



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

FEB 18 1981

REF: 4AH-AF

Mr. Steve Smallwood, Chief  
Bureau of Air Quality Management  
Division of Environmental Programs  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32301

RECEIVED  
FEB 25 1981  
DEPT. OF  
ENVIRONMENTAL REGULATION

RE: W. R. Grace and Company  
PSD-FL-068

Dear Mr. Smallwood:

Enclosed for your review and comment are the Public Notice and Preliminary PSD Determination for the W. R. Grace and Company's proposed modification to their existing diammonium phosphate plant and storage and shipping facilities located near Bartow, Florida. The public notice will appear in a local newspaper, Lakeland Ledger, in the near future.

Please let my office know if you have comments or questions regarding this determination. You may contact Mr. Kent Williams, Chief, New Source Review, at 404/881-4552 or Mr. Jeffrey Shumaker of TRW Inc. at 919/541-9100. TRW Inc. is under contract to EPA, and TRW personnel are acting as authorized representatives of the Agency in providing aid to the Region IV PSD review program.

Sincerely yours,

*Tommie A. Gibbs*

Tommie A. Gibbs, Chief  
Air Facilities Branch

TAG:JLS:clu

Enclosure





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

FEB 18 1981

REF: 4AH-AF

Mr. A. F. Vondrasek  
General Manager  
W. R. Grace and Company  
Bartow Works Chemical Complex  
P. O. Box 471  
Bartow, Florida 33830

RE: Modification to Diammonium Phosphate  
Plant and Storage and Shipping Facilities  
PSD-FL-068

Dear Mr. Vondrasek:

EPA Region IV has reviewed your application to construct the reference source under the provisions of Prevention of Significant Deterioration Regulations (40 CFR 52.21) and has made a preliminary determination of approval with conditions. Please find enclosed two copies of the Preliminary Determination.

A public notice will be run in the near future in a local newspaper, Lakeland Ledger. A copy of the summary and your application will be open to public review and comment for a period of 30 days. The public can also request a public hearing to review and discuss specific issues. At the end of this period, EPA will evaluate the comments received and make a final determination regarding the proposed construction.

Should you have questions regarding this information, please contact Mr. Kent Williams, Chief, New Source Review, at 404/881-4552 or Mr. Jeffrey Shumaker of TRW Inc. at 919/541-9100. TRW is under contract to EPA, and its personnel are acting as authorized representatives of the Agency in providing aid to the Region IV PSD program.

Sincerely yours,

Tommie A. Gibbs, Chief  
Air Facilities Branch

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Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

FEB 18 1981

REF: 4AH-AF

Polk County Commissioners  
County Commission Building  
P. O. Box 60  
Bartow, Florida 33830

RE: W. R. Grace and Company  
Modification to Diammonium  
Phosphate Plant  
PSD-FL-068

Ladies and Gentlemen:

I wish to bring to your attention that W. R. Grace and Company proposes to modify an existing diammonium phosphate plant and storage and shipping facilities near the town of Bartow, Florida, and that emissions of air pollutants will thereby be increased. The U.S. Environmental Protection Agency has reviewed the proposed modification under the authority of Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and has reached a preliminary determination of approval with conditions for this construction. This approval applies only to Federal regulatory requirements and has no bearing on State or local functions.

Please also be aware that the attached public notice announcing the Agency's preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in a local newspaper, Lakeland Ledger. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction.

If you have questions, please feel free to call Mr. Kent Williams, Chief, New Source Review, at 404/881-4552 or Mr. Jeffrey Shumaker of TRW Inc. at 919/541-9100. TRW is under contract to EPA, and its personnel are acting as authorized representatives of the Agency in providing aid to the Region IV PSD review program.

Sincerely yours,

Tommie A. Gibbs, Chief  
Air Facilities Branch

TAG:JLS:clu

Attachment

W. R. Grace and Company  
PSD-FL-068

Notification Letters Sent To:

Polk County Commissioners  
County Commission Building  
P. O. Box 60  
Bartow, Florida 33830

Mr. David Puchaty, District Manager  
Florida Department of Environmental Regulation  
7601 Highway 301 North  
Tampa, Florida 33610

Central Florida Regional Planning Council  
P. O. Box 2089  
Bartow, Florida 33830

The Honorable Gene Cole  
Mayor, City of Bartow  
L & M Fruit Company  
P. O. Box 1048  
Bartow, Florida 33830

Ms. Carolyn Dekle  
State A-95 Coordinator  
Florida State Planning and  
Development Clearinghouse  
Office of Planning and Budget  
The Capitol  
Tallahassee, Florida 32301

PUBLIC NOTICE  
PSD-FL-068

A modification to an existing air pollution source is proposed for construction by W. R. Grace and Company near the town of Bartow, Polk County, Florida. The source is a diammonium phosphate plant with storage and shipping facilities. This plant will be modified to increase production of phosphate fertilizer.

The proposed construction has been reviewed by the U. S. Environmental Protection Agency (EPA) under Federal Prevention of Significant Deterioration (PSD) Regulations (40 CFR 52.21), and EPA has made a preliminary determination that the construction can be approved provided certain conditions are met. A summary of the basis for this determination and the application for a permit submitted by W. R. Grace and Company are available for public review in the Bartow Public Library located at 315 East Parker Street, Bartow, Florida.

The total allowable emissions from the proposed construction are as follows in tons per year:

<u>PM</u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>F</u>	<u>CO</u>
109	137	15	12	4

Further, the maximum increment consumed by the source is as follows:

	<u>Annual</u>	<u>24-Hour</u>	<u>3-Hour</u>
PM	<1	8	N/A
SO <sub>2</sub>	4	34	108

Any person may submit written comments to EPA regarding the proposed modification. All comments, postmarked not later than 30 days from the date of this notice, will be considered by EPA in making a final determination regarding approval for construction of this source. These comments will be made available for public review at the above location. Furthermore, a public hearing can be requested by any person. Such requests should be submitted within 15 days of the date of this notice. Letters should be addresses to:

Mr. Tommie A. Gibbs, Chief  
Air Facilities Branch  
U.S. Environmental Protection Agency  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Preliminary Determination  
W. R. Grace and Company  
PSD-FL-068

I. Applicant

W. R. Grace and Company  
Bartow Works Chemical Complex  
P. O. Box 471  
Bartow, Florida 33830

II. Project Location

The proposed modification is located north of State Road 60, 4 miles west of Bartow in Polk County, Florida. The UTM coordinates are Zone 17, 409.29 kilometers east and 3086.96 kilometers north.

III. Project Description

The applicant proposes to increase production of phosphate fertilizer by the construction of a diammonium phosphate (DAP) plant (No. 3) and DAP storage and shipping facilities. The rated capacity of the DAP plant is 115 tons per hour. It is scheduled to operate 7000 hours per year to produce 805,000 tons per year. Some existing fertilizer production capacity will be shut down about 6 months after the proposed construction is completed and in operation. This capacity reduction is not a concurrent reduction in emissions.

IV. Source Impact Analysis

The existing plant has the potential to emit greater than 100 tons per year of particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and fluorides (F). The existing source therefore is a major stationary source. The proposed modification significantly increases emissions of pollutants regulated under the Clean Air Act (Act) amended August 7, 1977. Thus, in accordance with Title 40, Code of Federal Regulations, Part 52.21 (40 CFR 52.21) as promulgated August 7, 1980 (45FR52676), the proposed modification is subject to Prevention of Significant Deterioration (PSD) review.

The PSD review applies to each pollutant for which the modification would result in a significant net increase. Table 1 summarizes emission changes of all pollutants regulated under the Act affected by the proposed modification. This shows the proposed net emissions increase of PM, SO<sub>2</sub>, and F are significant as defined in the PSD regulations. The emissions increase of NO<sub>x</sub> and CO are not significant and therefore are not subject to further PSD review.

The PSD review analyzes the following:

- A. Best Available Control Technology (BACT);
- B. National Ambient Air Quality Standards (NAAQS) Impacts;
- C. PSD Increment Impacts;
- D. Class I Area Impacts;
- E. Growth Impacts; and
- F. Visibility, Soils, and Vegetation Impacts.

A. BACT Analysis

The applicant has submitted an application which was determined to be complete before August 7, 1980. This application shows the modification was subject to 40 CFR 52.21 as in effect on June 19, 1978. Therefore, in accordance with 40 CFR 52.21(i)(9) the requirements for BACT specified in the 1980 PSD regulations, 40 CFR 52.21(j), shall not apply. Instead the requirements of 40 CFR 52.21(j) as in effect on June 19, 1978 shall be applied. The latter does not require a BACT review for facilities emitting fluorides because the controlled emissions increase is less than 50 tons per year. However, all applicable emission limitations under the State Implementation Plan (SIP) and under the standards of performance 40 CFR 60 (NSPS) and 40 CFR 61 (NESHAPS) must be met. Thus, Table 2 shows fluoride emissions limited by NSPS requirements. There are no applicable NESHAPS requirements nor are there any general SIP requirements more restrictive than NSPS. The table contains certain standards set by case-by-case control technology review required by the State of Florida.

The applicant proposes to control particulates from the DAP plant with three dry cyclones followed by three coaxial venturi wet scrubbers. The scrubber liquid is phosphoric acid which recycles to the DAP reactors. This

Table 1  
SUMMARY OF EMISSIONS  
(tons per year)

<u>Facility</u>	<u>PM</u>	<u>SO<sub>x</sub></u>	<u>NO<sub>x</sub></u>	<u>F</u>	<u>CO</u>
DAP Plant	98	137	15	12	4
DAP Storage and Shipping	11	0	0	0	0
<hr/>					
Total	109	137	15	12	4
Significant <sup>a</sup> Emission Increase	25	40	40	3	100
Subject to PSD Review	Yes	Yes	No	Yes	No

<sup>a</sup>Reference 40 CFR 52.21(b)(23): Promulgated August 7, 1980.



serves to control ammonia losses as well as particulates. The gases are then scrubbed in two packed scrubbers using pond water as scrubbing liquid. The function of the packed scrubbers is primarily to remove gaseous fluorides; however, they are designed with spray chambers preceding the packed section to control silicon oxide gel which is formed by the reaction of silicon-tetrafluoride and water. This gel could hinder the scrubbing of fluorides or yield silicon dioxide particulates if not cleared by the spray chambers. The applicant proposes this combination of control equipment as BACT for control of PM and further proposes an emission limit of 0.5 pounds of PM per ton of equivalent  $P_2O_5$  feed to the DAP plant. This corresponds to a BACT limit determined under the Florida SIP. A PM limit for DAP plants is not included in the NSPS.

The applicant proposes to control PM emissions from the DAP storage and shipping facility with a venturi scrubber or bag collector to a controlled concentration of 0.015 grains per dry standard cubic foot (7.8 pounds per hour).

The applicant proposes to control  $SO_2$  emissions from the DAP plant by restricting the sulfur content of fuel oil used to heat the dryer to less than 2.4 percent sulfur. Further, the free ammonia and DAP product in the dryer is expected to absorb 50 percent of the  $SO_2$  since the dryer combustion gases come in direct contact with DAP product. The applicant proposes this technology and an emission limit of 0.7 pounds of  $SO_2$  per ton of equivalent  $P_2O_5$  feed to the DAP plant as BACT. This corresponds to a BACT limit determined under the Florida SIP.

EPA has reviewed the proposed technology for the control of PM and  $SO_2$  from the DAP plant and the DAP storage and shipping and concurs that this technology and emissions limits constitute BACT for these cases. These limits are listed in Table 2. The proposed use of two packed scrubbers is determined to be adequate technology to meet the NSPS requirements for control of fluoride emissions from the DAP plant (0.06 lb/ton equivalent  $P_2O_5$  feed).

Table 2

## ALLOWABLE EMISSION LIMITS

Facility Pollutant	Pounds Per Hour	Standard lbs/Operating Unit	Basis
DAP Plant			
PM	28	0.5 <sup>a</sup>	BACT <sup>b</sup>
SO <sub>2</sub>	39	0.7 <sup>a</sup>	BACT <sup>b</sup>
Fluoride	3.4	0.06 <sup>a,c</sup>	NSPS
DAP Storage and Shipping			
PM	7.8	0.015 gr/dscf	BACT <sup>d</sup>
Visible Emissions	—	<5% opacity	BACT <sup>e</sup>

<sup>a</sup>Pounds of pollutant per ton of equivalent P<sub>2</sub>O<sub>5</sub> feed.

<sup>b</sup>Proposed by applicant based upon State of Florida BACT determination.

<sup>c</sup>Continuous monitoring of feed rate and scrubber pressure drop.

<sup>d</sup>Proposed by applicant.

<sup>e</sup>Imposed by EPA consistent with mass standard, proposed by applicant; this opacity standard is subject to conditions of 40 CFR 60.11.

B. National Ambient Air Quality Standards (NAAQS) Impacts

The ambient air standards for PM and SO<sub>2</sub> for various averaging times are listed in Table 3. No NAAQS has been established for fluorides. Paragraph k(1) of the PSD regulations requires an air quality analysis to ensure these standards will not be violated. The applicant has submitted such an analysis.

The applicant's analysis proposed the background PM concentration will be represented by monitor measurements made by the Florida Department of Environmental Regulation (DER) at a site less than 2 kilometers south of the proposed construction. The applicant's analysis used the second highest 24-hour monitored value of 119 ug/m<sup>3</sup> because the standard allows one exceedance per year. The EPA review determines the more conservative use of the highest 24-hour value of 126 ug/m<sup>3</sup> is more appropriate for use in the analysis as discussed below. The use of this monitored data as background is a conservative assumption since it presumably contains a contribution from the existing sources at W. R. Grace, but it is to be used in the analysis without allowance for such a contribution.

Initial screening PM air quality impact modeling was carried out using the CRSTER model and particulate emissions from the proposed DAP plant and DAP storage and shipping. Meteorological data from Tampa for the years 1970 to 1974 were input to these model runs. These runs yield maximum annual concentrations from W. R. Grace facilities. Also from these runs the meteorological data resulting in the highest second-high 24-hour impact were selected for further modeling runs using the PTMTPW model and the emissions from all existing W. R. Grace facilities as well as the proposed new facilities. The model results from PTMTPW runs were collected in a 0.4 X 0.5 km receptor grid with 0.1 km spacing located at the east property line. These runs yield the 24-hour highest second-high PM ambient concentrations due to the proposed construction and the existing W. R. Grace facilities. An analysis of the impact areas of the proposed project and of new facilities at two neighboring sources (New Wales, PSD-FL-034, and Agrico, PSD-FL-061) shows no overlap, therefore interaction between sources was not evaluated.

Table 3

## ANALYSIS OF NAAQS IMPACTS

<u>Pollutant</u>	<u>Averaging Time</u>	<u>Modeled Impacts<sup>a,b</sup></u>		<u>Background</u>	<u>Total</u>	<u>NAAQS<sup>b,c</sup></u>
		<u>New &amp; Proposed</u>	<u>Existing</u>			
Particulates	Annual	.8 <sup>d</sup>	2 <sup>d</sup>	53.6 <sup>e,f</sup>	56.4	60 <sup>e</sup>
	24-Hour	6 <sup>g</sup>	13 <sup>g</sup>	126 <sup>f</sup>	147	150 <sup>h</sup>
SO <sub>2</sub>	Annual	4 <sup>d</sup>	42 <sup>d</sup>	20	66	80 <sup>i</sup>
	24-Hour	34 <sup>g</sup>	128 <sup>g</sup>	20	182	365 <sup>h</sup>
	3-Hour	108 <sup>g</sup>	236 <sup>g</sup>	20	364	1300 <sup>h</sup>

<sup>a</sup>Modeled maximum ambient concentration increases.

<sup>b</sup>Micrograms per cubic meter, (ug/m<sup>3</sup>).

<sup>c</sup>The lower concentration of either the primary or secondary standard.

<sup>d</sup>Highest high.

<sup>e</sup>Geometric mean.

<sup>f</sup>Highest monitored concentration measured within 2 km of site over 20 months (includes contribution from existing sources as well as true background).

<sup>g</sup>Highest second-high.

<sup>h</sup>Not to be exceeded more than once per year.

<sup>i</sup>Arithmetic mean.

Table 3 lists the monitored background concentration, the modeled increase in concentration, due to existing and proposed facilities and the summation of these for comparison with the NAAQS. EPA concurs with the applicant's conclusion that the proposed project shall not threaten any NAAQS for PM.

For analysis of impact on the SO<sub>2</sub> NAAQS, no monitored data for the vicinity of the proposed project was available, therefore, the applicant's analysis first established the area of impact of the proposed project plus two sulfuric acid plants located at the W. R. Grace plant site that have been constructed since January 6, 1975. These impact areas were determined to have a radii of 20, 36, and 40 kilometers for the annual, 24-hour, and 3-hour significance levels of 1, 5, and 25 ug/m<sup>3</sup>, respectively (reference 45FR26398). To determine the baseline maximum ambient air concentration of SO<sub>2</sub> in the vicinity of the W. R. Grace plant, an inventory was made of all major SO<sub>2</sub> sources within 50 kilometers, which were constructed prior to January 6, 1975. The allowed SO<sub>2</sub> emissions from these inventoried sources were input to the AQDM model with meteorological data from Tampa representing the 5-year period, 1970 through 1974. The applicant's analysis submitted the maximum concentrations of this run as the baseline maximum annual ambient SO<sub>2</sub> concentration. Background from distant sources or non man-made sources was considered zero, but in the absence of monitored measurements, EPA must assume uninventoried background to be 20 ug/m<sup>3</sup>; therefore, the applicant's proposed baseline shall be increased by 20 for all averaging times. The applicant's analysis further modeled all new sources (constructed since January 6, 1975) within 50 kilometers of the W. R. Grace site (including the new and proposed W. R. Grace facilities). The individual components of this analysis and the summation for comparison with the annual SO<sub>2</sub> NAAQS are shown in Table 3.

The short-term analysis to determine the impacts on the 24-hour and 3-hour NAAQS were carried out with the same inventories of new and existing sources. To analyze the interactions between W. R. Grace and the neighboring sources four worst case meteorological conditions were selected with different wind directions. The selections were based upon the results of CRSTER screening runs which had used 5 years of meteorological data. These runs had been made upon the proposed sources and showed that for W. R. Grace sources alone with a

westerly wind direction yielded maximum impact. This was selected as case 1 even though no neighboring sources lay west of W. R. Grace. The nearest major neighboring source (New Wales Chemicals) was southwest, with several sources south and a large utility to the north. Therefore, these wind directions were used to select the meteorological worst days from the previous CRSTER runs. The short term interaction concentrations were estimated with the PTMTPW air quality model. The results of the eight possible interaction cases are summarized in Table 4. The worst-case for each averaging time is shown in Table 3 and summed with a background concentration of 20 ug/m<sup>3</sup> for comparison with the NAAQS. EPA concurs, based on the analysis presented, that this project does not threaten any NAAQS for SO<sub>2</sub>.

#### C. PSD Increment Impact

Paragraph (k)(2) of the PSD regulations requires an analysis to ensure that no PSD increment will be violated. The PM and SO<sub>2</sub> increments applicable to this analysis are shown in Table 5. The SO<sub>2</sub> modeling results developed in the NAAQS analysis which represent maximum concentrations from new and proposed sources include all increment consuming sources within the impact area and major sources within 50 kilometers. EPA concurs based on the analysis presented that this project does not threaten violation of any PSD Class II increments.

#### D. Class I Area Impacts

The nearest Class I area to this proposed modification is Chassahowitzka National Wildlife Refuge, located approximately 104 kilometers northwest of the W. R. Grace Chemical Complex. The applicant concludes no significant impacts will occur in the Class I area. EPA concurs that since the Class I area is greater than 100 kilometers away, and models cannot reasonably predict impacts beyond 100 kilometers, no further analysis of Class I area impacts is required, and it is determined that the proposed modification will not affect any Class I area.

#### E. Growth Impacts

The increased employment due to the proposed project will be about six persons. The increased production will be shipped from the area and is not expected to significantly influence local commercial or industrial growth. The increased transportation of raw materials and product will be handled with existing facilities with a negligible increase in secondary emissions.

Table 4  
 Maximum Short-term SO<sub>2</sub> Impacts (Modeled)  
 (8 Cases)

Number and Location of Facilities

<u>Wind Direction</u>	<u>New and Proposed</u>	<u>Existing</u>	<u>Total</u>	<u>Maximum Concentration Location</u>	
West	3 - W. R. Grace (no significant new or existing sources west of W. R. Grace)	5 - W. R. Grace			
	Max. 24-hour Concen.	34 ug/m <sup>3</sup>	128 ug/m <sup>3</sup>	162 ug/m <sup>3</sup>	1.7km
	Max. 3-hour Concen.	78 ug/m <sup>3</sup>	138 ug/m <sup>3</sup>	216 ug/m <sup>3</sup>	1.7km
South	3 - W. R. Grace 1 - Farmland 2 - CF Industries 2 - Agrico	5 - W. R. Grace 1 - Farmland 4 - CF Industries 4 - Agrico			
	Max. 24-hour Concen.	26 ug/m <sup>3</sup>	89 ug/m <sup>3</sup>	115 ug/m <sup>3</sup>	1.3km
	Max. 3-hour Concen.	108 ug/m <sup>3</sup>	236 ug/m <sup>3</sup>	344 ug/m <sup>3</sup>	1.2km

East of  
W. R. Grace

North of  
W. R. Grace

Table 4 (cont.)  
 Maximum Short-term SO<sub>2</sub> Impacts (Modeled)  
 (8 Cases)

<u>Wind Direction</u>	<u>New and Proposed</u>	<u>Existing</u>	<u>Total</u>	<u>Maximum Concentration Location</u>
Northwest	3 - W. R. Grace 5 - New Wales	5 - W. R. Grace 6 - New Wales 2 - Conserve 1 - Royster 3 - Mobil		
	Max. 24-hour Concen.	13 ug/m <sup>3</sup>	24 ug/m <sup>3</sup>	37 ug/m <sup>3</sup> 1.6km
	Max. 3-hour Concen.	63 ug/m <sup>3</sup>	106 ug/m <sup>3</sup>	169 ug/m <sup>3</sup> 1.5km
North	3 - W. R. Grace 2 - Lakeland Utilities	5 - W. R. Grace 5 - Lakeland Utilities		
	Max. 24-hour Concen.	16 ug/m <sup>3</sup>	31 ug/m <sup>3</sup>	47 ug/m <sup>3</sup> 1.6km
	Max. 3-hour Concen.	76 ug/m <sup>3</sup>	155 ug/m <sup>3</sup>	231 ug/m <sup>3</sup> 1.5km

Southeast of  
W. R. Grace

South of  
W. R. Grace



Table 5  
CLASS II AREA INCREMENT ANALYSIS

<u>Pollutant/ Averaging Time</u>	<u>Maximum Increment Consumption</u> (ug/m <sup>3</sup> )	<u>PSD Allowed Increment</u> (ug/m <sup>3</sup> )
SO <sub>2</sub>		
3-hour	108	512
24-hour	34	91
Annual	4	20
PM		
24-hour	8	37
Annual	<1	19

#### F. Soils, Visibility, and Vegetation Impacts

The applicant has concluded that impacts of  $\text{SO}_2$  and PM upon soils, visibility, and vegetation will not be detrimental since the ambient concentrations are well below secondary NAAQS which have been established considering these welfare related criteria. No NAAQS have been established for fluorides, but since the emissions of fluorides are controlled to a low level by NSPS requirements, it is concluded that no detrimental effects will occur. EPA concurs with these conclusions.

#### V. Conclusions

EPA Region IV proposes a preliminary determination of approval with conditions for the construction of the modification to the W. R. Grace and Company Bartow Works Chemical Complex proposed in its application submitted July 21, 1980. The determination is made on the basis of information contained in the application and in additional information dated August 15, 1980 and January 26, 1981 received from the applicant. The specific conditions set forth in the permit are as follows:

1. The new facilities shall be constructed in accordance with the capacities and specifications stated in the application including a DAP plant capacity of 115 tons per hour (56 tons per hour of equivalent  $\text{P}_2\text{O}_5$  feed), a DAP storage capacity of approximately 15,650 tons, a DAP plant to DAP storage transfer equipment capacity of 115 tons per hour, and a DAP loadout facility capacity of 300 tons per hour.
2. Emissions of PM,  $\text{SO}_2$ , and fluorides from the DAP plant shall not exceed 28, 39, and 3.4 pounds per hour, respectively, while operating at the maximum operating rate of 56 tons per hour of equivalent  $\text{P}_2\text{O}_5$  feed. At lesser operating rates the emissions of PM,  $\text{SO}_2$ , and fluorides shall not exceed 0.5, 0.7, and 0.06 pounds, respectively, per ton of equivalent  $\text{P}_2\text{O}_5$  feed.

3. The applicant shall install, calibrate, maintain, and operate continuous monitoring systems for measuring in accordance with the provisions of 40 CFR 60 Subpart V, Paragraph 60.223 - Standards of Performance for Phosphate Fertilizer Industry: Diammonium Phosphate Plants:
  - a. The mass flow rate of equivalent  $P_2O_5$  feed to the DAP plant; and
  - b. The total pressure drop across the scrubbing systems of the DAP plant.
4. In addition to Specific Conditions 2 and 3, the applicant shall comply with all applicable New Source Performance Standards requirements of (40 CFR 60 Subpart V).
5. The oil used to fuel the DAP dryer shall not contain more than 2.4 percent sulfur. The sulfur content of the fuel used during the compliance stack test for  $SO_2$  emissions shall be recorded and that level of fuel oil sulfur content shall not be exceeded without another  $SO_2$  emissions compliance test being performed. A record of all  $SO_2$  test results and sulfur content of all fuel oil received shall be maintained. In lieu of the above evidence of continuing compliance, the source may install continuous  $SO_2$  monitoring/recording equipment subject to the requirements of 40 CFR 60.13 which meets the appropriate Performance Specifications of 40 CFR 60 Appendix B.
6. The PM emissions from the DAP storage and shipping shall not exceed 7.8 pounds per hour or 0.015 grains per dry standard cubic foot while operating at the maximum product handling capacity of 115 tons per hour input and simultaneously 300 tons per hour output. Visible emissions shall not exceed 5 percent opacity.
7. Compliance with the emissions limits (Conditions 2 and 6) shall be determined by performance tests scheduled in accordance with the attached General Conditions and conducted in accordance with the provisions of reference methods in Appendix A of 40 CFR 60, except as provided under 40 CFR 60.8(b) as follows:

- a. Method 1 for sample and velocity traverses;
- b. Method 2 for velocity and volumetric flow rate;
- c. Method 3 for gas analyzing;
- d. Method 5 for concentration of PM and associated moisture content;
- e. Method 9 for visible emissions; and
- f. Method 13A or 18B for the concentration of total fluorides and the associated moisture content.

Each facility shall operate within 10 percent of the maximum operating rate during sampling. The parameters of operating rate, control equipment variables and all continuous monitoring results shall be recorded during compliance testing and made a part of the reported results.

8. The source shall comply with the requirements of the attached General Conditions.

## GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.
2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.
3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.
4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.
5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:
  - (a) description of noncomplying emission(s),
  - (b) cause of noncompliance,
  - (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,
  - (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,and
  - (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.
7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.
8. The permittee shall allow representatives of the State environmental control agency and/or representatives of the Environmental Protection Agency, upon the presentation of credentials:
  - (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;
  - (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;
  - (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;
  - (d) to sample at reasonable times any emission of pollutants;and
  - (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.
9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

Chief, Air Facilities Branch  
Air and Hazardous Materials Division  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street  
Atlanta, Georgia 30365
10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.



JOE D. TANNER  
Commissioner

# Department of Natural Resources

ENVIRONMENTAL PROTECTION DIVISION  
270 WASHINGTON STREET, S.W.  
ATLANTA, GEORGIA 30334

J. LEONARD LEDBETTER  
Division Director

January 8, 1981

Mr. J. P. Subramani, Chief  
Bureau of Air Quality Management  
Department of Environmental Regulation  
2562 Executive Center Circle East  
Tallahassee, Florida 32301

Dear Mr. Subramani:

Enclosed is a copy of the Georgia Environmental Protection Division's preliminary determination for the proposed construction of a new power boiler at Gilman Paper Company's pulp mill at St. Marys, Georgia. As explained in detail in the determination, our review indicates that as a result of this project there will be a net air quality improvement with respect to sulfur dioxide and total suspended particulates and an insignificant air quality impact of other regulated pollutants.

If you have any questions or comments, please contact me.

Sincerely,

  
J. Leonard Ledbetter  
Director

JLL:dwr

Enclosure

c: EPA Region IV

DEPT. OF ENVIRONMENTAL REGULATION  
BUREAU OF WASTEWATER MANAGEMENT  
JAN 12 1981

Prevention of Significant Air Quality Deterioration Review  
Gilman Paper Company Coal/Wood Waste Fired Boiler  
St. Marys, Georgia

PRELIMINARY DETERMINATION

State of Georgia  
Department of Natural Resource  
Environmental Protection Division

December 1980



## Abstract

The Environmental Protection Division (EPD) of the Georgia Department of Natural Resources has reviewed Gilman Paper Company's application for Permit to Construct a coal/wood waste fired boiler at its St. Marys, Georgia kraft pulp mill. The proposed (No. 3 Combination) boiler with a heat input capacity of 691 million BTU per hour is classified as one of the specific 28 source categories for Prevention of Significant Air Quality Deterioration (PSD) review. Although contemporaneous reductions of sulfur dioxide and particulate emissions will occur, emissions of nitrogen oxides, carbon monoxide, and volatile organic compounds will all increase by more than 100 tons per year so that a PSD review is required. The proposed boiler is also subject to the Federal Standards of Performance for New Stationary Sources (SPNSS) for fossil fuel fired steam generators (FFSG).

EPD's evaluation of the application indicates that the emissions from the proposed boiler: will comply with the Federal and State PSD regulations; will comply with the Federal SPNSS and State emission regulations; and will not cause or exacerbate a violation of any National Ambient Air Quality Standard (NAAQS) or PSD increment.

## Background

On March 19, 1980, Gilman Paper Company submitted an application for permit to construct a new power boiler at its St. Marys, Georgia kraft pulp mill. The application was revised on June 3, 1980 and determined to be complete on June 26, 1980. The proposed (No. 3 Combination) boiler will normally fire wood and/or coal to generate up to 450,000 pounds of steam per hour. Residual oil will be used as a standby fuel for startups and emergencies. The construction of this new boiler will not result in an increase in kraft pulping capacity at the mill. However as a result of this construction, three existing oil fired boilers (Nos. 1, 2 and 4) will be retired, and one oil fired boiler (No. 3) will be operated at 40 percent of its present load.

Through its new source review procedures, the Environmental Protection Division has evaluated Gilman Paper Company's proposed boiler for compliance with each of the State and Federal regulatory requirements. The findings of EPD have been assembled in this Preliminary Determination.

The Preliminary Determination includes the following sections: Prevention of Significant Deterioration Review, Conclusions and Recommendations, and Appendix. The Prevention of Significant Deterioration Review includes subsections on Emission Control Strategy and Ambient Air Quality Impact Analysis.

## Prevention of Significant Air Quality Deterioration Review

### 1.0 Introduction

#### 1.1 Applicability

In June 1978, the PSD regulations were promulgated which applied to any new major source or modification which had the potential to emit any of the regulated pollutants - particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC) - in major amounts (100 tons per year for a source included on the list of 28 specific source categories and 250 tons per year for all other emissions sources). Under these regulations "potential to emit" indicated uncontrolled emissions. Also, no account was allowed for contemporaneous emission reductions.

On January 30, 1980, a partial stay of the 1978 PSD regulations was issued. Under this stay, determination of PSD applicability could be made on the basis of the proposed amended PSD regulation as issued on September 5, 1979. This 1979 proposal changed the definition of "potential to emit" to emissions after installation of control equipment and allowed the accounting for contemporaneous emission reductions. The partial stay was in effect until August 7, 1980, when EPA promulgated the amended PSD regulations. Since Gilman's application was submitted while the stay was in effect, the application will be reviewed for PSD applicability according to the September 1979 applicability criteria.

Actual emissions of each regulated pollutant from the proposed new (No. 3 Combination) boiler will be greater than 100 tons per year. However, contemporaneous emission reductions gained by the retirement of Nos. 1, 2, and 4 power boilers and reducing the load of No. 3 power boiler will cause an actual emission reduction of SO<sub>2</sub> and particulate matter. Emissions of NO<sub>x</sub>, VOC and CO will increase by more than 100 tons per year, after accounting for contemporaneous reductions. Therefore, Gilman's proposed construction is subject to PSD and will be reviewed in accordance with the June 1978 PSD review procedures.

#### 1.2 Review Requirements

The June 1978 PSD regulations require that any new major source or modification which increases the allowable emissions of any pollutant regulated under the Act by 50 tons per year, 1000 pounds per day, or 100 pounds per hour (50/1000/100) or more undergo case-by-case review for Best Available Control Technology (BACT). In addition, an ambient air quality review is required to assess the consumption of the PSD increments and to determine the impact on the National Ambient Air Quality Standards (NAAQS). It is also required that the applicant address the impact on visibility, soils and vegetation and of related growth.

For the proposed No. 3 Combination boiler at Gilman, the allowable emissions of each subject pollutant will exceed the 50/1000/100 threshold (with no account for contemporaneous reductions). An emission rate summary is presented in Table 1. The emission control technology reviews for all five pollutants, the ambient air impact analysis for carbon monoxide, volatile organic compounds and nitrogen oxides (as required under the August 7, 1980 regulations) and the secondary impact studies follow.

## 2.0 Emission Control Strategy

### 2.1 General

The proposed boiler will primarily burn pulverized coal and/or wood wastes but will have the capacity to burn fuel oil during startup and emergencies. The boiler will have a rated heat input of 691 million BTU per hour and will produce 450,000 pounds of steam per hour. The steam produced by the new boiler will be used to replace the steaming capacity of Nos. 1, 2, and 4 power boilers which will be shutdown and of No. 3 power boiler which will operate at a reduced (40 percent) load.

Since the proposed boiler will have a heat input of greater than 250 million BTU per hour, it must comply with the minimum standards as required in the Standards of Performance for New Stationary Sources (SPNSS) for Fossil Fuel Fired Steam Generators (FFFSG). In addition, the application of Best Available Control Technology (BACT) must be demonstrated for each pollutant for which the allowable emission rate exceeds 50 tons per year.

### 2.2 Particulate Emissions

The SPNSS for FFFSG for particulate emissions is 0.1 pounds per million BTU heat input. Gilman proposes to comply with this standard with an electrostatic precipitator (ESP).

As specified in the PSD regulations, EPD required Gilman to demonstrate BACT for particulate emissions. The BACT determination is made on a case-by-case basis, taking into account energy, environmental, and economic impacts. For the proposed boiler, EPD has determined that BACT is an electrostatic precipitator designed to reduce particulate emissions to 0.075 pounds per million BTU heat input. This emission limit is contained in the draft construction permit. At the time the application was filed, all of the design criteria for the ESP had not been finalized; but the draft construction permit includes provisions for review and approval by EPD of the final ESP design. Gilman will be required to conduct performance testing to demonstrate compliance with the particulate emission limitation.

The SPNSS requires that visible emissions not exceed 20 percent opacity and that the visible emissions be measured and recorded by an in stack continuous opacity monitor. EPD will require that Gilman continuously monitor the opacity of the boiler's flue gases in the stack after the ESP.

Table I

Net Emission Changes from Construction of No. 3 Combination Boiler and  
Subsequent Retirement of Existing Boilers at Gilman Paper Company

Pollutant	Present Emissions		Future Emissions (LB/HR)				Net Emission Change			
	Nos. 1, 2, 3 & 4 Power Boilers	No. 3 Power Boiler <sup>a</sup>	No. 3 Combination		Total		LB/HR		TON/YR	
			Case I <sup>b</sup>	Case II <sup>c</sup>	Case I	Case II	Case I	Case II	Case I	Case II
PM <sup>d</sup>	310	58	44.0	51.8	102	110	-208	-200	-891	-857
SO <sub>x</sub> <sup>e</sup>	2081	438	704	829	1142	1267	-939	-814	-4023	-3487
CO <sup>f</sup>	0.83	0.174	29.4	106	29.6	107	+28.8	+106	+123	+454
VOC <sup>f</sup>	0.83	0.174	8.81	94.8	8.98	95.0	+8.15	+94.2	+34.9	+404
NO <sub>x</sub> <sup>f</sup>	220	46.6	528	299	575	346	+355	+126	+1521	+540

a Operating at 40 percent of present load

b Firing 100 percent coal (587 X 10<sup>6</sup> BTU per hour)

c Firing 48 percent coal/52 percent wood wastes (691 X 10<sup>6</sup> BTU per hour)

d Present emissions represent allowable based on State regulations; new boiler emission based on allowable of 0.075 pounds per 10<sup>6</sup> BTU

e Present emissions based on material balance; new boiler emissions based on 1.2 pounds per 10<sup>6</sup> BTU NSPS allowable

f Present and future emissions estimated from Environmental Pollution Controls in Pulp and Paper Industry, EPA-625/7-76-001 (October 1976)

### 2.3 Sulfur Dioxide

The EPD will require that the proposed boiler comply with the SPNSS sulfur dioxide emission standard of 1.2 pounds per million BTU heat input. The proposed boiler will fire coal with a sulfur content of 1.0 to 1.5 percent and wood wastes with a sulfur content of less than 0.1 percent. Gilman has proposed to control sulfur dioxide emissions by installation of a wet (caustic) scrubber after the ESP. The EPD has determined that compliance with the SPNSS emission limit through use of a sulfur dioxide scrubber is BACT for industrial combination boilers.

In accordance with the SPNSS, EPD will require sulfur dioxide emissions to be continuously monitored. Gilman has proposed an in-stack continuous monitor to insure proper scrubber operation and to demonstrate compliance with the SPNSS. No scrubber bypass will be provided so that during a malfunction or breakdown (such as loss of scrubbant flow) of the scrubber, the boiler fuel will be proportioned to maintain compliance with the 1.2 pound per million BTU standard.

During startups, emergencies and other unusual periods when the proposed boiler will fire residual oil for short periods, the scrubber will maintain sulfur dioxide emissions below the SPNSS emission limit for liquid fossil fuels of 0.8 pound per million BTU.

### 2.4 Nitrogen Oxides

Gilman has proposed to control NO<sub>x</sub> emissions through the use of burner design, furnace design, and the utilization of good operating procedures. By minimizing high temperature excursions in the combustion zone and by operating with close excess air tolerances, Gilman will insure minimum formation of nitrogen oxides. Although the boiler design criteria has not been finalized when the application was submitted, the draft permit contains provisions for review and approval by EPD of the final boiler design. The emission level of nitrogen oxides (expressed as NO<sub>2</sub>) must comply with SPNSS emission standard of 0.7 pounds per million BTU heat input. Gilman has proposed to delay installation of the continuous flue gas NO<sub>x</sub> monitor until after the initial performance tests are conducted and to then install the NO<sub>x</sub> monitor only if the performance tests demonstrate that NO<sub>x</sub> emissions are greater than 70 percent of the SPNSS emission standard. This strategy has been approved by EPD and complies with SPNSS, 40 CFR 60.45(b)(3).

The EPD has determined that proper furnace and burner design and utilization of proper boiler operating practices (with the aid of a continuous NO<sub>x</sub> monitoring system, if necessary) will affect the compliance with the SPNSS NO<sub>x</sub> standard and is BACT for industrial coal/wood combination boilers.

## 2.5 Carbon Monoxide

Uncontrolled emissions of carbon monoxide from coal fired boilers have been estimated at 0.05 pounds per million BTU, and 0.25 pounds per million BTU from wood wastes fired boilers. Carbon monoxide is the result of incomplete combustion of the fuel and is caused by a stoichiometrically insufficient amount of available oxygen or the insufficient mixing of combustion air and fuel in the combustion chamber. These occurrences are indicative of low boiler efficiency and are routinely minimized by providing optimal fuel/air mixture, good combustion instrumentation, monitoring equipment and control functions. Gilman has proposed to maintain low emissions of carbon monoxide by installation of a continuous in-stack oxygen monitor. This instrument will allow the boiler operator to determine whether sufficient combustion air is fed to the furnace and thereby affect good combustion. The SPNSS for FFFSG set no specific emission limits for carbon monoxide. The estimated carbon monoxide emission rate of 0.15 pounds per million BTU heat input has been determined by EPD to be BACT for such boilers.

## 2.6 Volatile Organic Compounds

Emissions of volatile organic compounds (VOC) have been estimated at 0.015 pounds per million BTU from coal, and 0.25 pounds per million BTU from wood wastes combustion. The potential emission of VOC or hydrocarbons from a fossil fuel fired boiler would also be indicative of poor combustion and low thermal efficiency. As with carbon monoxide, proper boiler design and operation are the general control techniques for VOC emissions. No specific techniques that provide better VOC emission control than those proposed by Gilman have been demonstrated. Therefore, the EPD has determined that Gilman's proposal for control of VOC emissions represents the Lowest Achievable Emission Rate (LAER) which is equivalent to BACT in this particular case.

## 2.7 Fugitive Dust

The operation of a coal fired boiler entails coal and ash handling systems which are potential sources of fugitive particulate emissions. To minimize fugitive dust from its coal handling system, Gilman has proposed a wet dust suppression system with water spray showers located at all transfer points in the system.

Ash will be collected at the bottom ash hopper, each of the precipitator hoppers, the economizer hoppers, and the air heater hoppers. Also, the clinkers from the boiler bottom will be collected. The ash will be stored in a silo, and a dustless unloading system will be used to transfer the ash from the storage silo to a truck for removal from the plant.

Table II

Emission Rate Summary for the Proposed  
Gilman Paper Company No. 3 Combination Boiler<sup>1</sup>

Pollutant	Uncontrolled (T/YR)	(T/YR)	Actual <sup>2</sup> (LB/10 <sup>6</sup> BTU)	Allowable <sup>3</sup> (LB/10 <sup>6</sup> BTU)
PM	15,500	< 222	< 0.075	0.075
SO <sub>2</sub>	2570	< 3550	< 1.2	1.2
CO	454	454	0.15	NA
VOC	406	406	0.14	NA
NO <sub>x</sub>	1280	1280	0.43	0.70

1 Based on normal expected operation: 691 X 10<sup>6</sup> BTU per hour, 48 percent coal/52 percent wood waste

2 PM and SO<sub>2</sub> based on allowable; CO, VOC and NO<sub>x</sub> based on Environmental Control in Pulp and Paper Industry: EPA-625/7-76-001 (October 1976)

3 Allowable emission rates are equivalent to or more restrictive than the New Source Performance Standards for Fossil Fuel Fired Steam Generators



### 3.0 Ambient Air Quality Analysis

#### 3.1 General

The 1978 PSD regulation require that any new source or modification with allowable emissions of any regulated pollutant equal to or greater than the 50/1000/100 limit undergo pre-construction review to determine the impact on the ambient air. This determination includes the impact of the source on the overall air quality (National Ambient Air Quality Standards), on available PSD increments, and on the soils, vegetation and visibility.

In performing the ambient air analysis, EPD primarily uses the results obtained from computerized dispersion models and ambient monitoring programs. The effects of other factors such as stack heights and emission reductions (offsets) must also be considered.

#### 3.2 Contemporaneous Emission Reductions

Since no steam consumption increase will occur as a result of the construction of No. 3 Combination Boiler, some existing boilers will necessarily be retired or reduced in load. The existing Nos. 1, 2, and 4 Power Boilers which fire residual oil will be retired, and the oil-fired No. 3 Power Boiler will be fired at only 40 percent of its present load. (During emergencies when No. 3 Combination Boiler is out of service, No. 3 Power Boiler may be fired at full capacity).

As shown in Table I, the result of this project is a net reduction in the quantity of particulate matter and sulfur dioxide emissions from Gilman. There will be a reduction of about 200 pounds per hour in particulate emissions from the mill when this project is completed. Similarly, sulfur dioxide emissions will be reduced by more than 800 pounds per hour. It is evident that the quantity of particulate matter and sulfur dioxide discharged into the ambient air in the St. Marys area will decrease as a result of this modification.

#### 3.3 Stack Height

The PSD regulation requires that dispersion enhancement credit not be given for the height of any stack which exceeds "good engineering practice" (GEP). Gilman has proposed to use stack height of 175 feet for the boiler. EPD has determined that the proposed stack does not exceed GEP as defined by EPA. GEP is given by the following equation:

$$HG = H + 1.5 L$$

Where:

HG = Good engineering practice stack height

H = Height of structure of nearby structure

L = Lesser dimension (height or width) of the nearby structure

At Gilman, the nearby structure has been defined to be the No. 2 Bark Boiler building. The structure is 130 feet high and 152 feet by 200 feet at its base which predicts a GEP stack height of 325 feet. Therefore, the proposed stack does not exceed the maximum permissible height which may be utilized for dispersion enhancement, The distance from the proposed stack to the base of the nearby structure is approximately 230 feet. This satisfies the criteria that the nearby structure not be more than five times the width or height, whichever is less, from the GEP stack.

### 3.4 Modeling

In general, EPD assesses the atmospheric impact of a source through the use of mathematical dispersion models. The models are based upon the assumption that the dispersion of a plume is primarily a function of wind speed and direction, atmospheric stability conditions, and the effective point of discharge of the plume. To predict ambient air concentrations, the models simulate the plume emerging from the stack, rising a certain distance in the atmosphere, leveling off, and continuing downwind over relatively flat terrain. The concentrations of pollutants are assumed to have a Gaussian distribution about the longitudinal centerline of the plume.

In the case of Gilman, EPD only used computer models (PTMAX and CRSTER) to evaluate ambient air quality with respect to the National Ambient Air Quality Standards (NAAQS) for carbon monoxide and nitrogen oxides.

### 3.5 Increment Consumption

No computer modeling was performed for particulates or sulfur dioxide because EPD predicts a net ambient air quality improvement for these pollutants as a result of this project. The basis of this prediction is the reduction in the quantity of these pollutants emitted coupled with modified plume dispersion characteristics.

As shown in Table III, the average stack height and temperature at which the flue gases will exit (after the proposed modification) are less than at present. These factors tend to cause less atmospheric dispersion and hence contribute to increased ambient air concentrations. However, the small disadvantage of less dispersion is offset by the more important and significant reduction in emission rates. Therefore, this project will consume no PSD increment for sulfur dioxide or particulate matter.

### 3.6 Ambient Air Quality

The computer dispersion modeling results for carbon monoxide and nitrogen oxides are presented in Table IV. These results represent the total contribution of Gilman Paper to the ambient concentration of these pollutants. Since no PSD increment has been established for these pollutants, the only criteria with which to compare these predicted concentrations is the National Ambient Air Quality Standards (NAAQS).

TABLE III  
GILMAN PAPER COMPANY

Source	Height (M)	Diameter (M)	Temp. (K)	Vol. Flow (M <sup>3</sup> /S)	Velocity (M/S)	SO (G/S)	PM (G/S)	NO (G/S)	CO (G/S)
Present									
PB 1,2,3	83.82	4.27	505	141.6	9.89	201.9	30.11	21.34	0.081
PB 4	36.58	1.83	533	48.1	18.3	60.31	8.98	6.38	0.024
BB 1	36.58	2.44	344	75.5	16.2	18.02	11.10	30.11	7.07
BB 2	36.58	2.04	344	59.0	18.1	10.71	3.53	32.69	7.94
RB 2	47.24	2.29	404	46.2	11.2	7.31	3.51	13.18	45.31
RB 3	53.34	1.62	410	49.8	24.2	7.56	3.53	13.31	46.86
RB 4	76.20	2.59	455	101.8	19.3	15.50	4.86	21.45	96.07
LK 3	30.48	1.52	345	18.0	9.94	0	3.91	92.99	60.74
Future									
PB 3	83.82	4.27	505	81.4	5.69	55.19	7.31	5.87	0.022
BB 1	36.58	2.44	344	75.5	16.2	18.02	11.10	30.11	7.07
BB 2	36.58	2.04	344	59.0	18.1	10.71	3.53	32.69	7.94
BB 3	53.34	2.90	352	106.2	16.1	104.5	6.53	66.53	13.36
RB 2	47.24	2.29	404	46.2	11.2	7.31	3.51	13.18	45.31
RB 3	53.34	1.62	410	49.8	24.2	7.56	3.53	13.31	46.86
RB 4	76.20	2.59	455	101.8	19.3	15.50	4.86	21.45	96.07
LK 3	30.48	1.52	345	18.0	9.94	0	3.91	92.99	60.74

TABLE IV

COMPARISON OF PREDICTED AMBIENT CONCENTRATIONS WITH NAAQS<sup>1</sup>

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Maximum Receptor</u>		<u>NAAQS</u> ( $\mu\text{g}/\text{m}^3$ )
		<u>Concentration</u> ( $\mu\text{g}/\text{m}^3$ )	<u>Distance From Stack</u> (km)	
Carbon monoxide	1-Hour	1399	0.5	40000
	8-Hour	562	0.5	10000
Nitrogen oxides	Annual	24.9	0.9	100

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<sup>1</sup> National Ambient Air Quality Standards

Table IV shows the carbon monoxide 1-hour average to be less than 4 percent of the NAAQS at 0.5 kilometer downwind of the mill. Similarly, the 8-hour average is less than 6 percent of the NAAQS. Since Gilman is located in an area of relatively little industrial development and since carbon monoxide is most frequently associated with urban and/or highly industrialized areas, the background concentration of carbon monoxide would not be expected to approach the NAAQS.

The predicted annual concentration of nitrogen oxides contributed by Gilman is shown in Table IV as less than 25 percent of the NAAQS of 100  $\mu\text{g}/\text{m}^3$ . Since Gilman is located in a generally rural and non-industrialized area where nitrogen oxides concentrations in the ambient air are usually quite low (with respect to the NAAQS), EPD has determined that Gilman will not cause or contribute to excess ambient air concentrations of nitrogen oxides. This conclusion is further supported by ambient monitoring data from samplers in Brunswick, approximately 30 miles (48 km) north of Gilman. These data are presented in Table V. Upon consideration that these ambient concentrations (20-30 percent of the NAAQS) are representative of the much more industrialized and heavily populated area of Brunswick, it is obvious that the St. Marys area would have lower nitrogen oxides concentrations.

### 3.7 Ambient Air Monitoring

No computerized dispersion modeling has been performed for ozone formed as a result of volatile organic compounds (VOC) emissions because of the atmospheric reactivity of these compounds. However, in accordance with 40 CFR 52.21(n)(2)[June 1978], Gilman will evaluate the ambient air quality with respect to ozone by conducting an air quality monitoring study. This study will sample the ambient air over a period of several months to determine ozone concentrations prior to startup of the boiler. Even if the monitoring finds exceedances of the NAAQS in the St. Marys area with the subsequent designation of the area as "nonattainment", Gilman has already agreed to install LAER for VOC emissions (as discussed in Paragraph 2.6 above) so that the requirements for a nonattainment area would have been met.

### 3.8 Impact on Class I Areas

The area impacted by the emissions from Gilman is a region which has been designated PSD - Class II for TSP and  $\text{SO}_2$ . The nearest PSD - Class I area is the Okefenokee National Wildlife Refuge with its nearest bounds approximately 35 miles (56 km) to the west. The Wolf Island National Wildlife Refuge is approximately 45 miles (72 km) to the northeast. Because of the overall emissions reductions of particulate matter and sulfur dioxide and the short impact range of the plume (shown by the carbon monoxide and nitrogen oxides dispersion models), EPD has determined that the proposed project at Gilman will have no adverse impact on either of these Class I areas.

### 3.9 Impact on Soils, Vegetation and Visibility

EPD requested that Gilman address the impact of the proposed boiler construction/modification/retirement project on soils, vegetation and visibility. Gilman concluded that the reductions in particulate matter and sulfur dioxide emissions coupled with increased overall dispersion from the proposed boiler would result in no adverse impact on soils or vegetation. Gilman concluded that the condensing water vapor (wet plume) from the new combination boiler would affect visibility in the immediate vicinity of the stack. However, Gilman has determined and EPD concurs that this visibility impairment will diminish before approaching the plant property boundary and would therefore not have an adverse affect on the overall visibility of the area. Overall, EPD has determined that the proposed modification at Gilman will decrease Gilman's impact on soils, vegetation and visibility in the area around the mill site.

TABLE V

## AMBIENT NITROGEN DIOXIDE SAMPLING RESULTS FOR BRUNSWICK AREA, 1979

<u>Sampling Location</u>	<u>Ambient Concentrations (<math>\mu\text{g}/\text{m}^3</math>)</u>		
	24-Hour Maximum		Annual
	<u>1st</u>	<u>2nd</u>	<u>Arithmetic Mean</u>
Glynn County Health Department	60	44	20.2
Arco Pump Station	78	75	30.8

## Conclusions and Recommendations

The Environmental Protection Division's review of the data submitted by Gilman for the construction of a coal/wood waste fired boiler in St. Marys indicates that compliance with all applicable Prevention of Significant Deterioration, State and Federal air quality regulations will be achieved.

Particulate emissions will be controlled by an electrostatic precipitator which has been determined to be the Best Available Control Technology (BACT). A scrubbing system will be used to reduce SO<sub>2</sub> emissions to comply with the SPNSS emission standards; this emission reduction has also been determined to satisfy BACT criteria for SO<sub>2</sub>. Proper burner and furnace design and operation will be used to demonstrate BACT for No<sub>x</sub>, CO and VOC emissions. The impact of the boiler's emissions to the ambient air will not cause a violation of any ambient standard and will not consume any PSD increments.

The Environmental Protection Division therefore recommends that a Permit to Construct be issued to Gilman paper for the proposed coal/wood waste fired boiler; however, several conditions will be made a part of the Permit to Construct to insure compliance with all applicable regulations. The Appendix contains a draft Permit to Construct with the proposed conditions included.

The engineering calculations used to prepare the Preliminary Determination are available for review and copying at Room 816, 270 Washington Street, S.W., Atlanta, Georgia 30334 (phone 404/656-4867), between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday. A copy machine is also available for public use at a charge of 25¢ per copy.



APPENDIX

D R A F T

STATE OF GEORGIA  
DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION DIVISION



PERMIT NO. 2631-020-7818-C

COUNTY Camden

EFFECTIVE DATE  
OF PERMIT:

PERMIT TO CONSTRUCT

In compliance with the provisions of Georgia's Air Quality Act of 1978 and the Rules and Regulations, Chapter 391-3-1, adopted pursuant to or in effect under that Act, Gilman Paper Company, St. Marys Kraft Division  
P. O. Box 878, St. Marys, Georgia 31558

is issued a Permit to Construct the following: Source code 16-No. 3 Combination (Power) Boiler—a coal and/or bark fired boiler, rated at 691 million BTU/hr heat input, with an electrostatic precipitator for control of particulate emissions and a wet scrubber for control of sulfur dioxide emissions.

located at: St. Marys, Georgia

This Permit to Construct is conditioned upon compliance with all provisions of Georgia's Air Quality Act of 1978, the Rules and Regulations of Chapter 391-3-1 adopted or in effect under that act, or any other condition of this Permit.

This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in the application(s) dated March 1, 1980, supporting data entered therein or attached thereto, or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

Absent prior revocation, suspension, modification or amendment by the Director, this Permit shall expire at midnight, the 31st day of March 19 83.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached 2 page(s), which page(s) are a part of this Permit.

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Director  
Environmental Protection Division

STATE OF GEORGIA  
DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION DIVISION

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1. Emission Limitation

- a. This boiler shall comply with the emissions limitations specified in the Standards of Performance for Fossil Fuel Fired Steam Generators (40 CFR 60.40-.46 Subpart D) and the Rules for Air Quality Control, Chapter 391-3-1, whichever is more restrictive; and
- b. The allowable particulate emission rate shall be 0.075 pounds per million BTU heat input.

2. Monitoring

The Permittee shall install, calibrate, operate and maintain continuous emissions monitoring systems for opacity, sulfur dioxide and nitrogen oxides emissions, and for carbon monoxide or oxygen as required by the Standards of Performance for Fossil Fuel Fired Steam Generators (40 CFR 60.45); the monitoring systems shall comply with the monitoring requirements of the General Provisions of the Standards of Performance for New Stationary Sources (40 CFR 60.13).

3. Testing

- a. Within 60 days after the maximum production rate is achieved, but no later than 180 days after initial startup, the Permittee shall conduct emissions tests. The results of the test(s) must be submitted to the Division (in writing) within 30 days of the completion of testing.
- b. Tests of particulate matter, sulfur dioxide, and nitrogen oxides emissions shall be conducted and in accordance with the Division's approved methods and procedures.
- c. The Permittee shall provide written notice to the Division 30 days before the date(s) of test(s).
- d. All continuous monitoring systems shall be installed, calibrated and operating when the emission test(s) are conducted.
- e. The Permittee shall install test ports which comply with the criteria described in 40 CFR 60, Appendix A.

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4. Control Equipment

- a. Within ten working days after it is available, the Permittee must submit to the Division technical data describing the emissions control systems. This data would include, but not be limited to: copies of the formal bids from the successful bidder(s), equipment operator's manuals, guaranteed efficiencies or emission rates, major design parameters (such as collecting plate area, scrubbing liquid supply rate, gas phase pressure drop, and gas flow rate). Upon review of the design data, the Division may revoke or modify this permit if review of the data indicates that the control device(s) cannot effect compliance with the emission limits.
- b. In the event that the nitrogen oxide emissions are controlled by boiler design, the Permittee shall submit to the Division data describing the design of the boiler. The Division may revoke or modify this permit if the review indicates that the boilers design will not effect compliance with the nitrogen oxide emission limit.

5. Notification

The Permittee shall provide the Division the following written notification:

- a. The anticipated date of startup of this source, not more than 60 nor less than 30 days prior to such date; and
- b. The actual date of startup of this source, within 15 days after such date.

For purpose of this permit, "startup" shall mean the setting in operation of a source for any purpose.

6. Prohibition

Within 60 days after the maximum production rate is achieved, but not later than 180 days after the initial startup of the Number 3 Combination Boiler, the Permittee shall be prohibited from operating Numbers 1, 2, and 4 Power Boilers and from operating Number 3 Power Boiler and Number 3 Combination Boiler at full load simultaneously. This prohibition shall not apply to periods of startup, shutdown and malfunction as defined by the Rules and Regulations for Air Quality Control, Chapter 391-3-1.

State of Georgia  
County of Camden

Notice of the opportunity  
for public comment

Environmental Protection Division  
Georgia Department of Natural Resources

To all interested persons and parties:

Gilman Paper Company desires to build a 450,000 pounds steam per hour coal and wood waste fired boiler at its kraft pulp mill in St. Marys, Georgia. Gilman Paper has filed an application with the Environmental Protection Division (EPD) for an Air Quality permit to install air pollution control measures to service this facility. State law specifies that a permit shall be issued on evidence satisfactory to the Director of the Division of compliance with all State and Federal regulations and requirements.

You are hereby notified of the opportunity for written public comments concerning the application for a permit to construct the boiler with associated emission control systems and the EPD's Preliminary Determination concerning the application. The Preliminary Determination is a summary of the technical review of the application and contains a copy of the company's application, other supporting information submitted by the applicant, and the draft construction permit.

The Division has concluded that Gilman Paper Company's application should be approved and that a permit should be granted. This conclusion is based upon evidence that the proposed project, when completed, will comply with the Division's Rules and Regulations for Air Quality Control, Chapter 391-3-1; that the emissions from the facility will not cause or add to a violation of any ambient air quality standard; and that emissions from the facility will not cause any significant deterioration of air quality.

The Preliminary Determination is available for public review during normal business hours at the Camden County Superior Court Clerk's Office, Camden County Courthouse, Kingsland, Georgia 31548, and the Environmental Protection Division, 270 Washington Street, S.W., Room 816, Atlanta, Georgia 30334. Persons wishing to comment upon the Preliminary Determination are invited to submit their comments in writing to the Environmental Protection Division at the above Atlanta address, post marked no later than 30 days after date of publication in this newspaper. All comments post marked on or prior to that date will be considered by the Division in making its final decision on the permit.

Any requests for a public hearing must be made within the 30 day public comment period. A request for a hearing should be in writing and specify in as much detail as possible the portion of the Preliminary Determination and/or Air Quality Control regulations which the individual making the request is concerned may not have been adequately reviewed. A public hearing may be held if the Director of the Environmental Protection Division finds that such a hearing would assist the Division in a proper review of the proposed facility's capability to comply with the requirements of Federal and State Air Quality Control regulations. State laws specify that a permit shall be issued on evidence satisfactory to the Director of compliance with applicable State and Federal regulations and requirements.

After the comment period has expired, the Division will issue a Final Determination relative to the proposed project's application. Copies of the Final Determination, comments received, and any other relevant information will then be made available for public review during normal business hours at the above designated sites.