.6	178.0	354.3	268.80	24.97	761,439	21,562	47.21	14.39

C. GEP Height and Dominant Downwash Structure

	Height		Maximum Dimension	
	(ft)	(m)	(ft)	(m)
DH2 GEP Height	482.3	147.0		
Unit 2 Boiler	192.9	58.8	235.9	71.9

*Emission rates reflect NSPS Subpart D limits. Stack parameters taken from DGS Title V Renewal Application dated June 2004.
†Emission rates reflect expected performance of the DGS Unit 2 AQCS. Stack parameters from BPEI DFGD Material Balance dated February 2, 2007.

Sources: ECT, 2007.
GRU, 2007.

Table 7-2. SCREEN3 Model Results

A. Current Stack Parameters and Allowable Emissions

SCREEN3 Modeled Emission Rate	10.0	grams per second
DH2 SO_2 Emission Rate (NSPS Subpart D Limit)	367.1	grams per second
DH2 NO_x Emission Rate (NSPS Subpart D Limit)	214.1	grams per second
DH2 PM Emission Rate (NSPS Subpart D Limit)	30.6	grams per second

Scenario	SO_2 Impacts*				NO_2 Impact	PM_{10} Impact	
	1-Hour (ug/m^3)	3-Hour (ug/m^3)	24-Hour (ug/m^3)	Annual (ug/m^3)	Annual (ug/m^3)	24-Hour (ug/m^3)	Annual (ug/m^3)
SCREEN3 (10 g/s)	8.32	7.48	3.33	0.67	0.67	3.33	0.67
DH Unit 2 - Current NSPS Subpart D Limits	305	275	122	24	14	10.2	2.0
NAAQS	N/A	1,300	365	80	100	150	50
FAAQS	N/A	1,300	260	60	100	150	50

B. Future (after AQCS) Stack Parameters; NSPS Subpart D and Expected AQCS Emissions

SCREEN3 Modeled Emission Rate	10.0	grams per second
DH2 SO_2 Emission Rate (AQCS)	36.7	grams per second
DH2 NO_x Emission Rate (AQCS)	21.4	grams per second
DH2 PM Emission Rate (AQCS)	4.6	grams per second

Scenario	SO_2 Impacts*				NO_2 Impact	PM_{10} Impact	
	1-Hour (ug/m^3)	3-Hour (ug/m^3)	24-Hour (ug/m^3)	Annual (ug/m^3)	Annual (ug/m^3)	24-Hour (ug/m^3)	Annual (ug/m^3)
SCREEN3 (10 g/s)	13.10	11.79	5.24	1.05	1.05	5.24	1.05
DH Unit 2 - Current NSPS Subpart D Limits	481	433	192	38	22	16.0	3.2
DH Unit 2 - Following AQCS	48	43	19	4	2	2.4	0.5
NAAQS	N/A	1,300	365	80	100	150	50
FAAQS	N/A	1,300	260	60	100	150	50

*SCREEN3 1-hour results adjusted to 3-hour, 24-hour, and annual averages using EPA recommended multiplication factors of 0.9, 0.4, and 0.08, respectively.

NAAQS - National Ambient Air Quality Standards
FAAQS - Florida Ambient Air Quality Standards

Source: ECT, 2007.

APPENDIX A

FDEP APPLICATION FOR AIR PERMIT—LONG FORM

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for any air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **City of Gainesville, GRU**
2. Site Name: **Deerhaven Generating Station**
3. Facility Identification Number: **0010006**
4. Facility Location...
   Street Address or Other Locator: **10001 NW 13th Street**
   City: **Gainesville** County: **Alachua** Zip Code: **32653**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Yolanta E. Jonynas**
2. Application Contact Mailing Address...
   Organization/Firm: **City of Gainesville, GRU**
   Street Address: **P.O. Box 147117 (A136)**
   City: **Gainesville** State: **FL** Zip Code: **32614-7117**
3. Application Contact Telephone Numbers...
   Telephone: **(352) 393-1284** ext. Fax: **(352) 334-3151**
4. Application Contact Email Address: **jonynasye@gru.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 02/23/07
2. Project Number(s): 0010006-005-AC
3. PSD Number (if applicable):
4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

[x] Air construction permit

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

[ ] Initial Title V air operation permit.

[ ] Title V air operation permit revision.

[ ] Title V air operation permit renewal.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

[ ] Air construction permit and Title V permit revision, incorporating the proposed project.

[ ] Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

[ ] I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application requests approval to retrofit the following emission control systems on Deerhaven Generating Station Unit 2:

- **Selective catalytic reduction (SCR) system to reduce nitrogen oxides (NO_x) emissions;**
- **A circulating dry scrubber (CDS) to reduce sulfur dioxide (SO_2) emissions;**
- **Fabric filter (FF) to reduce particulate matter (PM) emissions. The fabric filter is an integral part of the CDS; and**
- **Ancillary support equipment including new material (urea, lime, hydrated lime, and CDS by-product) handling and storage.**

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
005	2,428 MMBtu/hr Steam Boiler No. 2	N/A	N/A
009	Lime, Hydrated Lime, and Dry Circulating Scrubber By-Product Handling and Storage Activities	N/A	N/A

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
   George K. Allen, Assistant General Manager – Energy Supply
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **City of Gainesville, GRU**
   Street Address: **P.O. Box 147117 (A132)**
   City: **Gainesville** State: **Florida** Zip Code: **32614-7117**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(352) 393-1789** ext. Fax: **(352) 334-2786**
4. Owner/Authorized Representative Email Address: allengk@gru.com
5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.

   George K. Allen — Signature

   2/20/07 — Date

APPLICATION INFORMATION

Application Responsible Official Certification N/A

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) –

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Thomas W. Davis**
   Registration Number: **36777**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Environmental Consulting & Technology, Inc.**
   Street Address: **3701 Northwest 98th Street**
   City: **Gainesville** State: **Florida** Zip Code: **32606-5004**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 332-0444** ext. Fax: **(352) 332-6722**
4. Professional Engineer Email Address: **tdavis@ectinc.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here , if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

2/21/07
Date

(seal)

Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **365.70** North (km) **3,292.60**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
3. Governmental Facility Code: **4**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Yolanta E. Jonynas**
2. Facility Contact Mailing Address... Organization/Firm: **City of Gainesville, GRU** Street Address: **P.O. Box 147117 (A136)** City: **Gainesville** State: **Florida** Zip Code: **32614-7117**
3. Facility Contact Telephone Numbers: Telephone: **(352) 393-1284** ext. Fax: **(352) 334-3151**
4. Facility Contact Email Address: **jonynasye@gru.com**

Facility Primary Responsible Official **N/A**

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
NOX	**A**	**N**
SO2	**A**	**N**
CO	**A**	**N**
PM10	**A**	**N**
PM	**A**	**N**
VOC	**A**	**N**
H106 (Hydrogen Chloride)	**A**	**N**
H107 (Hydrogen Fluoride)	**A**	**N**
HAPS (Total)	**A**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps N/A

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date **June 2004**
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date: **June 2004**
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date: **June 2004**

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   ☐ Attached, Document ID:_____ [x] Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   [x] Attached, Document ID: **Sections 3.0 and 5.0**
3. Rule Applicability Analysis:
   [x] Attached, Document ID: **Sections 4.0 and 6.0**
4. List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.):
   ☐ Attached, Document ID:_____ [x] Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification:
   ☐ Attached, Document ID:_____ [x] Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   ☐ Attached, Document ID:_____ [x] Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   ☐ Attached, Document ID:_____ [x] Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ [x] Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ [x] Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    ☐ Attached, Document ID:_____ [x] Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications N/A

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications N/A

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:_____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

Additional Requirements Comment

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Fossil Fuel-Fired Steam Boiler Unit No. 2

3. Emissions Unit Identification Number: **005 (Internal ID: DH-2)**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**N/A**	**49**	☒ Yes ☐ No

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: **251** MW

11. Emissions Unit Comment:
Dry Bottom, Wall-fired Boiler

Field 10 is based on:
295,000 kVA @ 1.0 power factor
250.75 MW @ 0.85 power factor

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

High Efficiency Hot-Side Electrostatic Precipitator (ESP)

Selective Catalytic Reduction (SCR)

Dry Circulating Scrubber (CDS)

Medium Temperature (180°F <T <250°F) Fabric Filter (FF)

2. Control Device or Method Code(s): **010, 139, 119, 017**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **2,428** million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	**8,760** hours/year
6. Operating Capacity/Schedule Comment:	
Field 3 maximum heat input based on coal-firing. Maximum heat input is 900 MMBtu/hr for No. 1 or 2 fuel oil-firing, and 591 MMBtu/hr for natural gas-firing.	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **DH-2**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **350** feet	7. Exit Diameter: **18.5** feet
8. Exit Temperature: **178** °F	9. Actual Volumetric Flow Rate: **761,439** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Fields 8 and 9 based on preliminary Babcock Power Environmental (BPE) Dry Flue Gas Desulfurization (DFGD) Material Balance dated February 2, 2007.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **3**

1. Segment Description (Process/Fuel Type): **Bituminous Coal Burned**		
2. Source Classification Code (SCC): **1-01-002-02**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **93.4**	5. Maximum Annual Rate: **818,049**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **2.50**	8. Maximum % Ash: **17.0**	9. Million Btu per SCC Unit: **26**
10. Segment Comment: **Unit 2 can co-fire coal, natural gas, and Nos. 1 and 2 fuel oil. Field 9 value based on nominal coal heat content of 13,000 Btu/lb.**		

Segment Description and Rate: Segment **2** of **3**

1. Segment Description (Process/Fuel Type): **Natural Gas Burned**		
2. Source Classification Code (SCC): **1-01-006-01**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.57**	5. Maximum Annual Rate: **4,978**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1,040**
10. Segment Comment: **Unit 2 can co-fire coal, natural gas, and Nos. 1 and 2 fuel oil. Field 4 maximum hourly rate based on 591 MMBtu/hr heat input and nominal natural gas heat content of 1,040 Btu/ft^3.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **3** of **3**

1. Segment Description (Process/Fuel Type): **Distillate Fuel Oils Burned**		
2. Source Classification Code (SCC): **1-01-005-01**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **6.43**	5. Maximum Annual Rate: **56,314**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.05**	8. Maximum % Ash: **0.05**	9. Million Btu per SCC Unit: **140**
10. Segment Comment: **Unit 2 can co-fire coal, natural gas, and Nos. 1 and 2 fuel oil. Field 4 maximum hourly rate based on 900 MMBtu/hr heat input and nominal distillate fuel oil heat content of 140,000 Btu/gal.**		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NOX	**139**		**EL**
SO2	**119**	**017**	**EL**
PM	**010**	**017**	**EL**
PM_{10}	**010**	**017**	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1,700** lb/hour **5,317** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **3,812** tons/year	8.b. Baseline 24-month Period: From: **1/2005** To: **12/2006**
9.a. Projected Actual Emissions (if required): **550** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

0.7 lb/MMBtu (NSPS Subpart D) x 2,428 MMBtu/hr = 1,700 lb/hr

0.5 lb/MMBtu (Phase II annual average) x 2,428 MMBtu/hr = 1,214 lb/hr
[(1,214 lb/hr x 8,760 hr/yr) / 2,000 lb/ton] = 5,317 tons/yr

11. Potential, Fugitive, and Actual Emissions Comment:

Potential emissions set equal to allowable emissions.
See Section 6.0 (Table 6-1) for data shown in Fields 8a. through 9.a.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **3**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.7 lb/MMBtu**	4. Equivalent Allowable Emissions: **1,700** lb/hour **5,317** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 7, 7A, 7C, 7D, &E, or CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.44(a)(3) – Solid Fuels** **Title V Permit No. 00100006-003-AV, Condition B.7(a)(3)** **Annual emissions are limited by Phase II NOx Compliance Plan (0.5 lb/MMBtu ann. avg.)** **Allowable emissions are prorated when different fuels are burned simultaneously.**	

Allowable Emissions Allowable Emissions **2** of **3**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.3 lb/MMBtu**	4. Equivalent Allowable Emissions: **728** lb/hour **3,190** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 7, 7A, 7C, 7D, &E, or CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.44(a)(2) – Liquid Fuels** **Title V Permit No. 00100006-003-AV, Condition B.7(a)(2)** **Allowable emissions are prorated when different fuels are burned simultaneously.**	

Allowable Emissions Allowable Emissions **3** of **3**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.2 lb/MMBtu**	4. Equivalent Allowable Emissions: **486** lb/hour **2,127** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 7, 7A, 7C, 7D, &E, or CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.44(a)(1) – Gaseous Fuels** **Title V Permit No. 00100006-003-AV, Condition B.7(a)(1)** **Allowable emissions are prorated when different fuels are burned simultaneously.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2,914** lb/hour **12,762** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **8,081** tons/year	8.b. Baseline 24-month Period: From: **1/2005** To: **12/2006**
9.a. Projected Actual Emissions (if required): **943** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

1.2 lb/MMBtu (NSPS Subpart D) x 2,428 MMBtu/hr = 2,913.6 lb/hr
[(2,913.6 lb/hr x 8,760 hr/yr) / 2,000 lb/ton] = 12,762 tons/yr

11. Potential, Fugitive, and Actual Emissions Comment:

Potential emissions set equal to allowable emissions.
See Section 6.0 (Table 6-1) for data shown in Fields 8a. through 9.a.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **2**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **1.2 lb/MMBtu**	4. Equivalent Allowable Emissions: **2,914** lb/hour **12,762** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 6, 6A, 6B, 6C or CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.43(a)(2) – Solid Fuels** **Title V Permit No. 00100006-003-AV, Condition B.5(a)(2)** **Allowable emissions are prorated when different fuels are burned simultaneously.**	

Allowable Emissions Allowable Emissions **2** of **2**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.8 lb/MMBtu**	4. Equivalent Allowable Emissions: **1,942** lb/hour **8,508** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 6, 6A, 6B, 6C or CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.43(a)(1) – Liquid Fuels** **Title V Permit No. 00100006-003-AV, Condition B.5(a)(1)** **Allowable emissions are prorated when different fuels are burned simultaneously.**	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **243** lb/hour **1,064** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **289** tons/year	8.b. Baseline 24-month Period: From: **1/2002** To: **12/2003**
9.a. Projected Actual Emissions (if required): **124** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

0.1 lb/MMBtu (NSPS Subpart D) x 2,428 MMBtu/hr = 242.8 lb/hr
[(242.8 lb/hr x 8,760 hr/yr) / 2,000 lb/ton] = 1,064 tons/yr

11. Potential, Fugitive, and Actual Emissions Comment:

Potential emissions set equal to allowable emissions.
See Section 6.0 (Table 6-1) for data shown in Fields 8a. through 9.a.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Allowable Emissions and Units: **0.1 lb/MMBtu**	4. Equivalent Allowable Emissions: **243** lb/hour **1,064** tons/year
5. Method of Compliance: **Annual stack test using EPA Reference Methods 5 or 17.**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR Part 60, Subpart D, 60.42(a)(1)** **Title V Permit No. 00100006-003-AV, Condition B.4(a)(1)**	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **163** lb/hour **713** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: **0.67 x PM** Reference: **AP-42, Table**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): **194** tons/year	8.b. Baseline 24-month Period: From: **1/2002** To: **12/2003**
9.a. Projected Actual Emissions (if required): **114** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

0.1 lb/MMBtu (NSPS Subpart D) x 2,428 MMBtu/hr x .67 = 162.7 lb/hr
[(162.7 lb/hr x 8,760 hr/yr) / 2,000 lb/ton] = 713 tons/yr

11. Potential, Fugitive, and Actual Emissions Comment:

See Section 6.0 (Table 6-1) for data shown in Fields 8a. through 9.a.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions of **N/A**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **2**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [x] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **27** % Maximum Period of Excess Opacity Allowed: **6** min/hour	
4. Method of Compliance: **EPA Reference Method 9 or COMS**	
5. Visible Emissions Comment: **40 CFR Part 60, Subpart D, 60.42(a)(2). Title V Permit 0010006-003-AV, Condition B.4.(a)(2). Opacity standards do not apply during startup, shutdown, and malfunction per 40 CFR Part 60, Subpart A, 60.11(c).**	

Visible Emissions Limitation: Visible Emissions Limitation **2** of **2**

1. Visible Emissions Subtype: **VE**	2. Basis for Allowable Opacity: [x] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9 or COMS**	
5. Visible Emissions Comment: **Rule 62-210.700(1), F.A.C. allows excess emissions for up to 2 hours in any 24-hour period.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **1** of **5**

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Spectrum** Model Number: **Spectrum 41**	Serial Number: **0347-8005**
5. Installation Date: **10/21/2004**	6. Performance Specification Test Date: **12/17/2004**
7. Continuous Monitor Comment: **40 CFR Part 75.10(a)(4), 40 CFR Part 75.14(a), and 40 CFR Part 60.45(a).**	

Continuous Monitoring System: Continuous Monitor **2** of **5**

1. Parameter Code: **CO2**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Siemens** Model Number: **Ultramat 6E**	Serial Number: **N1-S8-0790**
5. Installation Date: **10/21/2004**	6. Performance Specification Test Date: **12/16/2004**
7. Continuous Monitor Comment: **40 CFR Part 75.10(a)(3)(i), 40 CFR Part 75.13(a), and 40 CFR Part 60.45(a).**	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **3** of **5**

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Monitor Labs** Model Number: **Ultra Flow 150** Serial Number: **1500232**	
5. Installation Date: **10/21/2004**	6. Performance Specification Test Date: **10/16/2004**
7. Continuous Monitor Comment: **40 CFR Part 75.10(a)(1 and 40 CFR Part 75.11(a).**	

Continuous Monitoring System: Continuous Monitor **4** of **5**

1. Parameter Code: **EM**	2. Pollutant(s): **NOX**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Thermo-Environmental Instruments, Inc.** Model Number: **42C** Serial Number: **0427508531**	
5. Installation Date: **10/21/2004**	6. Performance Specification Test Date: **12/16/2004**
7. Continuous Monitor Comment: **40 CFR Part 75.10(a)(2), 40 CFR Part 75.12(a) and (b), and 40 CFR Part 60.45(a).**	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **5** of **5**

1. Parameter Code: **EM**	2. Pollutant(s): **SO2**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Thermo-Environmental Instruments, Inc.** Model Number: **43C**	Serial Number: **0425408089**
5. Installation Date: **12/21/2004**	6. Performance Specification Test Date: **12/16/2004**
7. Continuous Monitor Comment: **40 CFR Part 75.10(a)(1), 40 CFR Part 75.11(a) and (g), and 40 CFR Part 60.45(a).**	

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

FACILITY INFORMATION

EMISSIONS UNIT INFORMATION
Section [1] of [2]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [x] Attached, Document ID: **Attachment A** [ ] Previously Submitted, Date

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [x] Attached, Document ID: **Attachment B** [ ] Previously Submitted, Date ____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [x] Attached, Document ID: **Section 5.0** Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [x] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [x] Not Applicable

6. Compliance Demonstration Reports/Records
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [x] Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   [ ] Attached, Document ID: _____ [x] Not Applicable

FACILITY INFORMATION

EMISSIONS UNIT INFORMATION
Section [1] of [2]

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications **N/A**

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:_
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

Attachment A includes a general arrangement profile, general arrangement plan, and isometric views of the DGS Unit 2 AQCS. All drawings are preliminary.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Lime, Hydrated Lime, and Circulating Dry Scrubber (CDS) By-Product Handling and Storage.

3. Emissions Unit Identification Number: **009**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C	**N/A**	**N/A**	**49**	☐ Yes ☒ No

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emission unit includes activities associated with the pneumatic handling and storage of lime, hydrated lime, and CDS by-product. Storage facilities include one lime storage silo, two lime day tanks, one hydrated lime storage silo, and one CDS by-product storage silo.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

   Medium Temperature (180°F <T <250°F) Fabric Filter (FF)

2. Control Device or Method Code(s): **017**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	**8,760** hours/year
6. Operating Capacity/Schedule Comment:	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: Dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Hydrated Lime Used in Circulating Dry Scrubber (CDS)**		
2. Source Classification Code (SCC): **3-05-016-15**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate: **6**	5. Maximum Annual Rate: **50,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Field 4, Maximum Hourly Rate, is approximate and based on 8,760 hours per year. Field 5, Maximum Annual Rate, is approximate.**		

Segment Description and Rate: Segment **2** of **2**

1. Segment Description (Process/Fuel Type): **Circulating Dry Scrubber (CDS) By-Product (Waste Ash)**		
2. Source Classification Code (SCC): **3-05-102-98**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate: **9**	5. Maximum Annual Rate: **82,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment: **Field 4, Maximum Hourly Rate, is approximate and based on 8,760 hours per year. Field 5, Maximum Annual Rate, is approximate.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM/PM10	**017**		**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **99+**
3. Potential Emissions: **1.3** lb/hour **6.0** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: **0.01 gr / dscf** Reference: **Engineering Estimate**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): **289** tons/year	8.b. Baseline 24-month Period: From: **1/2002** To: **12/2003**
9.a. Projected Actual Emissions (if required): **124** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

Railcar Unloading
(0.01 gr/dscf) x (1,382 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.12lb/hr
(0.12lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.52 ton/yr

Lime Silo
(0.01 gr/dscf) x (1,382 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.12lb/hr
(0.12 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.52 ton/yr

Lime Day Bin Silos – Total for Two Silos
(0.01 gr/dscf) x (2,000 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.18 lb/hr
(0.18 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.76 ton/yr

Lime Hydrator Scrubbers – Total for Two Scrubbers
0.68 lb/hr (Vendor Data)
(0.72 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 3.1 ton/yr

Hydrated Lime Silo
(0.01 gr/dscf) x (1,050 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.09 lb/hr
(0.09 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.39 ton/yr

CDS By-Product Silo
(0.01 gr/dscf) x (1,844 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.16 lb/hr
(0.16 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.69 ton/yr

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions of **N/A**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control: **99+**
3. Potential Emissions: **1.3** lb/hour **6.0** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): **N/A** to tons/year	
6. Emission Factor: **0.01 gr / dscf** Reference: **Engineering Estimate**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): **194** tons/year	8.b. Baseline 24-month Period: From: **1/2002** To: **12/2003**
9.a. Projected Actual Emissions (if required): **114** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions: **Note: PM_{10} emissions assumed equal to PM emissions.**

Railcar Unloading
(0.01 gr/dscf) x (1,382 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.12lb/hr
(0.12lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.52 ton/yr

Lime Silo
(0.01 gr/dscf) x (1,382 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.12lb/hr
(0.12 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.52 ton/yr

Lime Day Bin Silos – Total for Two Silos
(0.01 gr/dscf) x (2,000 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.18 lb/hr
(0.18 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.76 ton/yr

Lime Hydrator Scrubbers – Total for Two Scrubbers
0.68 lb/hr (Vendor Data)
(0.72 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 3.1 ton/yr

Hydrated Lime Silo
(0.01 gr/dscf) x (1,050 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.09 lb/hr
(0.09 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.39 ton/yr

CDS By-Product Silo
(0.01 gr/dscf) x (1,844 dscf/min) x (1 lb/7,000 gr) x (60 min/hr) = 0.16 lb/hr
(0.16 lb/hr) x (8,760 hr/yr) x (1 ton/2,000 lb) = 0.69 ton/yr

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions of **N/A**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [x] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9**	
5. Visible Emissions Comment: **62-296.320(4)(b), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor of **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date **N/A**

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date **N/A**

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Section 5.0** Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known):_____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [2] of [2]

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☒ Not Applicable

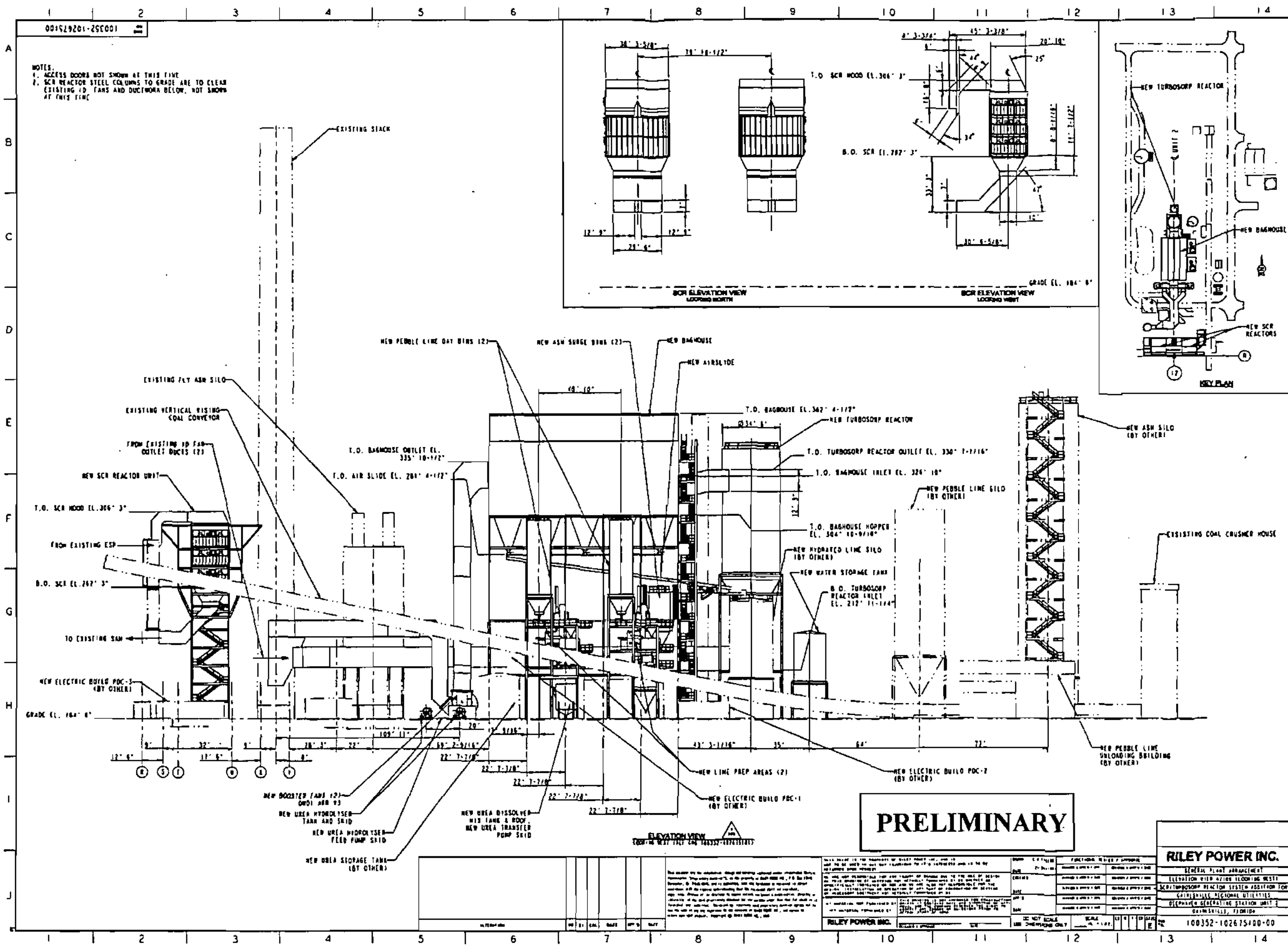
Additional Requirements for Title V Air Operation Permit Applications **N/A**

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

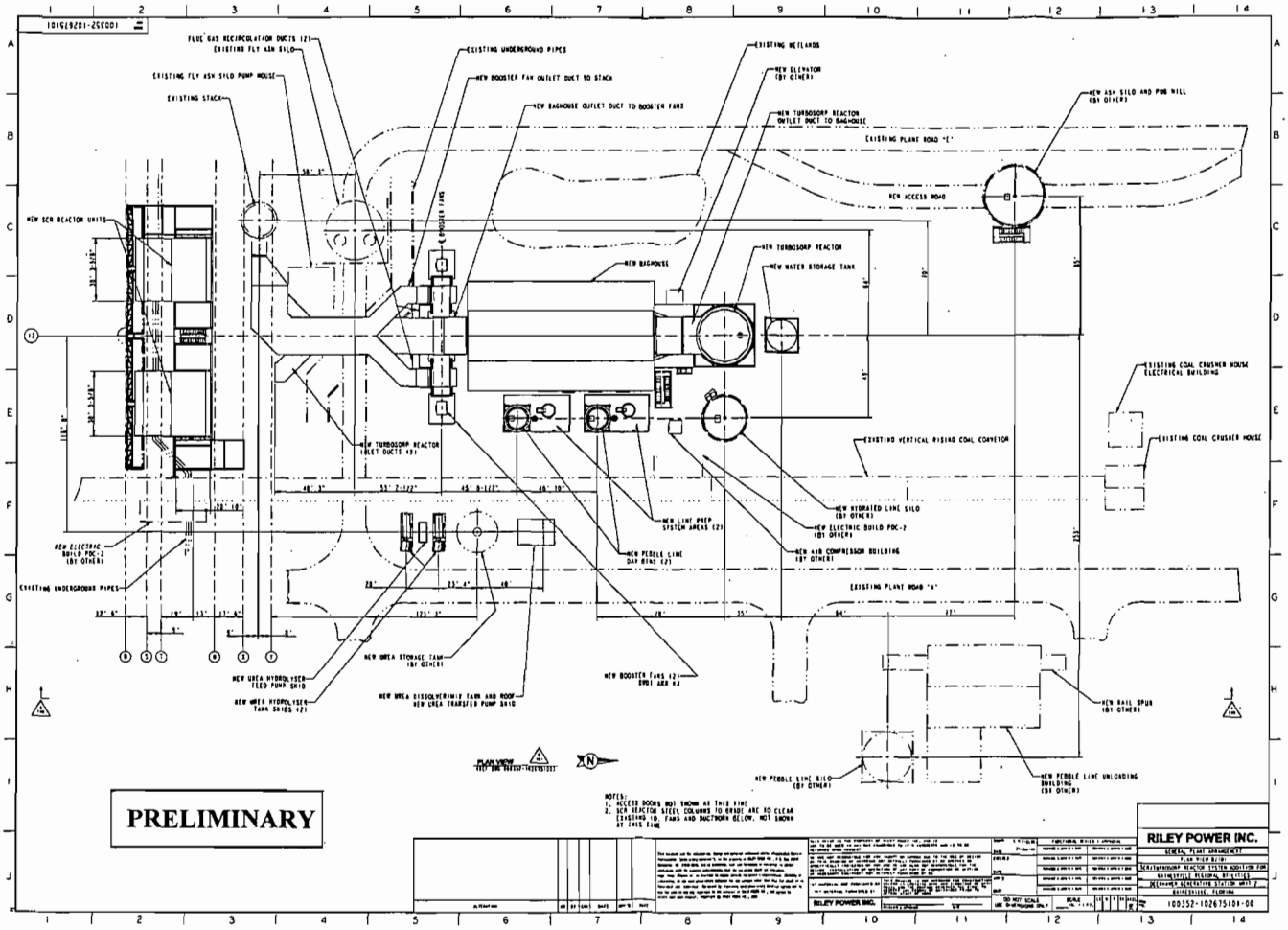
DGS UNIT 2 AQCS DIAGRAMS

GENERAL ARRANGEMENT PROFILE

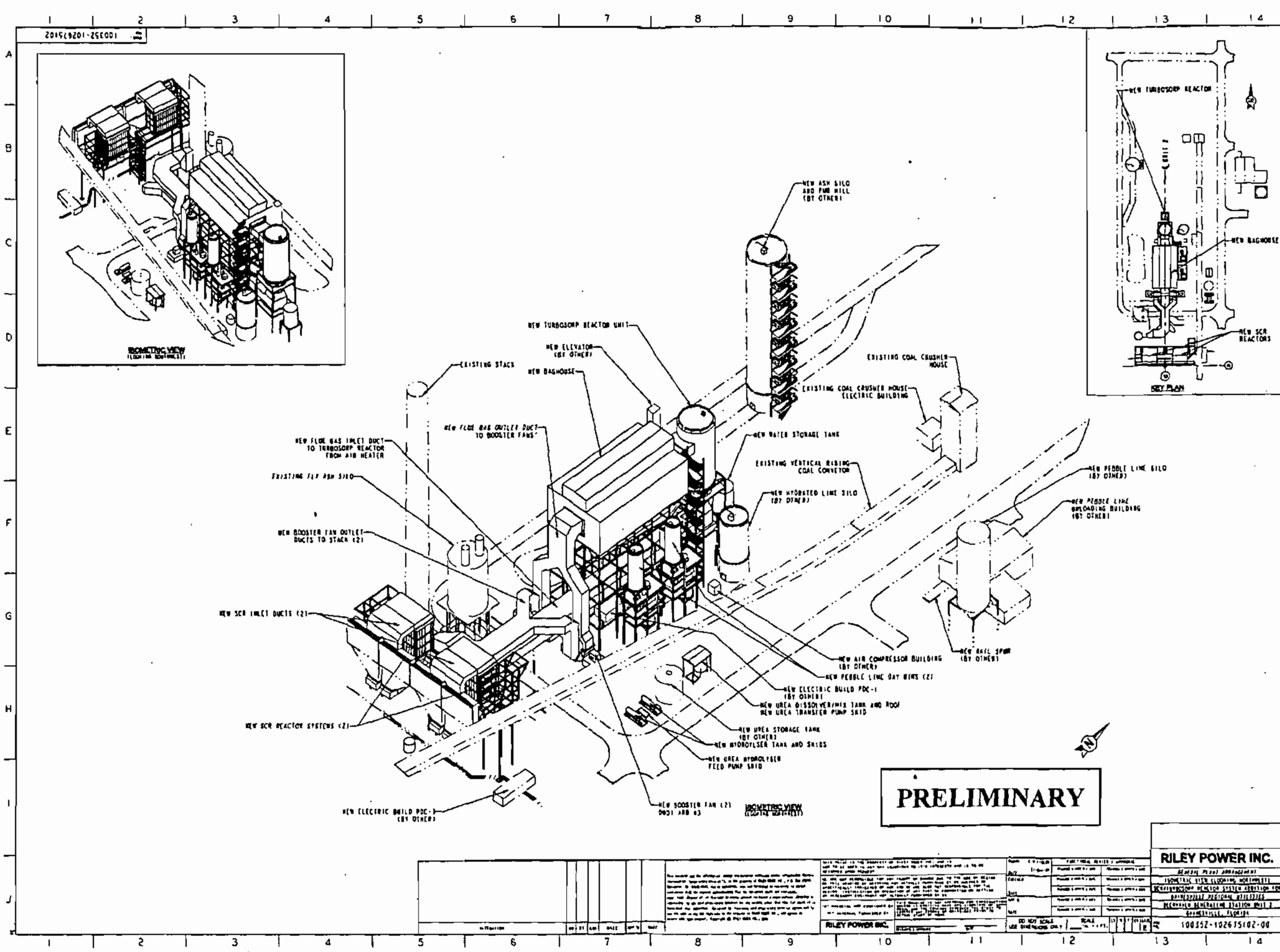


EXISTING STACK
EXISTING FLY ASH SILO
EXISTING VERTICAL RISING COAL CONVEYOR
NEW SCR REACTOR UNIT
FROM EXISTING ESP
TO EXISTING SAH
NEW BAGHOUSE
NEW AIRSLIDE
NEW TURBOSORP REACTOR
NEW ASH SILO (BY OTHERS)
NEW PEBBLE LIME SILO (BY OTHERS)
NEW HYDRATED LIME SILO (BY OTHERS)
NEW WATER STORAGE TANK
EXISTING COAL CRUSHER HOUSE
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHERS)
NEW LIME PREP AREAS (2)
NEW ELECTRIC BUILD PDC-2 (BY OTHERS)
NEW ELECTRIC BUILD PDC-1 (BY OTHERS)
GRADE EL. 164' 0"
SCR ELEVATION VIEW LOOKING NORTH
SCR ELEVATION VIEW LOOKING WEST
KEY PLAN
NEW SCR REACTORS
ELEVATION VIEW
PRELIMINARY
RILEY POWER INC.
GENERAL PLANT ARRANGEMENT
SCR/TURBOSORP REACTION SYSTEM ADDITION FOR
GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION UNIT 2
GAINESVILLE, FLORIDA
100352-102675400-00

GENERAL ARRANGEMENT PLAN


FLUE GAS RECIRCULATION DUCTS (2)
EXISTING FLY ASH SILO
EXISTING FLY ASH SILO PUMP HOUSE
EXISTING STACK
EXISTING UNDERGROUND PIPES
NEW BOOSTER FAN OUTLET DUCT TO STACK
NEW BAGHOUSE OUTLET DUCT TO BOOSTER FANS
EXISTING WETLANDS
NEW ELEVATOR (BY OTHER)
NEW TURBOSORP REACTOR OUTLET DUCT TO BAGHOUSE
NEW ASH SILO AND PUG MILL (BY OTHER)
EXISTING PLANT ROAD "E"
NEW ACCESS ROAD
NEW SCR REACTOR UNITS
NEW BAGHOUSE
NEW TURBOSORP REACTOR
NEW WATER STORAGE TANK
EXISTING COAL CRUSHER HOUSE ELECTRICAL BUILDING
EXISTING COAL CRUSHER HOUSE
EXISTING VERTICAL RISING COAL CONVEYOR
NEW TURBOSORP REACTOR INLET DUCTS (2)
NEW HYDRATED LIME SILO (BY OTHER)
NEW LIME PREP SYSTEM AREAS (2)
NEW ELECTRIC BUILD PDC-2 (BY OTHER)
NEW AIR COMPRESSOR BUILDING (BY OTHER)
NEW PEBBLE LIME DAY BINS (2)
NEW ELECTRIC BUILD PDC-2 (BY OTHER)
EXISTING UNDERGROUND PIPES
EXISTING PLANT ROAD "A"
NEW UREA HYDROLYSER FEED PUMP SKID
NEW UREA HYDROLYSER TANK SKIDS (2)
NEW UREA STORAGE TANK (BY OTHER)
NEW UREA DISSOLVER/MIX TANK AND ROOF
NEW UREA TRANSFER PUMP SKID
NEW BOOSTER FANS (2) (MID ARR #2)
NEW RAIL SPUR (BY OTHER)
NEW PEBBLE LIME SILO (BY OTHER)
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHER)
PLAN VIEW
NOTES:
1. ACCESS DOORS NOT SHOWN AT THIS TIME.
2. SCR REACTOR STEEL COLUMNS TO BRIDGE ARC TO CLEAR EXISTING I.D. FANS AND DUCTWORK BELOW, NOT SHOWN AT THIS TIME.
PRELIMINARY
RILEY POWER INC.
GENERAL PLANT ARRANGEMENT
PLAN VIEW (E/B)
SCRITSORSORP REACTOR SYSTEM ADDITION FOR
GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION UNIT 2
GAINESVILLE, FLORIDA
100352-102675101-00

ISOMETRIC VIEW OF DGS UNIT 2 AQCS



ISOMETRIC VIEW
NEW ASH SILO AND PUG MILL (BY OTHERS)
NEW TURBOSORP REACTOR UNIT
NEW ELEVATOR (BY OTHERS)
NEW BAGHOUSE
EXISTING STACK
NEW FLUE GAS OUTLET DUCT TO BOOSTER FANS
NEW FLUE GAS INLET DUCT TO TURBOSORP REACTOR FROM AIR HEATER
EXISTING FLY ASH SILO
NEW BOOSTER FAN OUTLET DUCTS TO STACK (2)
NEW SCR INLET DUCTS (2)
NEW SCR REACTOR SYSTEMS (2)
NEW ELECTRIC BUILD PDC-2 (BY OTHERS)
NEW BOOSTER FAN (2)
EXISTING COAL CRUSHER HOUSE
EXISTING COAL CRUSHER HOUSE ELECTRIC BUILDING
NEW WATER STORAGE TANK
EXISTING VERTICAL RISING COAL CONVEYOR
NEW HYDRATED LIME SILO (BY OTHERS)
NEW PEBBLE LIME SILO (BY OTHERS)
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHERS)
NEW RAIL SPUR (BY OTHERS)
NEW AIR COMPRESSOR BUILDING (BY OTHERS)
NEW PEBBLE LIME DAY BINS (2)
NEW ELECTRIC BUILD PDC-1 (BY OTHERS)
NEW UREA DISSOLVER/MIX TANK AND ROOF
NEW UREA TRANSFER PUMP SKID
NEW UREA STORAGE TANK (BY OTHERS)
NEW HYDROLYSER TANK AND SKIDS
NEW UREA HYDROLYSER FEED PUMP SKID
NEW TURBOSORP REACTOR
NEW BAGHOUSE
NEW SCR REACTORS
KEY PLAN
PRELIMINARY
RILEY POWER INC.
DO NOT SCALE
100352-102675102-00

APPENDIX B

FUEL CHARACTERISTICS

GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION

UNIT 2 FUEL CHARACTERISTICS*

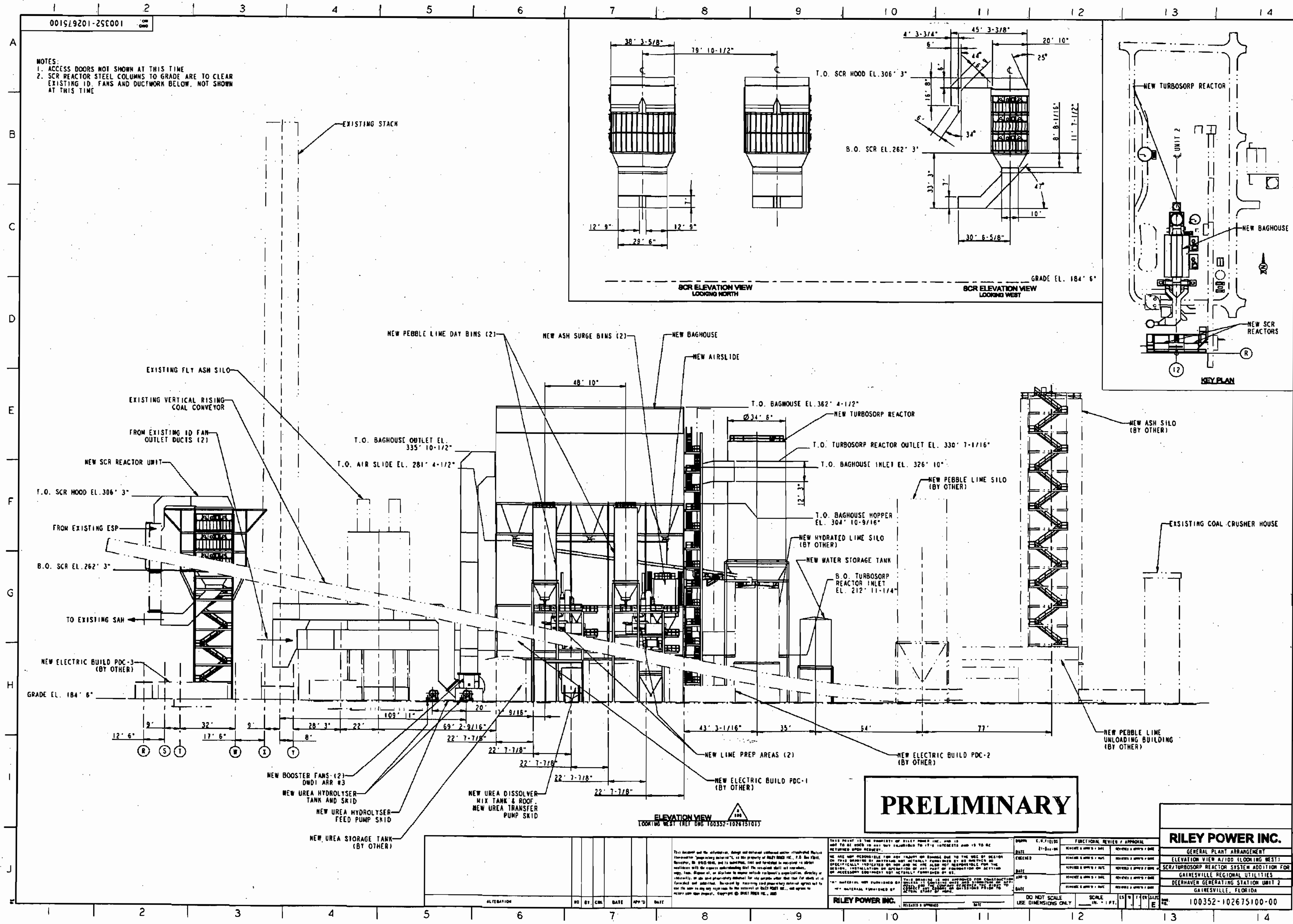
Constituent†	Units	Performance Coal	Design Coal	
			Min	Max
Ash	Weight %	9.0	4.5	17.0
Sulfur	Weight %	1.6	1.0	2.5
Heat Content	Btu/lb	12,791	11,000	14,500

*Table represents a range of coal characteristics based on potential candidate fuels from targeted producing regions that will be investigated for future procurement.
†Dry basis.

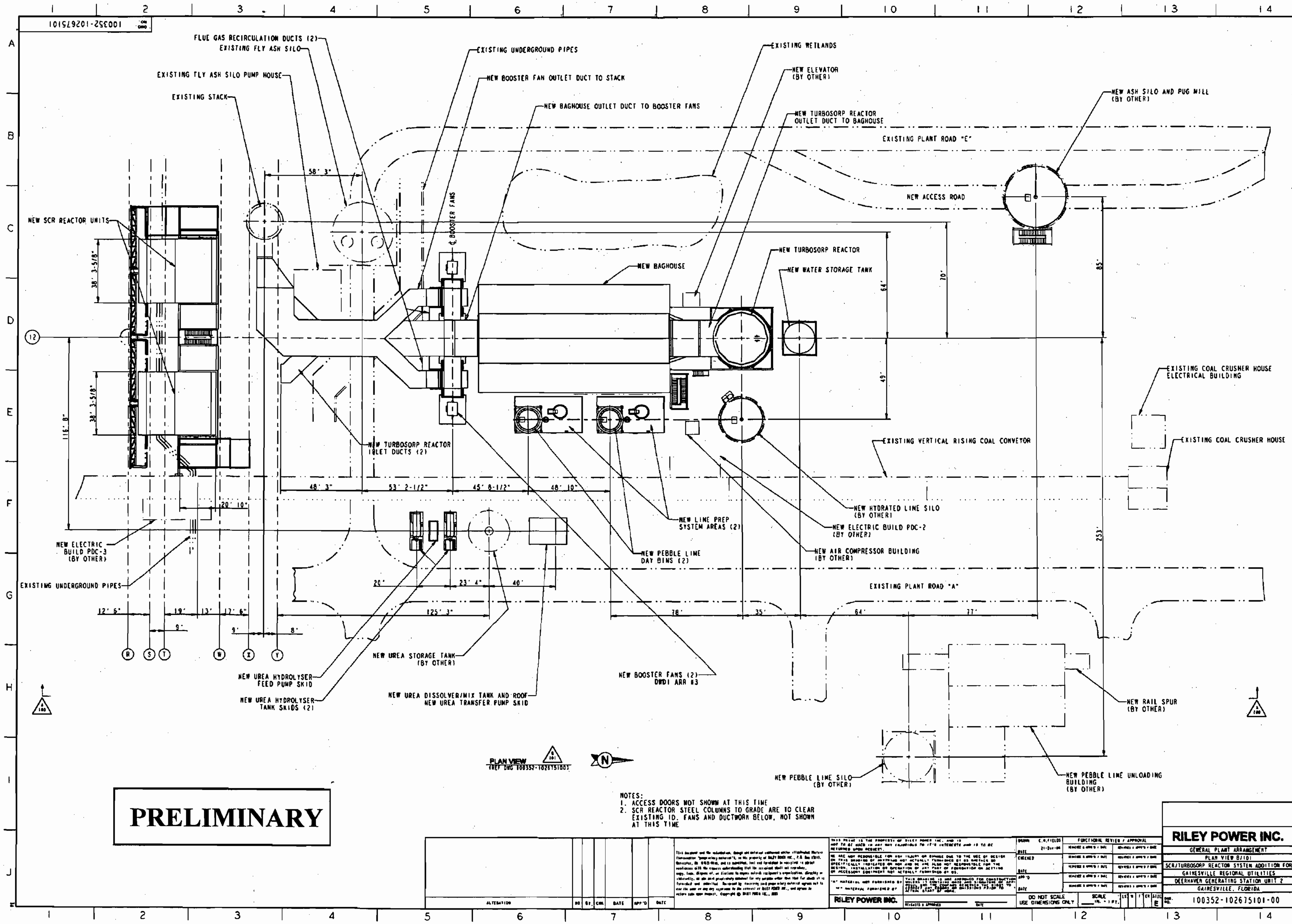
Source: GRU, 2007.

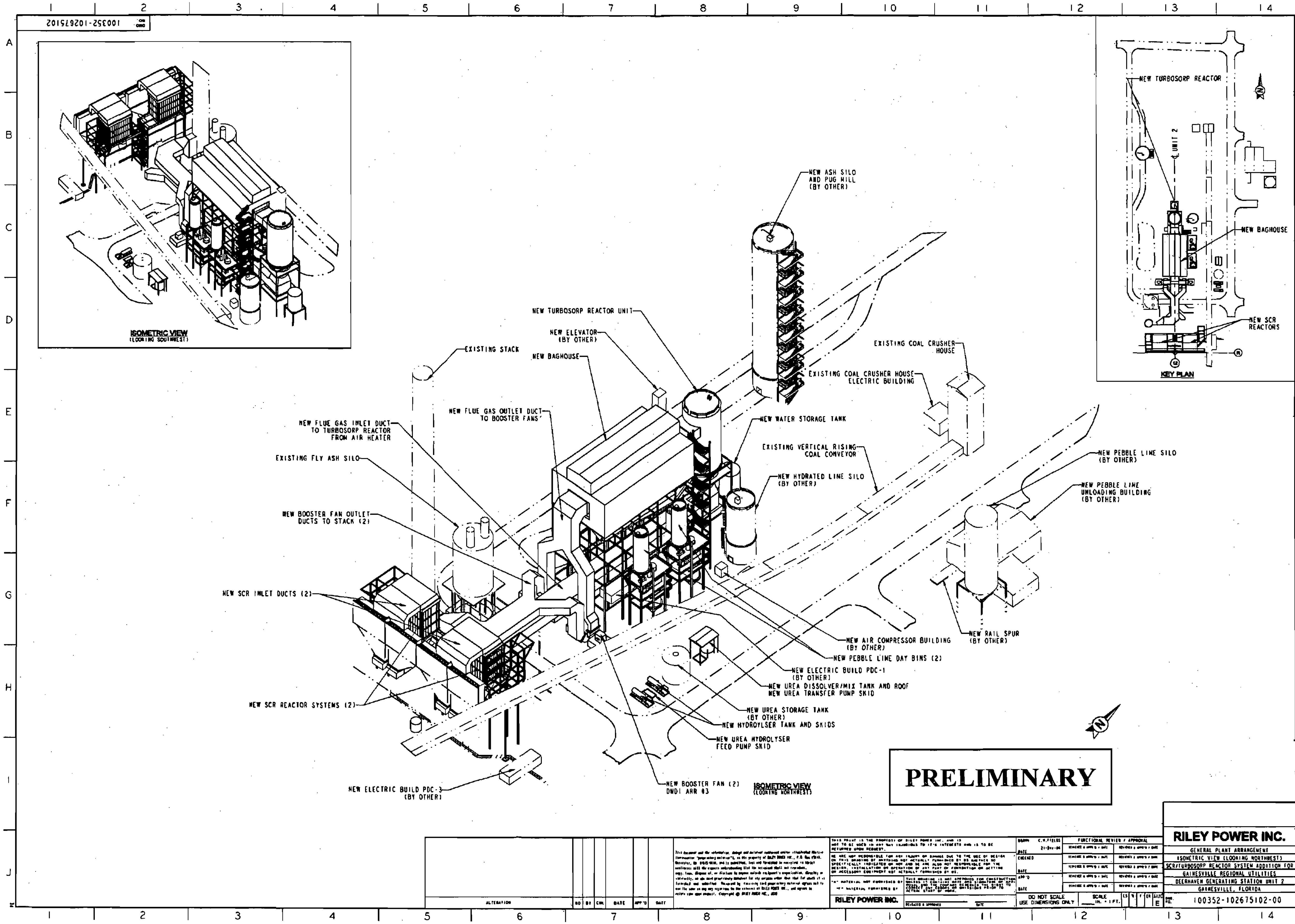
APPENDIX B

FUEL CHARACTERISTICS



DWG NO. 100352-102675100
NOTES:
1. ACCESS DOORS NOT SHOWN AT THIS TIME
2. SCR REACTOR STEEL COLUMNS TO GRADE ARE TO CLEAR EXISTING ID. FANS AND DUCTWORK BELOW. NOT SHOWN AT THIS TIME
EXISTING STACK
EXISTING FLY ASH SILO
EXISTING VERTICAL RISING COAL CONVEYOR
FROM EXISTING ID FAN OUTLET DUCTS (2)
NEW SCR REACTOR UNIT
T.O. SCR HOOD EL.306' 3"
FROM EXISTING ESP
B.O. SCR EL.262' 3"
TO EXISTING SAH
NEW ELECTRIC BUILD PDC-3 (BY OTHER)
GRADE EL. 184' 6"
NEW PEBBLE LIME DAY BINS (2)
NEW ASH SURGE BINS (2)
NEW BAGHOUSE
NEW AIRSLIDE
T.O. BAGHOUSE OUTLET EL. 335' 10-1/2"
T.O. AIR SLIDE EL. 281' 4-1/2"
48' 10"
T.O. BAGHOUSE EL.362' 4-1/2"
NEW TURBOSORP REACTOR
Ø34' 6"
T.O. TURBOSORP REACTOR OUTLET EL. 330' 7-1/16"
T.O. BAGHOUSE INLET EL. 326' 10"
12' 3"
T.O. BAGHOUSE HOPPER EL. 304' 10-9/16"
NEW HYDRATED LIME SILO (BY OTHER)
NEW WATER STORAGE TANK
B.O. TURBOSORP REACTOR INLET EL. 212' 11-1/4"
NEW PEBBLE LIME SILO (BY OTHER)
NEW ASH SILO (BY OTHER)
EXISTING COAL CRUSHER HOUSE
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHER)
NEW ELECTRIC BUILD PDC-2 (BY OTHER)
NEW ELECTRIC BUILD PDC-1 (BY OTHER)
NEW LIME PREP AREAS (2)
NEW BOOSTER FANS (2) DWDI ARR #3
NEW UREA HYDROLYSER TANK AND SKID
NEW UREA HYDROLYSER FEED PUMP SKID
NEW UREA STORAGE TANK (BY OTHER)
NEW UREA DISSOLVER MIX TANK & ROOF, NEW UREA TRANSFER PUMP SKID
12' 6"
9'
32'
17' 6"
9'
8'
28' 3"
22'
109' 11"
20'
1' 9/16"
69' 2-9/16"
22' 7-7/8"
43' 3-1/16"
35'
54'
77'
ELEVATION VIEW
LOOKING WEST (REF DWG 100352-102675101)
38' 3-5/8"
79' 10-1/2"
12' 9"
29' 6"
7'
SCR ELEVATION VIEW
LOOKING NORTH
4' 3-3/4"
45' 3-3/8"
6'
20' 10"
25°
T.O. SCR HOOD EL.306' 3"
16' 8"
34°
8' 8-1/16"
11' 7-1/2"
B.O. SCR EL.262' 3"
33' 3"
47°
10'
30' 6-5/8"
GRADE EL. 184' 6"
SCR ELEVATION VIEW
LOOKING WEST
NEW TURBOSORP REACTOR
UNIT 2
NEW BAGHOUSE
NEW SCR REACTORS
KEY PLAN
PRELIMINARY
RILEY POWER INC.
GENERAL PLANT ARRANGEMENT
ELEVATION VIEW A/100 (LOOKING WEST)
SCR/TURBOSORP REACTOR SYSTEM ADDITION FOR
GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION UNIT 2
GAINESVILLE, FLORIDA
DWG NO. 100352-102675100-00
DO NOT SCALE USE DIMENSIONS ONLY


100352-102675101
FLUE GAS RECIRCULATION DUCTS (2)
EXISTING FLY ASH SILO
EXISTING FLY ASH SILO PUMP HOUSE
EXISTING STACK
EXISTING UNDERGROUND PIPES
NEW BOOSTER FAN OUTLET DUCT TO STACK
NEW BAGHOUSE OUTLET DUCT TO BOOSTER FANS
EXISTING WETLANDS
NEW ELEVATOR (BY OTHER)
NEW TURBOSORP REACTOR OUTLET DUCT TO BAGHOUSE
NEW ASH SILO AND PUG MILL (BY OTHER)
EXISTING PLANT ROAD "E"
NEW ACCESS ROAD
NEW SCR REACTOR UNITS
℄ BOOSTER FANS
NEW BAGHOUSE
NEW TURBOSORP REACTOR
NEW WATER STORAGE TANK
58' 3"
38' 3-5/8"
38' 3-5/8"
116' 8"
70'
64'
49'
85'
253'
EXISTING COAL CRUSHER HOUSE ELECTRICAL BUILDING
EXISTING COAL CRUSHER HOUSE
EXISTING VERTICAL RISING COAL CONVEYOR
NEW TURBOSORP REACTOR INLET DUCTS (2)
48' 3"
53' 2-1/2"
45' 8-1/2"
48' 10"
20' 10"
NEW HYDRATED LIME SILO (BY OTHER)
NEW ELECTRIC BUILD PDC-2 (BY OTHER)
NEW LIME PREP SYSTEM AREAS (2)
NEW AIR COMPRESSOR BUILDING (BY OTHER)
NEW PEBBLE LIME DAY BINS (2)
NEW ELECTRIC BUILD PDC-3 (BY OTHER)
EXISTING UNDERGROUND PIPES
20'
23' 4"
40'
EXISTING PLANT ROAD "A"
12' 6"
19'
13'
17' 6"
9'
9'
8'
125' 3"
78'
35'
64'
77'
R S T W X Y
NEW UREA STORAGE TANK (BY OTHER)
NEW UREA HYDROLYSER FEED PUMP SKID
NEW UREA HYDROLYSER TANK SKIDS (2)
NEW UREA DISSOLVER/MIX TANK AND ROOF
NEW UREA TRANSFER PUMP SKID
NEW BOOSTER FANS (2) DWDI ARR #3
NEW RAIL SPUR (BY OTHER)
PLAN VIEW
(REF DWG 100352-102675100)
N
NEW PEBBLE LIME SILO (BY OTHER)
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHER)
NOTES:
1. ACCESS DOORS NOT SHOWN AT THIS TIME
2. SCR REACTOR STEEL COLUMNS TO GRADE ARE TO CLEAR EXISTING ID. FANS AND DUCTWORK BELOW, NOT SHOWN AT THIS TIME
PRELIMINARY
ALTERATION
RILEY POWER INC.
DRAWN C.W.FIELDS
21-Dec-06
CHECKED
APP'D
DATE
FUNCTIONAL REVIEW / APPROVAL
DO NOT SCALE USE DIMENSIONS ONLY
SCALE ___ IN. = 1 FT.
SIZE E
RILEY POWER INC.
GENERAL PLANT ARRANGEMENT
PLAN VIEW B/101
SCR/TURBOSORP REACTOR SYSTEM ADDITION FOR
GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION UNIT 2
GAINESVILLE, FLORIDA
DWG. NO. 100352-102675101-00


100352-102675102
ISOMETRIC VIEW
(LOOKING SOUTHWEST)
NEW TURBOSORP REACTOR
NEW BAGHOUSE
NEW SCR REACTORS
KEY PLAN
NEW ASH SILO AND PUG MILL (BY OTHER)
NEW TURBOSORP REACTOR UNIT
NEW ELEVATOR (BY OTHER)
NEW BAGHOUSE
EXISTING STACK
EXISTING COAL CRUSHER HOUSE
EXISTING COAL CRUSHER HOUSE ELECTRIC BUILDING
NEW WATER STORAGE TANK
NEW FLUE GAS INLET DUCT TO TURBOSORP REACTOR FROM AIR HEATER
NEW FLUE GAS OUTLET DUCT TO BOOSTER FANS
EXISTING VERTICAL RISING COAL CONVEYOR
EXISTING FLY ASH SILO
NEW HYDRATED LIME SILO (BY OTHER)
NEW PEBBLE LIME SILO (BY OTHER)
NEW PEBBLE LIME UNLOADING BUILDING (BY OTHER)
NEW BOOSTER FAN OUTLET DUCTS TO STACK (2)
NEW SCR INLET DUCTS (2)
NEW RAIL SPUR (BY OTHER)
NEW AIR COMPRESSOR BUILDING (BY OTHER)
NEW PEBBLE LIME DAY BINS (2)
NEW ELECTRIC BUILD PDC-1 (BY OTHER)
NEW UREA DISSOLVER/MIX TANK AND ROOF
NEW UREA TRANSFER PUMP SKID
NEW SCR REACTOR SYSTEMS (2)
NEW UREA STORAGE TANK (BY OTHER)
NEW HYDROLYSER TANK AND SKIDS
NEW UREA HYDROLYSER FEED PUMP SKID
NEW ELECTRIC BUILD PDC-3 (BY OTHER)
NEW BOOSTER FAN (2) DWDI ARR #3
ISOMETRIC VIEW
(LOOKING NORTHWEST)
PRELIMINARY
ALTERATION
NO
BY
CHK
DATE
APP'D
DATE
THIS PRINT IS THE PROPERTY OF RILEY POWER INC. AND IS NOT TO BE USED IN ANY WAY INJURIOUS TO IT'S INTERESTS AND IS TO BE RETURNED UPON REQUEST.
RILEY POWER INC.
DRAWN C.W.FIELDS
DATE 21-Dec-06
CHECKED
DATE
APP'D
DATE
FUNCTIONAL REVIEW / APPROVAL
DO NOT SCALE
USE DIMENSIONS ONLY
SCALE ___ IN. = 1 FT.
SIZE E
RILEY POWER INC.
GENERAL PLANT ARRANGEMENT
ISOMETRIC VIEW (LOOKING NORTHWEST)
SCR/TURBOSORP REACTOR SYSTEM ADDITION FOR
GAINESVILLE REGIONAL UTILITIES
DEERHAVEN GENERATING STATION UNIT 2
GAINESVILLE, FLORIDA
DWG. NO. 100352-102675102-00

GRU℠
More than Energy™

GAINESVILLE REGIONAL UTILITIES

STRATEGIC PLANNING

Via Overnight Delivery

February 22, 2007

Mr. Jeff Koerner
Florida Dept. of Environmental Protection
Bureau of Air Regulation
Air Permitting North
111 So. Magnolia Drive
Tallahassee, FL 32301

Re: Gainesville Regional Utilities
Deerhaven Generating Station – Unit 2
Air Construction Permit Application - Air Quality Control System Addition

Dear Mr. Koerner:

Enclosed are four (4) copies of the air construction permit application for the above-referenced project.

If you have any questions pertaining to this application or the project please contact me at jonynasye@gru.com or 352-393-1284. If I am not available please contact Mr. Tom Davis (ECT) at Tdavis@ectinc.com or 352-332-0444 or Mr. Tim Bates at Batestc@gru.com or 352-393-1751.

Sincerely,

Yolanta E. Jonynas

Yolanta E. Jonynas
Licensing Manager

xc: C. Allen, GRU
T. Bates, GRU
D. Beck, GRU
R. Embry, GRU, wo. enc.
C. Kirts, FDEP – NE District
R. Klemans, GRU, wo. enc.
D. Mallery, GRU, wo. enc.
D. Moffet, GRU
R. Nance, GRU, wo. enc.
E. Walters, GRU, wo. enc.
DH2AQCS1.0

DH2AQCSACPermitapp022107

DEERHAVEN GENERATING STATION

UNIT 2 AIR QUALITY CONTROL SYSTEM PROJECT

SELECTIVE CATALYTIC REDUCTION DRY FLUE GAS DESULFURIZATION FABRIC FILTER

APPLICATION FOR AIR CONSTRUCTION PERMIT

Prepared for:

GRU™
More than Energy™

Gainesville, Florida

Prepared by:

ECT
Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 051174-0700

February 2007