OglethorpePower

Oglethorpe Power Corporation
2100 East Exchange Place
Tucker, GA 30084-5336
phone 770-270-7600
fax 770-270-7872
An Electric Membership Cooperative

June 28, 2010

Mr. Eric Cornwell
Georgia Environmental Protection Division
Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, GA 30354

Certified Mail/Return Receipt#
70100290000026344772

Dear Mr. Cornwell:

Subject: Oglethorpe Power Corporation – Warren County PSD Permit Application Supplemental PM_{10} Surrogacy Submittal

Oglethorpe Power Corporation (Oglethorpe) has proposed to construct a nominal 100 megawatt (MW) biomass-fueled electric generating facility in Warren County, Georgia. A PSD permit application was first submitted in August 2009 requesting authorization to construct the facility, followed by a re-submittal in October 2009, with a slightly revised worst-case load modeling analysis submitted in March 2010. [1]

In the original August 2009 submittal, Oglethorpe asserted that the dispersion modeling analyses performed for particulate matter less than 10 microns in aerodynamic diameter (PM_{10}) were an appropriate surrogate for particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$). This assertion was based on the final rule implementing the $PM_{2.5}$ regulations effective July 2008, which largely restated the prior 1997 surrogacy policy.[2,3] Under the 2008 $PM_{2.5}$ NSR final rule, sources in SIP-approved states (as Georgia) could continue to use the surrogacy approach until May 2011.

At around the time of the initial submittal, EPA began to suggest that additional detail would be needed to use the surrogacy policy.[4] As acknowledged in EPA technical documents, there remain significant reasons for usage of surrogacy. For example, in a March 2010 EPA memo outlining potential steps to address $PM_{2.5}$ NAAQS modeling, EPA notes that double-counting of impacts from nearby sources at

---

[1] Letter to Mr. Eric Cornwell (Georgia EPD) from Mr. Doug Fulle (Oglethorpe), March 5, 2010. This submittal included a slightly revised worst-case load analysis and revised PM_{10} modeling reflective of the new worst-case load condition.

[2] 73 Federal Register 28321, *Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers ($PM_{2.5}$)*, May 16, 2008.

[3] Memorandum from John Seitz, Director, U.S. EPA Office of Air Quality Planning & Standards, *Interim Implementation of New Source Review Requirements for $PM_{2.5}$* (Oct. 27, 1997).

[4] *In the Matter of: Louisville Gas and Electric Company, Trimble County, Kentucky, Title V/PSD Air Quality Permit, #V-02-043, Revisions 2 and 3, Issued by Kentucky Division for Air Quality*, Title V Petition No. IV-2008-3, signed August 12, 2009 by Lisa P. Jackson, EPA Administrator. The Title V petition order was followed by an August 21, 2009 letter from EPA Region 4 transmitting officially transmitting the order to Kentucky.

ambient monitoring locations is a concern and that there is uncertainty regarding the statistical form.[5] Further, EPA has yet to finalize an approved test method for measuring $PM_{2.5}$ condensable emissions from sources; since condensable emissions represent a significant portion of $PM_{2.5}$, and since the existing test methods have wide variability, existing test data on $PM_{2.5}$ emissions (where available) must be viewed suspectly.

Given the uncertain and evolving nature of $PM_{2.5}$ requirements, Oglethorpe met with Georgia EPD on May 4, 2010 to determine what additional information, if any, would be needed for Georgia EPD to satisfactorily address the additional $PM_{2.5}$ steps advocated by EPA.[6] Note that Oglethorpe does not believe that any of these steps are necessarily required under the regulations currently in effect.

This letter addresses two areas for PM_{10} surrogacy. First, compliance with the National Ambient Air Quality Standards (NAAQS) is addressed. Second, supplemental information for Best Available Control Technology (BACT) is provided.

SUPPLEMENTAL $PM_{2.5}$ MODELING

Based on the May 2010 meeting with Georgia EPD, the following approach was recommended to address $PM_{2.5}$ while the PM_{10} surrogacy policy remains in effect. Consistent with procedures in Alabama, North Carolina[7] and South Carolina, due to known deficiencies in the offsite inventory data and likely double-counting with ambient monitor data, potential $PM_{2.5}$ impacts are addressed by comparing impacts from the proposed source plus background. Thus, the steps in the modeling analysis are as follows.

- ▲ First, assess project impacts against the lowest of the three proposed Significant Impact Levels (SIL). If below, stop. If above, continue.
- ▲ Determine if an existing monitor provides representative or conservative background data. If so, continue. If not, contact Georgia EPD.
- ▲ Determine the 2007-2009 ambient monitor $PM_{2.5}$ background value.
- ▲ Compare the sum of $PM_{2.5}$ background and project impacts to the $PM_{2.5}$ NAAQS.

Unless otherwise noted, modeling methodologies employed in the analysis remain the same as those utilized in the original October 2009 submittal and/or based on the revised load analysis submitted in March 2010.[8] As requested by Georgia EPD, all AERMOD modeling performed for this submittal uses the same AERMOD version as used for the original submittal (07026).

A CD containing all of the supplemental $PM_{2.5}$ modeling analyses files is included as an attachment to this letter.

---

[5] Memo from Stephen Page (EPA OAQPS Director) to various EPA staff, *Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$* NAAQS, March 23, 2010.

[6] Meeting attended by Georgia EPD, Oglethorpe and Trinity. Georgia EPD staff attending were Eric Cornwell, Furqan Shaikh, Anna Aponte, Jimmy Johnston, and Pete Courtney.

[7] http://daq.state.nc.us/permits/mets/Modeling_PM25.pdf

[8] Letter to Mr. Eric Cornwell (Georgia EPD) from Mr. Doug Fulle (Oglethorpe), March 5, 2010.

$PM_{2.5}$ SIGNIFICANCE ANALYSES

The $PM_{2.5}$ Significance Analysis was conducted using the worst-case load analysis parameters for the proposed biomass boiler (based on the PM_{10} load analysis) as presented in the March 5, 2010 revised load analysis. All other modeled stack exhaust parameters and locations remain the same as included in the PM_{10} modeling analysis.

In the permit application (October 2009) emissions calculations, Oglethorpe conservatively assumed that $PM_{2.5}$ was equal to PM_{10} for many sources. As part of the $PM_{2.5}$ modeling analyses, Oglethorpe has reduced this conservatism and included additional $PM_{2.5}$ speciations for several material handling baghouses and the mobile grinder. Non-baghouse controlled material handling and storage units, cooling tower, and haul road $PM_{2.5}$ speciations were included in the original October 2009 submittal. Table 1 presents the revised project $PM_{2.5}$ emissions rates and the basis for revised values.

TABLE 1. WARREN FACILITY $PM_{2.5}$ EMISSIONS

Unit ID	Source	$PM_{2.5}$ Emissions (lb/hr)	Notes
B001	Biomass Boiler	23.92	
CT01	Cooling Tower	0.14	
BM01	Biomass Unloading Area	1.17	1
BM02	Fuel Processing Building	1.19	1
BM03	Transfer Tower	0.65	1
BM04	Boiler Fuel Feed System	0.51	1
BM05	Sorbent Silo	2.54E-02	1
BM06	Boiler Bed Sand Silo	2.54E-02	1
BM07	Sand Day Silo	2.54E-02	1
BM08	Bottom Ash Covered Storage	3.81E-02	1
BM09	Fly Ash Silo	3.81E-02	1
BM10	Longwood Mobile Chipping Grinder	0.16	
TX01	Raw Material Unloading/Truck Dump (DMP1 - DMP6)	6.69E-04	
TX02	Dump (DMP1 - DMP6) to Hopper (HPR1 - HPR6)	2.23E-04	
TX03	Transfer Belt Conveyors (CV05, CV06) to Radial Stacking Belt Conveyors (CV07, CV08)	8.09E-05	
TX04	Radial Stacking Belt Conveyor (CV07) to Radial Stock Pile (SP01)	1.19E-04	
TX05	Radial Stacking Belt Conveyor (CV08) to Radial Stock Pile (SP02)	1.19E-04	
TX06	Radial Stock Pile (SP01) to Reclaim Chain Conveyor (CV09)	5.95E-05	
TX07	Radial Stock Pile (SP02) to Reclaim Chain Conveyor (CV10)	5.95E-05	
TX08	Reclaim Chain Conveyor (CV09) to Reclaim Belt Conveyor (CV11)	2.02E-05	
TX09	Reclaim Chain Conveyor (CV10) to Reclaim Belt Conveyor (CV12)	2.02E-05	
TX10	Reclaim Belt Conveyor (CV11) to Stockout Belt Conveyor (CV13)	2.02E-05	
TX11	Reclaim Belt Conveyor (CV12) to Stockout Belt Conveyor (CV13)	2.02E-05	
TX12	Longwood Material Unloading	3.72E-04	
GRN3	Longwood Mobile Chipping Grinder	0.00E+00	2
SP01	Radial Stock Pile 1	0.018	
SP02	Radial Stock Pile 2	0.018	
SP03	Longwood Storage	0.016	
ROADS	Paved Roads (Total)	0.32	

1. Based on $PM_{2.5}$ outlet rate of 0.003 gr/sf.
2. All material not captured by baghouse draft is presumed to be larger than 2.5 microns.

Using the emission rates shown in Table 1 and the stack parameters included in the March 2010 supplemental load analysis/PM_{10} analysis, Oglethorpe conducted a nearfield $PM_{2.5}$ Significance Analysis. Table 2 presents the results of the $PM_{2.5}$ Significance Analysis for each averaging period and compares the resulting impacts to the minimum of the proposed $PM_{2.5}$ SILs of 1.2 μg/m³ for 24-hour averaging period and 0.3 μg/m³ for annual averaging period.[9]

TABLE 2. $PM_{2.5}$ NEARFIELD SIGNIFICANCE RESULTS

Averaging Period	Year	UTM East (km)	UTM North (km)	Max Conc. (μg/m³)	Proposed SIL (μg/m³)	Exceeds SIL?	SIA (km)
24-Hour	1989	348.03	3,696.43	5.84	*1.2*	Yes	7.24
	1990	348.00	3,696.50	5.86	*1.2*	Yes	
	1991	348.03	3,696.43	5.99	*1.2*	Yes	
	1992	348.11	3,696.30	6.75	*1.2*	Yes	
	1993	348.08	3,696.35	5.96	*1.2*	Yes	
Annual	1989	348.81	3,696.96	1.14	*0.3*	Yes	1.70
	1990	348.01	3,696.48	1.10	*0.3*	Yes	
	1991	348.00	3,696.50	1.34	*0.3*	Yes	
	1992	348.00	3,696.50	1.27	*0.3*	Yes	
	1993	348.81	3,696.96	1.05	*0.3*	Yes	

As shown in Table 1, predicted $PM_{2.5}$ impacts exceed the proposed nearfield SILs, requiring further analysis to demonstrate compliance with NAAQS (no Class II Increment for $PM_{2.5}$ has been established; thus, Increment is not addressed in this analysis).

AMBIENT MONITORING

Under current EPA policies, the maximum impacts due to the emissions increases from a project are also assessed against monitoring *de minimis* levels to determine whether pre-construction monitoring should be considered. EPA has proposed a minimum 24-hour $PM_{2.5}$ *de minimis* concentration of 2.3 μg/m³; no concentration has been proposed for annual $PM_{2.5}$.[10] If either the predicted modeled impact from the project or the existing ambient concentration is less than the monitoring *de minimis* concentration, the permitting agency has the discretionary authority to exempt an applicant from pre-construction ambient monitoring. Both the project impacts and the ambient concentrations are above the proposed 2.3 μg/m³ level.

For the pollutants that exceed the monitoring *de minimis* levels, in this case, $PM_{2.5}$, Oglethorpe requests that Georgia EPD waive the pre-construction monitoring requirements of 40 CFR 52.21(m) for this

[9] Per guidance from Georgia EPD, the minimum of the proposed SILs from the EPA's September 21, 2007 proposed rule for Class II areas was considered.

[10] Per guidance from Georgia EPD, the minimum of the proposed *de minimis* concentrations from the EPA's September 21, 2007 proposed rule for Class II areas was considered.

project since background concentration data developed from existing monitors are already available from Georgia EPD and provide suitable estimates of background concentrations.

Oglethorpe evaluated three potential nearby existing $PM_{2.5}$ monitors to determine the most appropriate indicator of air quality at the proposed Warren site. A comparison of characteristics for the three sites is shown in Table 3. While all three monitors are nearly equidistant from the Warren site, based on review and comparison of site characteristics Oglethorpe determined that the Augusta Bungalow Road facility is the most appropriate $PM_{2.5}$ monitor to represent Warren. Additionally, Oglethorpe has determined that the Augusta Bungalow Road monitor represents a conservative but reasonable fit to the Warren site (i.e., Augusta Bungalow Road would show monitored values equal to or greater than the Warren site)

First, the other Augusta monitor (Medical College of Georgia [MCOG]) is located in a significant urban area, which is clearly not representative of a small town like Warren. The MCOG monitor would be expected to be significantly impacted by urban $PM_{2.5}$ sources.

The other two monitors, Bungalow Road and Sandersville, are both suburban monitors and require further review. While the Sandersville monitor is slightly closer than Bungalow Road, the Sandersville monitor was sited to measure the impacts from the many nearby kaolin facilities and quarries, and thus is likely impacted significantly by those localized sources. In contrast, the Bungalow Road monitor is not impacted by either significant adjacent industry sources or high numbers of mobile sources. Thus, Bungalow Road is the most representative monitor for Warren. While most representative, the Bungalow Road does likely still have some impact from the Augusta metropolitan statistical area (MSA), making Bungalow Road a conservative background estimate for Warren.

Figures illustrating the monitor locations and nearby sources are included in the attachment while Table 3 presents information on the monitors evaluated for similarity to the proposed Warren facility location.

TABLE 3. $PM_{2.5}$ AMBIENT MONITORS IN VICINITY OF PROPOSED WARREN FACILITY

Monitor Location	Monitor Type	Location Type	Monitoring Objective	Start Date	Distance to Facility (km)
Sandersville	FRM	Suburban	Population Exposure	1/30/99	49.9
Augusta - Bungalow Rd.	FRM	Suburban	Population Exposure (Augusta-Aiken,GA MSA)	2/8/99	56.5
Augusta - Medical College of GA	FRM	Urban	Population Exposure (Augusta-Aiken,GA MSA)	1/1/99	59.7

Georgia EPD provided Oglethorpe with quality-assured 2007-2009 $PM_{2.5}$ background data from the Augusta Bungalow Road monitor location.[11] The data were recorded every 3rd day and analyzed using the Federal Reference Method (FRM). The form of the $PM_{2.5}$ NAAQS standard requires the 98th percentile of the 24-hour concentrations (averaged over 3 years) to be used for background. The annual background value is based on the 3-year average of the arithmetic mean. As such, Oglethorpe extracted the 2nd High value (roughly the 98th percentile considering the every 3rd day frequency) for each year and

[11] Email from Janet Aldredge (Georgia EPD) to Jon Hill (Trinity Consultants), May 18, 2010.

averaged those values in order to determine the appropriate 24-hour background value. The annual background concentration was determined from the 3-year average of the arithmetic mean.

For the Augusta Bungalow Road monitor, the ambient background concentrations are 13.5 $\mu g/m^3$ and 29.8 $\mu g/m^3$ for annual and 24-hour average concentrations, respectively. These values are added to $PM_{2.5}$ impacts predicted in the modeling analysis conducted to demonstrate compliance with the NAAQS.

NEARFIELD NAAQS ANALYSIS

The $PM_{2.5}$ NAAQS analysis included the potential emissions from all proposed emission units at the Warren facility. Impacts attributable to facility-wide emissions were then combined with the background values.

The average of the annual concentrations predicted over each of the meteorological years was compared to the NAAQS annual standard for $PM_{2.5}$. For 24-hr $PM_{2.5}$, the form is 98th percentile of the daily maximum averaged across the years of meteorological data. This form is most accurately represented as the highest 8th high (H8H), and AERMOD was specifically modified to include this option to accommodate the $PM_{2.5}$ 24-hr NAAQS (note this option was included as an additional output in the significance model run to avoid the need for a separate model run of AERMOD).

The results of the $PM_{2.5}$ NAAQS analysis are shown in Table 4. The values shown in the table represent the highest eighth-high (H8H) value among the 24-hour periods for each of the years in the five-year period modeled.

TABLE 4. $PM_{2.5}$ NAAQS RESULTS

Averaging Period	Year	UTM East (km)	UTM North (km)	Modeled Conc. ($\mu g/m^3$)	Bkg. Conc. ($\mu g/m^3$)	Total Ambient Conc.[2] ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds NAAQS?
24-Hour	1989	348.01	3,696.48	4.39	29.8	34.22	35	
	1990	348.03	3,696.43	4.13	29.8	33.96	35	
	1991	348.03	3,696.43	4.69	29.8	34.52	35	
	1992	348.03	3,696.43	4.80	29.8	34.63	35	
	1993	348.00	3,696.50	4.43	29.8	34.26	35	
	Average					34.32	35	No
Annual	1989	348.81	3,696.96	1.14	13.5	14.64	15	
	1990	348.01	3,696.48	1.10	13.5	14.60	15	
	1991	348.00	3,696.50	1.34	13.5	14.85	15	
	1992	348.00	3,696.50	1.27	13.5	14.77	15	
	1993	348.81	3,696.96	1.05	13.5	14.55	15	
	Average					14.68	15	No

As Table 4 shows, the modeling analyses predict ambient concentrations below the 24-hour and annual $PM_{2.5}$ NAAQS.

SUPPLEMENTAL $PM_{2.5}$ BACT

As indicated earlier, recent EPA guidance suggests that surrogacy demonstrations show "that the degree of control of $PM_{2.5}$ by the control technology selected in the PM_{10} BACT analysis will be at least as effective as the technology that would have been selected if a BACT analysis specific to $PM_{2.5}$ emissions had been conducted."[12] EPA specifically stated that the BACT comparative requirement is met "if the control technology selected through the PM_{10} BACT analysis is physically the same as what is selected through the $PM_{2.5}$ BACT analysis in all respects that may affect control technology."

As presented in the BACT analysis in the original PSD application submitted for the project, $PM_{2.5}$ was already considered in selection of control technologies and corresponding emissions limits. In fact, PM, PM_{10} and $PM_{2.5}$ were evaluated collectively and the same control technologies selected to control PM and PM_{10} emissions to proposed BACT levels for PM and PM_{10} were the same technologies that were considered appropriate to control $PM_{2.5}$ emissions to proposed BACT levels. Nevertheless, this section provides additional information substantiating that the original control technologies selected for BACT for PM_{10} emissions are identical to the control technologies that would be selected in a BACT evaluation specifically for $PM_{2.5}$.

BIOMASS BOILER BACT ANALYSIS

The bubbling fluidized bed boiler will fire woody biomass as the primary fuel at a short-term maximum heat input rate of 1,399 MMBtu/hr. Biodiesel, possibly blended with ultra low sulfur diesel, will be used for boiler startups.

Uncontrolled $PM_{2.5}$ emissions from the biomass boiler consist of two components, filterable and condensable particulate matter. The filterable portion consists primarily of fly ash and byproducts of sorbent injection. The condensable portion consists primarily of acid gases and to a lesser extent high molecular weight organic compounds. Filterable $PM_{2.5}$ is a subset of filterable PM_{10}. Due to the small size of condensable particulate matter, emissions of condensable PM_{10} are assumed to be equal to $PM_{2.5}$.

Filterable Particulate Matter

The majority of uncontrolled PM emissions are filterable PM. As indicated in the BACT evaluation in the original application submitted for this project, the most effective control technology for filterable PM_{10} is a fabric filter, which was selected as the proposed control technology for the biomass boiler. Based on published information provided by EPA, approximately 85 percent of both PM_{10} and $PM_{2.5}$ are controlled by fabric filtration systems, indicating that fabric filtration systems control both PM_{10} and $PM_{2.5}$ at a similar effectiveness.[13] As discussed in the permit application submitted for this project, the fabric filtration system proposed for this project would provide the highest control efficiency of any of the filterable PM technologies selected and was proposed as BACT. Thus, the appropriateness of using filterable PM_{10} as a surrogate for filterable $PM_{2.5}$ has been demonstrated.

---

[12] *In the Matter of: Louisville Gas and Electric Company, Trimble County, Kentucky, Title V/PSD Air Quality Permit, #V-02-043, Revisions 2 and 3, Issued by Kentucky Division for Air Quality*, Title V Petition No. IV-2008-3, signed August 12, 2009 by Lisa P. Jackson, EPA Administrator.

[13] U.S. EPA, AP-42, Fifth Edition, Volume 1, Section 1.6, Table 1.6-1, September 2003.

Condensable Particulate Matter

As indicated above, the condensable fraction of PM is considered equivalent for both PM_{10} and $PM_{2.5}$ and is emitted primarily in the form of acid gases and to a lesser extent low volatility hydrocarbons. Condensable acid gases emissions, primarily comprised of sulfuric acid mist (H_2SO_4) are quite low compared to other fossil fuel technologies due to the relatively low sulfur concentration present in the biomass fuel. Hydrocarbons are comprised of VOCs. As presented in the original submittal, VOC are maintained quite low via good combustion and do not reach the emission rate required to trigger PSD permitting.

As presented in the permit application for this project, dry sorbent injection (DSI) operating in series with a baghouse was selected as BACT for sulfur dioxide (SO_2). DSI with baghouse is also a highly effective technology for control of acid gases and reduces emissions of H_2SO_4 to below the rate required to trigger PSD permitting. DSI technology involves injection of an alkaline sorbent in the flue gas exhaust ductwork where it reacts with acid gases. Additional removal is achieved in the baghouse where acid gases react on the "cake" of the fabric filter, which contains significant amounts of unreacted sorbent. Solid salts formed in the ductwork and on the baghouse are effectively captured as filterable particulate matter by the fabric filter.

The only demonstrated technology for removal of $PM_{2.5}$ downstream of sorbent injection with baghouse is use of a wet electrostatic precipitator (WESP). These systems electrically charge $PM_{2.5}$, which is subsequently collected by an oppositely charged collection surface in the WESP that is continually washed with water. Residual filterable PM, comprised of $PM_{10}/PM_{2.5}$, can also be potentially removed by a downstream WESP.

The number of WESPs used downstream of a DSI system is unknown, but these systems are uncommon and generally used by only newer, state-of-the-art coal-fired plants. WESP technology has not been employed for control of emissions from biomass power boilers due to the inherently low $PM_{2.5}$ emissions attributable to the low sulfur content of biomass and the high control efficiency that can be achieved for filterable PM using conventional control systems such as dry ESPs or baghouses, making WESP technology economically infeasible.

To quantify that use of WESP technology would not be cost effective, consider the cost effectiveness of the technology on the Warren project. First, make a conservative and unrealistic assumption that all residual PM downstream of the baghouse would be controlled by a WESP. Maximum requested PM emissions (all considered $PM_{2.5}$) in the permit application submitted for the boiler are 110.2 tons per year. The average annualized cost for WESP technology published by EPA is \$28/scfm.[14] Based on a flow rate of approximately 169,000 scfm, annual costs are estimated to be approximately \$4.73 million, equating to a cost effectiveness of \$41,200/ton. Another study conducted by an engineering firm specializing in wet ESP control indicates that the average annual cost of wet ESP control is approximately \$30/kW.[15] For the 100 MW Warren plant, use of this estimate indicates that the annual cost would be \$3.0 million, for a cost effectiveness of \$27,200/ton, also considered cost prohibitive. It should be stressed that the assumed control efficiency of 100% utilized in these estimates is conservative; assuming

[14] U.S. EPA, "Wet Electrostatic Precipitator Fact Sheet," EPA-452/F-03-0320.

[15] C. Weilert, "Wet ESPs vs. Sorbent Injection for SO3 Control", Proceedings of the Combined Power Plant Air Pollution Control Mega-Symposium, August 30 - September 2, 2004, Washington, DC.

a more realistic potential control efficiency of 25%, the cost effectiveness would be four times the listed values.

FIRE PUMP ENGINES

Two fire pumps will be used for emergency fire suppression at the Warren facility, utilizing nominal 330 and 175 hp compression ignition (CI) engines. Pure biodiesel (B100) or ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 0.0015 weight percent will be used in the engines. Oglethorpe is proposing to limit the total operation of each fire pump engine to 500 hours per year.

As is characteristic of CI engines, all PM emitted from such engines is assumed to be present as $PM_{2.5}$; thus, PM_{10} and $PM_{2.5}$ emission rates are considered equivalent. As indicated in the permit application submitted for this project, the proposed BACT for PM emissions for these engines is to comply with the New Source Performance Standards of 40 CFR Part 60 Subpart IIII. Since these emissions standards vary dependent upon the year the engine is installed, the NSPS reflect very modern technology standards for engines 2008 model year or later. Thus, the BACT analysis already conducted for the fire pump engines already addresses both PM_{10} and $PM_{2.5}$.

BIOMASS FUEL PREPARATION AND HANDLING, MATERIALS STORAGE SILOS

Numerous biomass fuel preparation and handling as well as materials storage silos will be constructed as part of the biomass plant. A complete list of these emissions sources are provided in the permit application submitted for the project. All of these sources emit only filterable PM.

$PM_{2.5}$ comprises a significant fraction of PM_{10} emissions. As indicated in the original BACT analysis and in Section 1.1.1 above, fabric filtration is the most effective control technology for both filterable PM_{10} and $PM_{2.5}$ and was proposed as BACT for those materials handling operations for which fabric filtration is considered technically feasible.

A number of other materials handling sources are fugitive-type emissions sources, for which use of fabric filtration is not practicable. For these sources, use of enclosures, where possible, was identified as the most stringent available control technology for both PM_{10} and $PM_{2.5}$. For those sources for which enclosures were not feasible, wet suppression was generally identified as the BACT for both PM_{10} and $PM_{2.5}$. For the remaining two conveyor systems, use of covered conveyors, combined with the abatement provided through previous wetting steps were identified as BACT for PM_{10} and $PM_{2.5}$.

In summary, PM_{10} and $PM_{2.5}$ were both evaluated in the original BACT analyses for the emissions sources described above. For each emissions source, the control technologies proposed as BACT for PM_{10} and $PM_{2.5}$ were determined to be identical.

COOLING TOWERS

PM is emitted from the cooling towers as recirculating water evaporates in the form of dissolved solids present in the recirculating cooling water. As evaporating water leaves the cooling tower cells in the form of tiny water droplets called "drift," water droplets evaporate forming TSP, PM_{10}, and $PM_{2.5}$. The only technically demonstrated method for reducing emissions is use of mist elimination baffling called "drift eliminators," which condense the tiny water droplets for recirculation in the cooling tower. As indicated in the original BACT analysis for the cooling towers, the proposed BACT for the cooling towers is use of the highest efficiency drift eliminators commercially available, reducing drift losses to only 0.0005 percent. Thus, the proposed control technology is applicable to both PM_{10} and $PM_{2.5}$ control and there is not a more effective control technology for $PM_{2.5}$ that is technically feasible.

Roads

Fugitive dust is emitted from plant roadways due to plant traffic. $PM_{2.5}$ emissions represent only a fraction of PM_{10} emissions. As discussed in the original application, there are few applicable control techniques to reduce roadway emissions and all of these technologies are considered equally appropriate for reduction of both PM_{10} and $PM_{2.5}$ emissions. There are no available control techniques that are different for PM_{10} and $PM_{2.5}$ emissions and all available control techniques demonstrated for use on roads were identified in the permit application. Control techniques proposed as BACT for PM_{10} and $PM_{2.5}$ were comprised of paving all the facility's roads, restricting vehicle access to authorized vehicles, reducing vehicle speeds, and watering the roads.

If you have any questions about the material presented in this letter or require additional information, please do not hesitate to call me at 770-270-7166.

Sincerely,

OGLETHORPE POWER CORPORATION

For Douglas J. Fulle
Vice President, Environmental Affairs

DJF:dmc

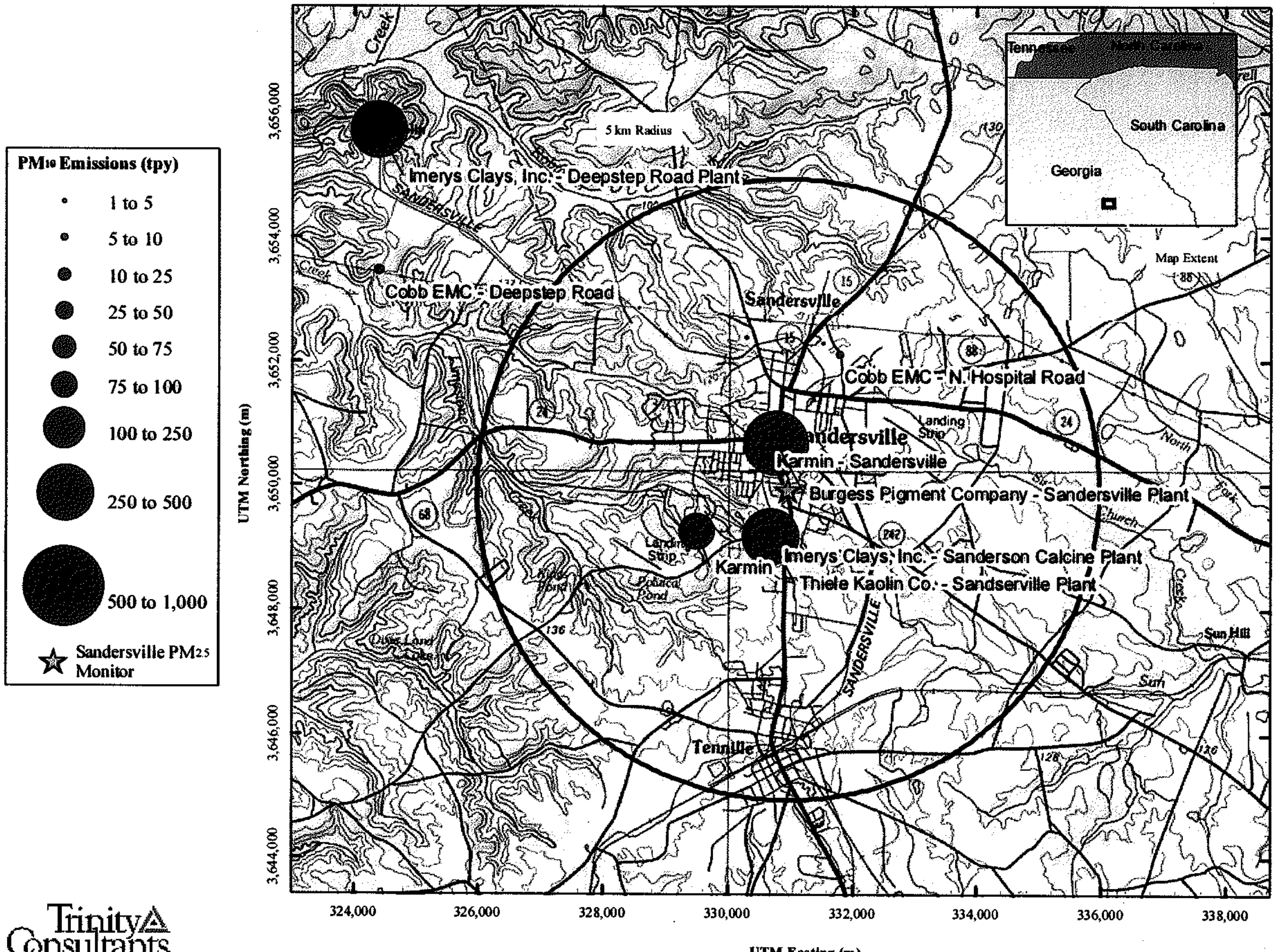
c: EPA Region 4, Air Planning Branch, Air Permits Section
Mr. Pete Courtney (Georgia EPD)
Ms. Wende Martin (Oglethorpe)
Mr. Mike Bilello (Oglethorpe)
Mr. Russell Bailey (Trinity)

Attachment

Attachment

Ambient Monitor Supporting Figures
Model Files

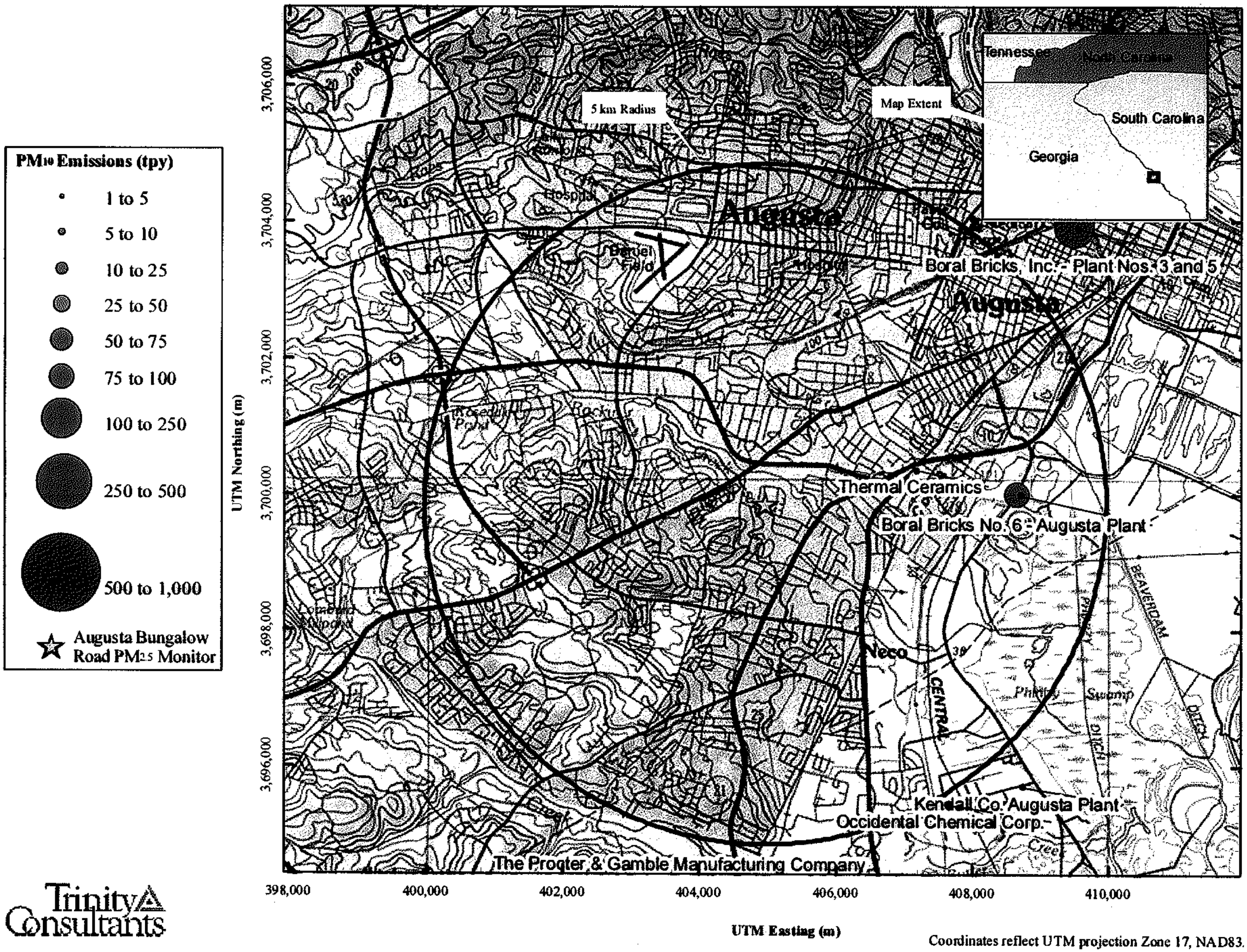
Figure 1. Sources Nearby Sandersville $PM_{2.5}$ Monitor



Coordinates reflect UTM projection Zone 17, NAD83.

Trinity Consultants

Figure 2. Sources Nearby Augusta Bungalow Road $PM_{2.5}$ Monitor



Coordinates reflect UTM projection Zone 17, NAD83.

Trinity Consultants

The CD included with this letter contains all of the $PM_{2.5}$ modeling analyses input and output data files used to generate the results presented in this letter; copies of previously provided files (i.e., meteorological data, downwash, load analysis) are not included. The following section provides a description of the contents of each folder included in the attached CD.

$PM_{2.5}$ SIGNIFICANCE/NAAQS

Contains the input (.ami), output (.lst) and plot (.plt) files from the 24-hr and Annual significance analysis. For all of the $PM_{2.5}$ Class II significance files, the nomenclature is as follows:

PM25*ABB*.xxx where:

A = type of analysis (*S* = significance)
BB = modeled year (1989-1993)
xxx = input or output file (*.ami* = input, *.lst* = output)