10-29-1990

Check Sheet

Company Name: Jefferson Smurfit
Permit Number: AC 16-136371
PSD Number: 122
Permit Engineer:

Application:

- [x] Initial Application
  - [ ] Incompleteness Letters
  - [ ] Responses
  - [x] Waiver of Department Action
  - [x] Department Response
  - [x] Other

WITHDRAWN

Cross References:

- [ ]
- [ ]
- [ ]

Intent:

- [ ] Intent to Issue
- [ ] Notice of Intent to Issue
- [ ] Technical Evaluation
- [ ] BACT Determination
- [ ] Unsigned Permit
- Correspondence with:
  - [ ] EPA
  - [ ] Park Services
  - [ ] Other
- [ ] Proof of Publication
  - [ ] Petitions - (Related to extensions, hearings, etc.)
  - [ ] Waiver of Department Action
  - [ ] Other

Jefferson Smurfit
AC 16-136371 PSDFL-122
Duval County

Final Determination:

- [ ] Final Determination
- [ ] Signed Permit
- [ ] BACT Determination
  - [ ] Other

Post Permit Correspondence:

- [ ] Extensions/Amendments/Modifications
- [ ] Other

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

October 24, 1990

RECEIVED
OCT 29 1990
DER - BAQM

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

Mr. C. H. Fancy, P. E.
Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJECT: APPLICATION FOR PSD PERMIT
NO. 10 COAL/BARK BOILER
PERMIT NO. AC16-136371

Dear Mr. Fancy:

This is in response to your letter of October 17, 1990 regarding the application for a PSD permit for the No. 10 Coal/Bark Boiler, Permit No. AC16-136371 by the Jacksonville Mill of the Jefferson Smurfit Corporation.

Jefferson Smurfit Corporation withdraws the subject application for consideration at this time. In the future, should the Company wish to pursue a PSD permit for the No. 10 Coal/Bark Boiler, the Department will be consulted to determine the application procedure.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
Vice President & General Manager

cc: M. Burley
M. Linn
A. Kutyna, NE Dist
R. Robinson, DESO
CHF/BA

td/PSDPERMT.WP5

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

October 17, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President and General Manager
Jacksonville Mill
Jefferson Smurfit Corporation
P. O. Box 150
Jacksonville, Florida 32201

RE: Application for PSD Permit for Power Boiler No. 10 - Permit No. AC 16-136371

Dear Mr. Mixson:

On July 14, 1987 the Department received the above referenced application for an air construction permit. A letter explaining that the Department would consider the application incomplete and hold the processing of the application in abeyance was sent to you on October 7, 1987. On October 23, 1987, you acknowledged receipt of the letter and agreed to provide the necessary submissions upon completion of the TRS emission control projects.

The Secretary recently implemented a policy that is intended to expedite the processing of active projects and remove obsolete projects from our files. This policy is intended to encourage permit applicants to respond to letters requesting additional information within about 90 days. Since your application has remained incomplete and inactive for the last 3 years, it will be necessary for you to either respond to the October 7, 1987 incompleteness letter or withdraw the application.

Please inform us in writing of your decision concerning the above referenced permit application within 30 days of receipt of this letter. In the absence of a response, it will be necessary for us to proceed with a denial of the application. If you have any questions please write to me at the address above or call Barry Andrews at (904) 488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Attachment

cc: A. Kutyna, J. Cox, D. Buff, P.E.

P 256 396 221

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to: Mr. J. Franklin Mixson, JSC	
Street and No.: P. O. Box 150	
P.O., State and ZIP Code: Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date: Mailed: 10-19-90 Permit: AC 16-136371	

PS Form 3800, June 1985 ☆U.S.G.P.O. 1989-234-555

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Mr. J. Franklin Mixson
Vice President & Gen. Manager
Jacksonville Mill
Jefferson Smurfit Corp.
P. O. Box 150
Jacksonville, FL 32201

4. Article Number
P 256 396 221

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X Frank T. Meyer

7. Date of Delivery
10-23

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Apr. 1989 ★U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

PM
26 Oct. 1987
Jax, FL
CM: P 643-720-607

Full Copy.

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

October 23, 1987

Certified Mail Return Receipt Requested

Mr. C. H. Fancy, P. E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

DER
OCT 27 1987
BAQM

Subject: Application for PSD Permit
No. 10 Power Boiler
Permit No. AC16-136371, PSD-FL-122

Dear Mr. Fancy:

By a letter dated September 29, 1987, a request was submitted to the Department for an additional 120 day waiver of the permit review calendar for the subject permit application.

In a letter dated October 7, 1987 from the Department's William A. Thomas, the Company was informed that the Department considered the application incomplete and that processing of the application would not resume until substantive amendments and additional information requested was received.

Because of other pressing matters, such as the required submittal of construction permit applications for TRS sources, the Company accepts the letter of incompleteness and requests that its letter of September 29, 1987 be ignored.

The additional information and comments requested by the Department will be submitted at some later date.

If you have any questions, please call Jerry Cox or Gene Tonn at 904/353-3611 or write to me at the above address.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
Vice President and
General Manager
Jacksonville Mill

10/28/87 mg

B. Carotano - US Forest Atlanta
B Waite - U.S. Forest
Wayne Aronson - EPA
Miguel Flores - NPS
Bill Stewart, NE Dist
Betsy Pittman - OGC
Bruce Mitchell
K. Mehta - BESD

cc: William A. Thomas, P. E. - DER ICHF
Mike Harley
Max Linn

J. Franklin Mixson
JEFFERSON SMURFIT CORPORATION
P.O. BOX 150 JACKSONVILLE, FLORIDA 32201

10/28

FYI
Thanks,
(M)

JACKSONVILLE FLA. OCT 25 '07
U.S. POSTAGE
$1.67

RETURN RECEIPT REQUESTED

CERTIFIED
P 643 720 607
MAIL

Mr. C. H. Fancy, P. E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

October 7, 1987

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
Post Office Box 150
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: Application for a PSD Permit for Power Boiler No.10
AC 16-136371, PSD-FL-122

We have not received a letter asking that we continue to hold processing of the above referenced application in abeyance. But, Mr. Cox informed us at the October 6, 1987 meeting of the Florida Pulp and Paper Association that such a letter was sent to Mr. Fancy. Based on our conversation with Mr. Cox, we will continue to hold the processing of your application in abeyance for the following reasons.

First, the application is unapprovable in its present form because of the modeled violations of ambient air quality standards for sulfur dioxide in Jacksonville. The ambient air quality modeling results indicate that the No.10 power boiler is a significant contributor to the violations. You will need to submit substantive amendments before the application will be approvable.

Second, the U.S. Environmental Protection Agency and the National Park Service provided substantive verbal comments during the initial 30-day review period. The written comments from both agencies were received and forwarded to you during the last 60-days. You will need to address these comments in writing before your application can be deemed complete and acceptable.

Third, Mr. Cox indicated that you would not be able to submit substantive amendments and address the comments at this time. The process of complying with the Florida TRS rules is presently a priority with your company.

We will consider your application incomplete. Processing will not resume until we receive the substantive amendments and you address the comments by the federal agencies in writing. If you

have any questions or wish to meet with us, please call me at (904) 488-1344 or write to me at the address above.

Sincerely,

William A. Thomas, P.E.
Administrator
Stationary Source Control Section
Bureau of Air Quality
Management

WT/MH/ss

cc: B. Pittman
B. Mitchell
M. Harley
M. Linn
M. Flores
W. Aronson
J. Woosley
W. Waite
D. Buff, P.E.
B. Carothud

P 274 007 673

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J. Franklin Mixson Jefferson Smurfit Corporation	
Street and No. P.O. Box 150	
P.O., State and ZIP Code Jacksonville, FL 3220]	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 10/07/87 Permit: AC 16-136371 PSD-FL-122	

PS Form 3800, June 1985 * U.S.G.P.O. 1985-480-794

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. *The return receipt fee will provide you the name of the person delivered to and the date of delivery.* For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
Mr. J. F. Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
P.O. Box]50
Jacksonville, FL 3220]

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P 274 007 673

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery

8. Addressee's Address *(ONLY if requested and fee paid)*

JACKSONVILLE, FL DOWNTOWN STA OCT 1987 PSD

DOMESTIC RETURN RECEIPT

PM
6 Oct. 1987
Jacksonville, Fl
CM: P-643-720-602

File Copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

DER
OCT 8 1987
BAQM

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

September 29, 1987

Certified Mail - Return Receipt Requested

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

SUBJECT: Application for PSD Permit
No. 10 Power Boiler
Permit No. AC 16-136371, PSD-FL-122

Dear Mr. Fancy:

On July 1, 1987, an application was submitted to the Department for a PSD permit for the No. 10 Power Boiler of the Jefferson Smurfit Corporation's Jacksonville Mill.

On August 7, 1987, in order to re-evaluate the application and possibly submit substantive amendments, a waiver of the permit review calendar for a period of 60 days was submitted. This waiver was granted by your letter of August 12, 1987, and the permit review calendar was tolled as of August 10, 1987.

Additional information has been requested by the National Park Service and the application shows violations of ambient air quality standards. The Company believes the response to these concerns will require substantive review and amendment of its application.

In addition, because of other pressing matters, such as the required submittal of construction permit applications for TRS sources, the Company hereby submits a request that the permit review calendar be waived an additional 120 days.

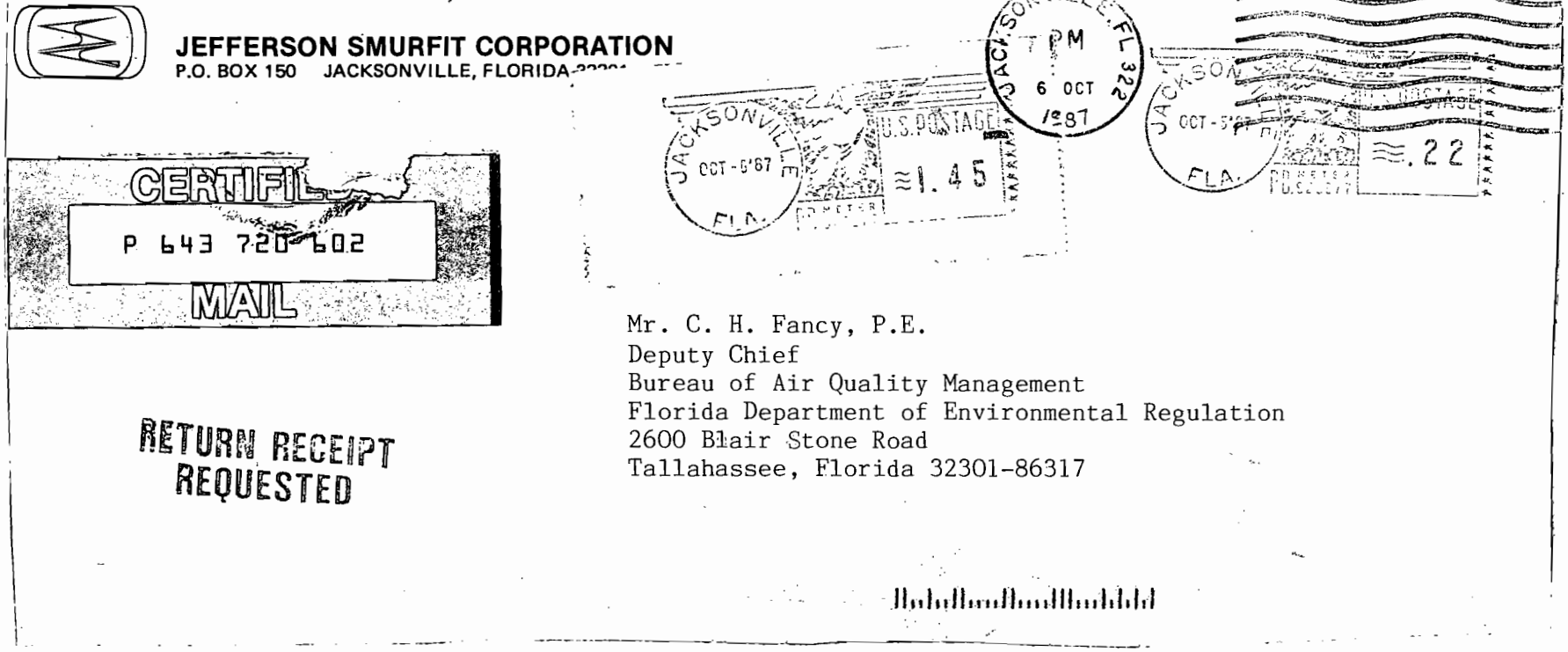
If you have any questions in consideration of this matter, please call Jerry Cox or Gene Tonn at (904) 353-3611.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson, V.P. and General Manager
Jefferson Smurfit Corporation, Jacksonville Mill

Copied: CHF/BT
Mike Harley
Bruce Mitchell
Bill Stewart, NE Dist.
K. Mehta, BESD
B. Pittman
Miguel Idoux, NPS
Wayne Aronson, EPA
B. Waite - US Forest
B. Carotrud - US Forest
} 10/9/87



JEFFERSON SMURFIT CORPORATION
P.O. BOX 150 JACKSONVILLE, FLORIDA 32201

CERTIFIED
P 643 720 602
MAIL

RETURN RECEIPT
REQUESTED

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

PM
22 Sept. 87
Atlanta, GA

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DER

SEP 24 1987

BAQM

SEP 22 1987

Permit: AC 16-136371
PSD-FL-122

4APT/AP-jeh

Mr. C. H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32339

Dear Mr. Fancy:

On August 26, 1987, you sent us a letter requesting EPA's opinion on the use of contemporaneous emission decreases by Jefferson Smurfit Corporation. Our response to that letter is as follows:

On October 1, 1985, the company was issued a permit to construct a new lime kiln. At that time, contemporaneous emission decreases at the mill were used by the company to "net out" of Prevention of Significant Deterioration (PSD) review. Now the company wishes to modify the new lime kiln and use the unused portion of the total net decrease in emissions from the previous netting calculation. According to federal regulations at 40 CFR 51.24(b)(3)(iii),

> ... an increase or decrease in actual emissions is creditable only if the reviewing authority has not relied on it in issuing a permit for the source under regulations approved pursuant to this section....

Thus, if the State has relied on the original emission decreases in issuing a permit pursuant to State PSD regulations, then those credits (or what is left over after the needed credits are used) are not available for further use. After a PSD permit is issued for a particular pollutant, none of the increases or decreases at or before that time can ever be used again in a netting calculation; the slate is in essence "wiped clean".

You also asked if the effective date, from which contemporaneous emission changes are considered, remains the same for the modification as it was for the original application. Under EPA's PSD regulations, the contemporaneous time frame is measured from the date the proposed construction is scheduled to begin. The term "construction" includes not only physical changes, but any change in the method of operation of a unit which results in a change in actual emissions. Therefore, the "contemporaneous" date would not be the same for the original construction of the lime kiln as it would be for the proposed modification, even if no physical change is proposed.

You also asked about EPA's policy as it relates to the use of contemporaneous emissions pursuant to 40 CFR 52.21(r)(4), Source Obligation. Under 40 CFR 52.21(r)(4), if the limitations on a source or modification are relaxed such that a source becomes a major source or major modification, then PSD review requirements would apply to the source or modification as though construction had not yet begun. Thus, if a proposed modification to an existing source would allow the original source to become major, then a present day PSD review must be done for the original source and the proposed modification together as one. In this case, net emissions changes would be calculated as usual, using the same "contemporaneous" date as would be used for the proposed modification.

We have attempted to outline EPA's interpretation of the proper use of contemporaneous emission changes under federal PSD rules. However, it should be noted that, pursuant to Section 116 of the Clean Air Act, states are free to interpret their regulations in a manner which is in effect more stringent than what federal law requires.

I hope this information has been helpful. If you have any further questions regarding this matter, please contact Wayne Aronson or Janet Hayward of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

copied: Mike Harley
Max Hinn
CHF/BT
Jerry Wocoby
Bill Stewart-
Bruce Mitchell

9/25/87 mr

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR - 4

U.S. OFFICIAL MAIL
ATLANTA SEP 22'87 GA.
PENALTY FOR PRIVATE USE $300
P.B. METER 6250488
U.S. POSTAGE 0.22

Mr. C. H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

File Copy

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

September 21, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
Post Office Box 150
Jacksonville, Florida 32201

Dear Mr. Mixson:

RE: Application for a PSD Permit for Power Boiler No. 10
AC 16-136371, PSD-FL-122

Enclosed is a copy of the National Park Service's written comments about the above referenced project. These comments are being forwarded to you pursuant to my letter of August 27, 1987. Please prepare a response that addresses each of the National Park Service comments during the period of the 60 day waiver. The response needs to include all documentation and should be submitted with any amendments to your application. It is obvious that the additional information will be necessary to respond to the concerns of the National Park Service.

If you have any questions or wish to meet with us, please call Mike Harley at (904) 488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CF/MH/ss

cc: B. Pittman
B. Mitchell
M. Harley
M. Linn
M. Flores
W. Aronson
J. Woosley
B. Carothers
D. Buff, P.E.

P 274 007 688

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J. Franklin Mixson Jefferson Smurfit Corp.	
Street and No. P.O. Box 150	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 09/22/87 Permit: AC 16-136371 Federal: PSD-FL-122	

PS Form 3800, June 1985 * U.S.G.P.O. 1985-480-794

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to: J. Franklin Mixson
Jefferson Smurfit Corp.
P.O. Box 150
Jacksonville, FL 32201

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number: P 274 007 688

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
9/25/87

8. Addressee's Address *(ONLY if requested and fee paid)*

DOMESTIC RETURN RECEIPT

When we CC: Forest Service
we need to include:

William R. Waite
U.S. Forest Service
Federal Bldg.
227 N. Bronough, Suite 4061
Tallahassee, FL 32301

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
RW AQD
MAIL STOP 60130
N3615 (475)

SEP 4 1987

DER
SEP 14 1987
BAQM

Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Ms. Janes:

We have reviewed the information you sent us regarding Jefferson Smurfit Corporation's proposal to increase allowable sulfur dioxide (SO_2) emissions from the existing Power Boiler No. 10 located at its plant in Jacksonville, Florida. This facility is located approximately 55 km southeast of Okefenokee National Wildlife Refuge, a class I area administered by the U.S. Fish and Wildlife Service. For the reasons discussed in the attached technical review, we recommend the Florida Department of Environmental Regulation deny the requested SO_2 emissions increase, and require Jefferson Smurfit Corporation to continue to meet the current emissions limitation.

For your information, in accordance with a request by the Region 4 Director of the U.S. Fish and Wildlife Service, Region 6 in Denver is now submitting formal comments on any air quality related projects in Region 4. Please continue to send copies of any applications to:

Miguel I. Flores
Chief, Permit Review and Technical Support Branch
Air Quality Division
National Park Service
P.O. Box 25287
Lakewood, CO 80225

A notification of the project should also be sent to the Region 4 Air Quality Coordinator.

If you have any questions regarding these comments please contact Miguel Flores at 303-969-2072.

Copied: Mike Harley
Nat Finn
BT/CHF
Jerry Wooley
Bill Stewart
9.14.87 mf

Sincerely yours,

John L. Spinks, Jr.
Deputy Regional Director

Attachment

TECHNICAL REVIEW
for
Jefferson Smurfit Corporation

Current SO_2 emissions from Power Boiler No. 10 are limited to 289.5 lb/hr (0.66 lb/10^6 BTU at maximum capacity). Jefferson Smurfit Corporation is requesting the allowable limit be increased to 528.7 lb/hr (1.2 lb/10^6 Btu), the maximum applicable emissions allowable under New Source Performance Standard. No physical modification to the boiler will be required in order to implement this change. Therefore, the Environmental Protection Agency determined the change is not defined as a modification under New Source Performance Standard and is not subject to the new industrial boiler New Source Performance Standard which the Environmental Protection Agency proposed on June 19, 1986. The proposed New Source Performance Standard would require a minimum of 90 percent reduction in potential SO_2 emissions from new or modified industrial boilers.

The Florida Department of Environmental Regulation construction permit for Power Boiler No. 10 was issued on February 3, 1981, and the operating permit on November 11, 1985. Power Boiler No. 10 replaced four other boilers at the mill. In order to avoid Prevention of Significant Deterioration review for the new boiler, Jefferson Smurfit Corporation agreed to a 289.5 lb/hr emissions limitation for the boiler. This rate was the total permitted emissions from the four boilers replaced by Power Boiler No. 10. In a September 29, 1980, letter to the Florida Department of Environmental Regulation, Jefferson Smurfit Corporation stated that there would be no increase in SO_2 emissions over the existing boiler system, and that it was their intent to accept the SO_2 emissions limitation of 289.5 lb/hr for permit review purposes. Because of this "no net increase" in SO_2 emissions, Jefferson Smurfit Corporation was able to construct the boiler without undergoing the Prevention of Significant Deterioration review process. Jefferson Smurfit Corporation agreed to the 289.5 lb/hr rate, was aware of its implications, was able to achieve this rate with the present SO_2 control system, and benefited by not undergoing Prevention of Significant Deterioration review.

It appears the reason for Jefferson Smurfit Corporation's proposed emissions increase is solely economic. Jefferson Smurfit Corporation has been meeting the 289.5 lb/hr limitation since 1985, and they indicate that even when burning a higher sulfur content coal (3.5 percent maximum) the existing SO_2 scrubbing system is capable of meeting the present limit. Jefferson Smurfit Corporation can save approximately $350,000 annually in sodium hydroxide costs if the proposed 80 percent reduction (1.2 lb/10^6 BTU) is allowed, compared to the approximately 90 percent control required to meet the present SO_2 limitation. To allow Jefferson Smurfit Corporation to emit more SO_2 emissions solely for an economic savings, after using the

more stringent rate to avoid Prevention of Significant Determination review, could set a bad precedent. If the proposed increase is allowed, other sources may seek similar economic savings by shutting down their air pollution control equipment. Or they may commit to stringent limitations, possibly exempting them from Prevention of Significant Deterioration review, with the intent of requesting less stringent limitations after the facility is constructed and operating. Air pollution control equipment should be viewed as an integral part of the manufacturing process, not as something that can be turned down or off as a way of reducing operating costs. Also, Prevention of Significant Deterioration review is a preconstruction permit program. It was not intended to review sources under this program after they have been constructed and are operating and the applicant has spent millions of dollars. A review under these circumstances could be compromised.

Under the worst case conditions of burning 3.5 percent sulfur coal at maximum capacity, the required SO_2 scrubbing efficiency to achieve Jefferson Smurfit Corporation's proposed SO_2 limitation of 1.2 lb/10^6 BTU for all Power Boiler No. 10 levels of operation would be 80 percent. To meet the existing 0.66 lb/10^6 BTU limitation under these conditions, the required scrubber efficiency would be approximately 90 percent. Therefore, in their Best Available Control Technology analysis, Jefferson Smurfit Corporation compared the proposed 80 percent scrubbing to the required 90 percent. Based on Jefferson Smurfit Corporation's economic analysis, compared to the 80 percent control option, 90 percent control would remove an additional 1159 tons per year of SO_2, at an additional cost of $350,000 per year. This equates to an incremental cost of 302/ton of SO_2 removed, which Jefferson Smurfit Corporation considers excessive. In developing the 90 percent reduction requirement for the proposed New Source Performance Standards the Environmental Protection Agency performed extensive economic analyses of various control alternatives. In determining incremental cost effectiveness for these control alternatives, the Environmental Protection Agency cites a wide range of values. For example, for a 400 x 10^6 BTU/hr boiler locating in Environmental Protection Agency Region 5, the incremental cost effectiveness for 90 percent reduction compared to 70 percent control could be as high as 2250/ton. For a similar sized boiler in Environmental Protection Agency Region 8, the incremental cost effectiveness could be only $250/ton. Based on their economic analyses, the Environmental Protection Agency concluded that a 90 percent reduction requirement is more cost effective than lower percent reduction requirements and proceeded to propose the 90 percent requirement. Based on the incremental cost effectiveness numbers cited by the Environmental Protection Agnecy we do not consider 302/ton SO_2 removed to be unreasonable. Therefore, from a cost/benefit standpoint, we do not feel a higher emission rate is justified. Also, Jefferson Smurfit Corporation states that the environmental impact of the proposed 80 percent control is small, representing less than 15 percent of the National Ambient Air Quality Standard. This conclusion is misleading because it fails to

consider the impact on the Prevention of Significant Deterioration increment and Florida Ambient Air Quality Standards. Based on Jefferson Smurfit Corporation's Prevention of Significant Deterioration increment analysis, the maximum 24-hour average Prevention of Significant Deterioration class II increment consumption is estimated to be 97 percent of the maximum allowable increment. The proposed increase in SO_2 emissions from Power Boiler No. 10 contributes approximately 42 percent of this concentration. In addition, in a July 27, 1987, letter to the Duval County Department of Health, the Florida Department of Environmental Regulation states, "In the process of reviewing the Prevention of Significant Deterioration analyses for the SO_2 emission increase for the Jefferson Smurfit Corporation's power boiler No. 10, a number of modeled exceedances of the 24-hour SO_2 Florida Ambient Air Quality Standard have been found." We understand that the Florida Department of Environmental Regulation would issue an intent to deny the permit based on these exceedances. Although in the Jefferson Smurfit Corporation refined modeling analysis these violations of the Florida Ambient Air Quality Standard would no longer occur as a result of using actual emissions (instead of allowable) from several large sources in the area, we do not believe modeling with actual instead of allowable emissions should be allowed unless the Florida Department of Environmental Regulation modifies the permit conditions for each of these sources to reflect present day actual emissions. If the JEA*** Northside Unit No. 2 and other permitted sources come on line or increase actual emissions in 1992, or prior to that time, Jefferson Smurfit Corporation modeling analysis shows that violations of the Florida Ambient Air Quality Standard would occur. Consequently, we do not consider the proposed environmental impact "small" considering the large extent of increment consumption and the large contribution of the proposed emissions increase, and the potential exceedances of the Florida Ambient Air Quality Standard. Therefore, from an environmental standard we do not feel the proposed higher emission rate is justified.

Jefferson Smurfit Corporation also states that the majority of Best Available Control Technology determinations on power boilers in the pulp and paper industry have resulted in emission limitations of $1.2 lb/10^6$ BTU. They further state that imposition of a lower limit would place Jefferson Smurfit Corporation at a significant economic disadvantage in the market place. Because Jefferson Smurfit Corporation competitors would be required to meet the new New Source Performance Standards requirements for a new or modified boiler, Jefferson Smurfit Corporation may receive an economic advantage if they are not required to meet similar requirements. Regarding past Best Available Control Technology determinations, the list provided by Jefferson Smurfit Corporation shows that the dates of these Best Available Control Technology determinations range from November 1977 to October 1985, and that 17 of the 29 determinations occurred in 1980 or 1981. This information must have been available to Jefferson Smurfit Corporation at the time they decided to opt to avoid Prevention of Significant Deterioration review back in 1981 by accepting a more stringent limitation than what may have been imposed by the Florida Department of Environmental

Regulation had they applied for a Prevention of Significant Deterioration permit at that time. It is difficult to accept that economics were not an issue in 1981 in light of the national economic situation at that time, i.e., the economic recession. Because Jefferson Smurfit Corporation is now proposing to increase emissions, such an increase should be reviewed by present standards, not standards in effect in 1981. The New Source Performance Standards proposed in 1986 would require new or modified boilers to reduce SO_2 emissions by at least 90%. Although the Environmental Protection Agency determined the proposed change is not subject to the new New Source Performance Standards, a case-by-case Best Available Control Schedule analysis should consider the fact that such standards exist. In addition, Florida New Source Review Rule 17-2,500(2)(g) states:

> "If a previously permitted facility or modification becomes a facility or modification which would be subject to the New Source Review requirements of this section if it were a proposed new facility or modification solely by virtue of a relaxation in any federally enforceable limitation on the capacity of the facility or modification to emit a pollutant (such as a restriction on hours of operation), which limitation was established after August 7, 1980, then at the time of such relaxation the New Source Review requirements of this section shall apply to the facility or modification as though construction had not yet commenced on it." (emphasis added)

If the State performs a Best Available Control Technology analysis for Power Boiler No. 10 "as though construction had not yet commenced on it," Best Available Control Technology should be at least as stringent as that required for other new boilers. Therefore, Best Available Control Technology for Power Boiler No. 10 is a 90 percent SO_2 scrubbing system, not the 80 percent scrubbing proposed by Jefferson Smurfit Company.

With regard to the applicant's analysis of effects on Okefenokee National Wildlife Refuge, the applicant performed a level 1 visibility analysis which indicated there should be no adverse impact on visibility at the Refuge due to Jefferson Smurfit Corporation. We agree with this conclusion. Jefferson Smurfit Corporation did an analysis of their SO_2 contribution to Okefenokee Refuge and the Prevention of Significant Deterioration class I increment. However, they did not give values for the cumulative SO_2 concentration that would result at Okefenokee Refuge. Without this information, we cannot predict effects on air quality related values (other than visibility) at Okefenokee Refuge. We ask that you require Jefferson Smurfit Corporation to provide such cumulative concentration values and forward these values to us for our consideration.

Jefferson Smurfit Corporation states that the maximum predicted SO_2 - concentrations near the plant, when using actual instead of allowable emissions for several large sources, will be 947 ug/m^3 for a 3-hour period, 253 ug/m^3 for a 24-hour period, and 53 ug/m^3 annually. They then state (page 6-2) that "the predicted 3-hour and 24-hour concentrations are at or below values shown to cause injury to other native vegetation. . . . As a result no adverse impacts to vegetation are predicted due to the proposed Jefferson Smurfit Corporation modification." The total predicted ambient concentrations were derived using modeled concentrations plus lowest ambient levels occurring in the area during the period 1983-1985 as background values. We question whether the use of the lowest values is appropriate. Perhaps the average of the measured ambient levels over the 3-year period would be more representative of actual concentrations in the area. Regardless of the background levels used, the high ambient SO_2 levels measured in the area tend to support the validity of the predicted concentrations from Jefferson Smurfit Corporation modeling analysis. The predicted SO_2 levels are sufficiently high to result in vegetation injury. From Table 6-1 in the application, it can be deduced that with the maximum predicted SO_2 concentrations in the area (from all sources) that orchard grass, trembling aspen, and the sensitive vegetation referenced in the Dreisinger and McGovern reference would be affected. McLaughlin and Lee, 1974, mentioned in Table 6-1 of the application, looked at the effects of SO_2 on 84 species of plants near a coal-fired power plant in the southeastern United States. They found that 10 percent of the plants showed visible injury after SO_2 doses of 780 ug/m^3 for a 3-hour exposure, and 1300 ug/m^3 for a 1-hour exposure. In addition, Jefferson Smurfit Corporation did not consider the impacts of SO_3 on nonvascular plants, especially lichens, which can be much more sensitive to SO_2. They also did not address the issue of chronic or long-term exposure of plants to the expected levels of SO_2. They only addressed the issue of short-term or acute exposures. Finally, SO_2 and ozone can act synergistically, that is, symptoms occur at lower pollutant concentrations when both pollutants are present, than when one alone is present. Because Jacksonville is presently not attaining the ozone National Ambient Air Quality Standard and has measured ozone levels as high as 0.14 ppm, the levels of SO_2 in the area could exacerbate plant damage.

In summary, we recommend the State retain the present 289.5 lb/hr (0.66 lb/10^6 BTU) SO_2 emissions limitation and deny Jefferson Smurfit Corporation's request to increase the allowable rate to 528.7 lb/hr (1.2 lb/10^6 BTU) for the following reasons: (1) Jefferson Smurfit Corporation originally obtained an operating permit by agreeing to stringent emission limitations which it has demonstrated it can meet; (2) were Jefferson Smurfit Corporation coming in as a new Prevention of Significant Deterioration source they would be required to meet 90 percent scrubbing efficiency; (3) allowing a relaxation of the emission limitation could set a bad precedent; and (4) the high levels of SO_2 in the Jacksonville area resulting from Jefferson Smurfit Corporation's increased emissions may cause damage to vegetation in the vicinity of the source.

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12

United States Department of the Interior
FISH AND WILDLIFE SERVICE

TAKE PRIDE IN AMERICA

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:

RW AQD
MAIL STOP 60130
N3615 (475)

SEP 4 1987

DER
SEP 14 1987
BAQM

Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Ms. Janes:

We have reviewed the information you sent us regarding Jefferson Smurfit Corporation's proposal to increase allowable sulfur dioxide (SO_2) emissions from the existing Power Boiler No. 10 located at its plant in Jacksonville, Florida. This facility is located approximately 55 km southeast of Okefenokee National Wildlife Refuge, a class I area administered by the U.S. Fish and Wildlife Service. For the reasons discussed in the attached technical review, we recommend the Florida Department of Environmental Regulation deny the requested SO_2 emissions increase, and require Jefferson Smurfit Corporation to continue to meet the current emissions limitation.

For your information, in accordance with a request by the Region 4 Director of the U.S. Fish and Wildlife Service, Region 6 in Denver is now submitting formal comments on any air quality related projects in Region 4. Please continue to send copies of any applications to:

Miguel I. Flores
Chief, Permit Review and Technical Support Branch
Air Quality Division
National Park Service
P.O. Box 25287
Lakewood, CO 80225

A notification of the project should also be sent to the Region 4 Air Quality Coordinator.

If you have any questions regarding these comments please contact Miguel Flores at 303-969-2072.

Copied: Mike Harley
Nat Finn
BT/CHF
Jerry Wooley
Bill Stewart
9.14.87 mp

Sincerely yours,

John L. Spinks, Jr.
Deputy Regional Director

Attachment

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
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DENVER FEDERAL CENTER
DENVER, COLORADO 80225

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Ms Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fla 32399-2400

TECHNICAL REVIEW
for
Jefferson Smurfit Corporation

Current SO_2 emissions from Power Boiler No. 10 are limited to 289.5 lb/hr (0.66 lb/10^6 BTU at maximum capacity). Jefferson Smurfit Corporation is requesting the allowable limit be increased to 528.7 lb/hr (1.2 lb/10^6 Btu), the maximum applicable emissions allowable under New Source Performance Standard. No physical modification to the boiler will be required in order to implement this change. Therefore, the Environmental Protection Agency determined the change is not defined as a modification under New Source Performance Standard and is not subject to the new industrial boiler New Source Performance Standard which the Environmental Protection Agency proposed on June 19, 1986. The proposed New Source Performance Standard would require a minimum of 90 percent reduction in potential SO_2 emissions from new or modified industrial boilers.

The Florida Department of Environmental Regulation construction permit for Power Boiler No. 10 was issued on February 3, 1981, and the operating permit on November 11, 1985. Power Boiler No. 10 replaced four other boilers at the mill. In order to avoid Prevention of Significant Deterioration review for the new boiler, Jefferson Smurfit Corporation agreed to a 289.5 lb/hr emissions limitation for the boiler. This rate was the total permitted emissions from the four boilers replaced by Power Boiler No. 10. In a September 29, 1980, letter to the Florida Department of Environmental Regulation, Jefferson Smurfit Corporation stated that there would be no increase in SO_2 emissions over the existing boiler system, and that it was their intent to accept the SO_2 emissions limitation of 289.5 lb/hr for permit review purposes. Because of this "no net increase" in SO_2 emissions, Jefferson Smurfit Corporation was able to construct the boiler without undergoing the Prevention of Significant Deterioration review process. Jefferson Smurfit Corporation agreed to the 289.5 lb/hr rate, was aware of its implications, was able to achieve this rate with the present SO_2 control system, and benefited by not undergoing Prevention of Significant Deterioration review.

It appears the reason for Jefferson Smurfit Corporation's proposed emissions increase is solely economic. Jefferson Smurfit Corporation has been meeting the 289.5 lb/hr limitation since 1985, and they indicate that even when burning a higher sulfur content coal (3.5 percent maximum) the existing SO_2 scrubbing system is capable of meeting the present limit. Jefferson Smurfit Corporation can save approximately $350,000 annually in sodium hydroxide costs if the proposed 80 percent reduction (1.2 lb/10^6 BTU) is allowed, compared to the approximately 90 percent control required to meet the present SO_2 limitation. To allow Jefferson Smurfit Corporation to emit more SO_2 emissions solely for an economic savings, after using the

more stringent rate to avoid Prevention of Significant Determination review, could set a bad precedent. If the proposed increase is allowed, other sources may seek similar economic savings by shutting down their air pollution control equipment. Or they may commit to stringent limitations, possibly exempting them from Prevention of Significant Deterioration review, with the intent of requesting less stringent limitations after the facility is constructed and operating. Air pollution control equipment should be viewed as an integral part of the manufacturing process, not as something that can be turned down or off as a way of reducing operating costs. Also, Prevention of Significant Deterioration review is a preconstruction permit program. It was not intended to review sources under this program after they have been constructed and are operating and the applicant has spent millions of dollars. A review under these circumstances could be compromised.

Under the worst case conditions of burning 3.5 percent sulfur coal at maximum capacity, the required SO_2 scrubbing efficiency to achieve Jefferson Smurfit Corporation's proposed SO_2 limitation of 1.2 lb/10^6 BTU for all Power Boiler No. 10 levels of operation would be 80 percent. To meet the existing 0.66 lb/10^6 BTU limitation under these conditions, the required scrubber efficiency would be approximately 90 percent. Therefore, in their Best Available Control Technology analysis, Jefferson Smurfit Corporation compared the proposed 80 percent scrubbing to the required 90 percent. Based on Jefferson Smurfit Corporation's economic analysis, compared to the 80 percent control option, 90 percent control would remove an additional 1159 tons per year of SO_2, at an additional cost of $350,000 per year. This equates to an incremental cost of 302/ton of SO_2 removed, which Jefferson Smurfit Corporation considers excessive. In developing the 90 percent reduction requirement for the proposed New Source Performance Standards the Environmental Protection Agency performed extensive economic analyses of various control alternatives. In determining incremental cost effectiveness for these control alternatives, the Environmental Protection Agency cites a wide range of values. For example, for a 400 x 10^6 BTU/hr boiler locating in Environmental Protection Agency Region 5, the incremental cost effectiveness for 90 percent reduction compared to 70 percent control could be as high as 2250/ton. For a similar sized boiler in Environmental Protection Agency Region 8, the incremental cost effectiveness could be only $250/ton. Based on their economic analyses, the Environmental Protection Agency concluded that a 90 percent reduction requirement is more cost effective than lower percent reduction requirements and proceeded to propose the 90 percent requirement. Based on the incremental cost effectiveness numbers cited by the Environmental Protection Agnecy we do not consider 302/ton SO_2 removed to be unreasonable. Therefore, from a cost/benefit standpoint, we do not feel a higher emission rate is justified. Also, Jefferson Smurfit Corporation states that the environmental impact of the proposed 80 percent control is small, representing less than 15 percent of the National Ambient Air Quality Standard. This conclusion is misleading because it fails to

consider the impact on the Prevention of Significant Deterioration increment and Florida Ambient Air Quality Standards. Based on Jefferson Smurfit Corporation's Prevention of Significant Deterioration increment analysis, the maximum 24-hour average Prevention of Significant Deterioration class II increment consumption is estimated to be 97 percent of the maximum allowable increment. The proposed increase in SO_2 emissions from Power Boiler No. 10 contributes approximately 42 percent of this concentration. In addition, in a July 27, 1987, letter to the Duval County Department of Health, the Florida Department of Environmental Regulation states, "In the process of reviewing the Prevention of Significant Deterioration analyses for the SO_2 emission increase for the Jefferson Smurfit Corporation's power boiler No. 10, a number of modeled exceedances of the 24-hour SO_2 Florida Ambient Air Quality Standard have been found." We understand that the Florida Department of Environmental Regulation would issue an intent to deny the permit based on these exceedances. Although in the Jefferson Smurfit Corporation refined modeling analysis these violations of the Florida Ambient Air Quality Standard would no longer occur as a result of using actual emissions (instead of allowable) from several large sources in the area, we do not believe modeling with actual instead of allowable emissions should be allowed unless the Florida Department of Environmental Regulation modifies the permit conditions for each of these sources to reflect present day actual emissions. If the JEA*** Northside Unit No. 2 and other permitted sources come on line or increase actual emissions in 1992, or prior to that time, Jefferson Smurfit Corporation modeling analysis shows that violations of the Florida Ambient Air Quality Standard would occur. Consequently, we do not consider the proposed environmental impact "small" considering the large extent of increment consumption and the large contribution of the proposed emissions increase, and the potential exceedances of the Florida Ambient Air Quality Standard. Therefore, from an environmental standard we do not feel the proposed higher emission rate is justified.

Jefferson Smurfit Corporation also states that the majority of Best Available Control Technology determinations on power boilers in the pulp and paper industry have resulted in emission limitations of 1.2lb/10^6 BTU. They further state that imposition of a lower limit would place Jefferson Smurfit Corporation at a significant economic disadvantage in the market place. Because Jefferson Smurfit Corporation competitors would be required to meet the new New Source Performance Standards requirements for a new or modified boiler, Jefferson Smurfit Corporation may receive an economic advantage if they are not required to meet similar requirements. Regarding past Best Available Control Technology determinations, the list provided by Jefferson Smurfit Corporation shows that the dates of these Best Available Control Technology determinations range from November 1977 to October 1985, and that 17 of the 29 determinations occurred in 1980 or 1981. This information must have been available to Jefferson Smurfit Corporation at the time they decided to opt to avoid Prevention of Significant Deterioration review back in 1981 by accepting a more stringent limitation than what may have been imposed by the Florida Department of Environmental

Regulation had they applied for a Prevention of Significant Deterioration permit at that time. It is difficult to accept that economics were not an issue in 1981 in light of the national economic situation at that time, i.e., the economic recession. Because Jefferson Smurfit Corporation is now proposing to increase emissions, such an increase should be reviewed by present standards, not standards in effect in 1981. The New Source Performance Standards proposed in 1986 would require new or modified boilers to reduce SO_2 emissions by at least 90%. Although the Environmental Protection Agency determined the proposed change is not subject to the new New Source Performance Standards, a case-by-case Best Available Control Schedule analysis should consider the fact that such standards exist. In addition, Florida New Source Review Rule 17-2,500(2)(g) states:

> "If a previously permitted facility or modification becomes a facility or modification which would be subject to the New Source Review requirements of this section if it were a proposed new facility or modification solely by virtue of a relaxation in any federally enforceable limitation on the capacity of the facility or modification to emit a pollutant (such as a restriction on hours of operation), which limitation was established after August 7, 1980, then at the time of such relaxation the New Source Review requirements of this section shall apply to the facility or modification as though construction had not yet commenced on it." (emphasis added)

If the State performs a Best Available Control Technology analysis for Power Boiler No. 10 "as though construction had not yet commenced on it," Best Available Control Technology should be at least as stringent as that required for other new boilers. Therefore, Best Available Control Technology for Power Boiler No. 10 is a 90 percent SO_2 scrubbing system, not the 80 percent scrubbing proposed by Jefferson Smurfit Company.

With regard to the applicant's analysis of effects on Okefenokee National Wildlife Refuge, the applicant performed a level 1 visibility analysis which indicated there should be no adverse impact on visibility at the Refuge due to Jefferson Smurfit Corporation. We agree with this conclusion. Jefferson Smurfit Corporation did an analysis of their SO_2 contribution to Okefenokee Refuge and the Prevention of Significant Deterioration class I increment. However, they did not give values for the cumulative SO_2 concentration that would result at Okefenokee Refuge. Without this information, we cannot predict effects on air quality related values (other than visibility) at Okefenokee Refuge. We ask that you require Jefferson Smurfit Corporation to provide such cumulative concentration values and forward these values to us for our consideration.

Jefferson Smurfit Corporation states that the maximum predicted SO_2 - concentrations near the plant, when using actual instead of allowable emissions for several large sources, will be 947 ug/m^3 for a 3-hour period, 253 ug/m^3 for a 24-hour period, and 53 ug/m^3 annually. They then state (page 6-2) that "the predicted 3-hour and 24-hour concentrations are at or below values shown to cause injury to other native vegetation. . . . As a result no adverse impacts to vegetation are predicted due to the proposed Jefferson Smurfit Corporation modification." The total predicted ambient concentrations were derived using modeled concentrations plus lowest ambient levels occurring in the area during the period 1983-1985 as background values. We question whether the use of the lowest values is appropriate. Perhaps the average of the measured ambient levels over the 3-year period would be more representative of actual concentrations in the area. Regardless of the background levels used, the high ambient SO_2 levels measured in the area tend to support the validity of the predicted concentrations from Jefferson Smurfit Corporation modeling analysis. The predicted SO_2 levels are sufficiently high to result in vegetation injury. From Table 6-1 in the application, it can be deduced that with the maximum predicted SO_2 concentrations in the area (from all sources) that orchard grass, trembling aspen, and the sensitive vegetation referenced in the Dreisinger and McGovern reference would be affected. McLaughlin and Lee, 1974, mentioned in Table 6-1 of the application, looked at the effects of SO_2 on 84 species of plants near a coal-fired power plant in the southeastern United States. They found that 10 percent of the plants showed visible injury after SO_2 doses of 780 ug/m^3 for a 3-hour exposure, and 1300 ug/m^3 for a 1-hour exposure. In addition, Jefferson Smurfit Corporation did not consider the impacts of SO_3 on nonvascular plants, especially lichens, which can be much more sensitive to SO_2. They also did not address the issue of chronic or long-term exposure of plants to the expected levels of SO_2. They only addressed the issue of short-term or acute exposures. Finally, SO_2 and ozone can act synergistically, that is, symptoms occur at lower pollutant concentrations when both pollutants are present, than when one alone is present. Because Jacksonville is presently not attaining the ozone National Ambient Air Quality Standard and has measured ozone levels as high as 0.14 ppm, the levels of SO_2 in the area could exacerbate plant damage.

In summary, we recommend the State retain the present 289.5 lb/hr (0.66 lb/10^6 BTU) SO_2 emissions limitation and deny Jefferson Smurfit Corporation's request to increase the allowable rate to 528.7 lb/hr (1.2 lb/10^6 BTU) for the following reasons: (1) Jefferson Smurfit Corporation originally obtained an operating permit by agreeing to stringent emission limitations which it has demonstrated it can meet; (2) were Jefferson Smurfit Corporation coming in as a new Prevention of Significant Deterioration source they would be required to meet 90 percent scrubbing efficiency; (3) allowing a relaxation of the emission limitation could set a bad precedent; and (4) the high levels of SO_2 in the Jacksonville area resulting from Jefferson Smurfit Corporation's increased emissions may cause damage to vegetation in the vicinity of the source.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 31, 1987

Mr. Don Bayly, Chief
Duval County Department of Health,
Welfare and Bio-Environmental
Services
515 West Sixth Street
Jacksonville, FL 32206

Dear Mr. Bayly:

In the course of reviewing an air permit application the Bureau has uncovered modeled violations of the SO_2 standards in Jacksonville. In order to resolve these violations, it is necessary that we have the best data possible to more completely identify the extent of the problem. Consequently, we respectfully request the cooperation of your air staff in obtaining this data as soon as possible.

The facilities of interest are:

1. JEA - Northside
2. JEA - Southside
3. JEA - SJRPP
4. JEA - Kennedy
5. U.S. Gypsum
6. Seminole Kraft
7. Anheuser Busch
8. Oxce Fuel
9. Container Corp.
10. Jefferson Smurfit
11. SCM Corp.

For each of these facilities the SO_2 emission rate (and method of calculation), stack height, stack diameter, exit temperature, and exit velocity for each SO_2 source is required.

Thank you for your cooperation in this matter. If you have any questions regarding this request please contact me or Mr. Max Linn, BAQM staff meteorologist, at (904)488-1344.

Sincerely,

Clair H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CF/plm
cc: M. Linn
M. Harley

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 27, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
Post Office Box 150
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: Application for a PSD Permit for Power Boiler No. 10
AC 16-136371, PSD-FL-122

Enclosed is a copy of the comments which the Region IV Office of the U.S. EPA offered with regard to your PSD permit application for the No. 10 Power Boiler. Mr. Norman Davis of your company was informed on August 10 that we had received these comments and would forward them to you. Please prepare a response that addresses each of the EPA comments during the period of the 60 day waiver. The response needs to include all documentation and should be submitted with any amendments to your application. It is obvious that the EPA considers the requested information to be necessary for your application to be acceptable.

The National Park Service informed us by telephone on the afternoon of August 10 that they also have substantive written comments. We have not yet received these comments, but the comments will be forwarded as soon as they are received.

If you have any questions or wish to meet with us, please call Mike Harley at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/MH

cc: B. Pittman
B. Mitchell
M. Harley
M. Linn
M. Flores
W. Aronson
J. Woosley
B. Carothers
D. Buff, P.E.
John Bunyak - NPS 8/28
Bill Waite - US Forest

P 274 007 708

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Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 08/28/87 Permit: AC 16-136371 FED. I.D.: PSD-FL-122	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

PS Form 3811, July 1983 447-845

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Vice President and General Manager
Jefferson Smurfit Corporation
Post Office Box 150
Jacksonville, FL 32201

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Always obtain signature of addressee or agent and **DATE DELIVERED.**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

AUG 0 5 1987

4APT/AB-aes

DER

AUG 7 1987

BAQM

Margaret V. Janes
Bureau of Air Quality
Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Jefferson Smurfit Corporation (JSC)

Dear Ms. Janes:

This is to acknowledge the receipt of the application for construction and air quality modeling printouts submitted by the above-referenced company. The proposed modification for the existing No. 10 boiler will be subject to prevention of significant deterioration (PSD) review.

After reviewing the application, we have the following comments:

1. As it is stated in the application, JSC seeks to increase the permitted SO_2 emission limit from 0.66 lb/mmBtu to 1.2 lb/mmBtu. However, the net emissions increase procedure for the increase in SO_2 emissions appears incorrect. The proper net emissions increase is done by subtracting the actual emissions from the proposed potential emissions. Thus, from page 7-4, the net emissions increase should be 2,316 TPY - 488 TPY = 1,828 TPY.

2. JSC has cited the new source performance standard (NSPS) as one of the justifications for the proposed increase in SO_2 emissions. However, it should be made clear that the NSPS serves only as the minimum emission limit guideline for which a particular type of process must meet and that best available control technology (BACT) determination is done on a case-by-case basis and may be more stringent than NSPS.

3. As you may know, different sulfur content coals have different chemical composition as well as ash contents. Although JSC claims that the proposed use of a 3.5% sulfur content coal will not affect other pollutant emissions, please ensure that JSC provides the necessary documentation to verify that the chemical composition and ash content of the proposed coal will not cause the proposed modification to be subject to PSD review for any significant increases of the other regulated pollutants (i.e., TSP, berylium, mercury, lead, etc.)

4. The BACT determination does not appear to be complete. The two alternative control proposals only seem to demonstrate the impracticalities of any other alternative control proposals aside from the base case. Specifically, JSC is excluding other control alternatives by the reasons of higher costs associated with the use of 1.0% S coal, higher caustic usage, and the impracticalities of maintaining a 90% SO_2 removal system. Other options such as the use of a 2.5% (or some other sulfur content between 3.5% and 1.0%) with a 80% SO_2 removal system (the associated incremental cost is approximately $297.01/ton of SO_2 removed) should be examined. Please ensure that JSC provides a more complete BACT determination.

Please address our comments in your preliminary determination and draft permit. If you have any further questions, please contact me or Mr. Gary Ng at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

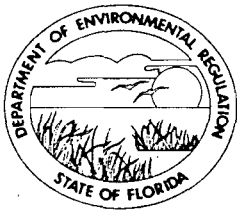
Copied: Mike Harley
Max Linn
CHF/BT
8/10/87 mr

Jefferson Smurfit
AC 16-136371

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400



BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 26, 1987

Mr. Bruce P. Miller
Chief
Air Programs Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Miller:

Re: Contemporaneous Emissions Application Pursuant to 40 CFR 52.21(r)(4): Source Obligation

The Bureau of Air Quality Management's Central Air Permitting staff recently met with Jefferson Smurfit Corporation's representatives concerning their No. 3 Lime Kiln. The kiln was issued a State construction permit, No. AC 16-095614, on October 1, 1985. The pollutant emissions review was such that PSD and Nonattainment Area new source reviews were avoided by using contemporaneous emission decreases. The mill has performed its initial compliance test pursuant to 40 CFR 60, Subpart A.

The company is now unofficially (no application submitted) proposing to modify the No. 3 Lime Kiln and is inquiring about the U.S. EPA's policy as it relates to the use of contemporaneous emissions pursuant to review under 40 CFR 52.21(r)(4), Source Obligation. There is no physical change proposed. Specifically, for the proposed modification, can the company use any of the unused amounts of the contemporaneous emissions previously offered and partially used in the original No. 3 Lime Kiln review? Also, would the effective date from which contemporaneous emissions be considered and calculated remain the same as in the original application review?

Would you please have someone review and prepare a response to the above questions. I might mention that Mr. Bruce Mitchell of my staff has had recent discussions on these issues with Mr. Wayne Aronson, Chief-Program Support Section, of your staff. Thank you for your assistance in this matter.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/bm

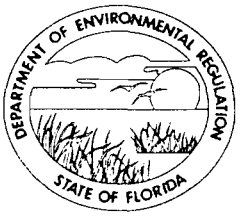
cc: Steve Smallwood - DER
Bill Thomas - DER
Jerry Woosley - Duval Cty Dept. Health, Welfare & Bio-Environmental Svcs.
Wayne Aronson - EPA
Betsy Pittman - DER
Terry Cole Oertel, Hoffman law offices
Jerry Cox - Jefferson Smurfit Corp.

Project File

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400



BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 12, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
V. P. and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

Dear Mr. Mixson:

RE: Application for a PSD Permit for Power Boiler No. 10
AC 16-136371, PSD-FL-122

We have received your letter of August 7, 1987, which asked the Department to discontinue the processing of the PSD permit application for your No. 10 Power Boiler. Your letter was received on August 10, 1987 (day 28 of the permit review process). Our Office of General Counsel informs us that your letter constitutes a waiver that tolls the permit review calendar as of August 10, 1987, for a period of 60 days. If you submit substantive amendments to your application within the 60-day waiver period, then processing of your application will resume. The date that the Department receives the additional information will become Day 1 of the 90-day permitting calendar. If you do not submit substantive amendments or submit another waiver within the 60-day waiver period, then we will issue an Intent to Deny. Presently, your application shows violations of ambient air quality standards for SO_2 to which Jefferson Smurfit Corporation is a substantial contributor. Therefore, the application is unapprovable at this time.

If you have any questions or we may be of further assistance, please write to either me or Ms. Betsy Pittman, Assistant General Counsel, at the above address or call me at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/BM/ss

cc: Betsy Pittman
Bruce Mitchell
Mike Harley
Max Linn
Miguel Flores
Wayne Aronson
Jerry Woosley
Bill Carothers

P 274 007 714

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J. Franklin Mixson Jefferson Smurfit Corp.	
Street and No. 1915 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 08/12/87 Permit: AC 16-136371 Federal: PSD-FL-122	

★ U.S.G.P.O. 1985-480-794

PS Form 3800, June 1985

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, FL 32201

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail	P 274 007 714

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X [signature]

7. Date of Delivery
8/2[illegible]

8. Addressee's Address *(ONLY if requested and fee paid)*

DOMESTIC RETURN RECEIPT

PM
8.7.87
Federal Express
Jax, FL

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

August 7, 1987

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

FEDERAL EXPRESS - AUGUST 7, 1987

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

Dear Mr. Fancy:

We request the Department of Environmental Regulation to place the review of our proposed #10 Power Boiler P.S.D. permit application on hold for 60 days because we would like to re-evaluate and make substantive amendments to application #AC16-136371, #PSD-FL-122.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
V.P. and General Manager

JFM/nml

Copied: Mike Harley
Max Linn
BT/CHF
OGC
Bruce P. Miller - EPA
Jerry Woosley - Duval County
Miguel Flores, NPS
Wayne Aronson, EPA

8/10/87 mr

DER
AUG 10 1987
BAQM

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 3107157701

15 70438M

F

00

DATE 8/7

AIRBILL NUMBER 3107157701

1 From (Your Name) J. E. MASON

Your Phone Number (Very Important) (904) 353-3611

Company JEFFERSON SMURFIT CORP

Department/Floor No.

Street Address 1915 WIGMORE STREET

City JACKSONVILLE State FL

ZIP Required For Correct Invoicing 32204

2 To (Recipient's Name) C. H. FANCY, P.E.

Recipient's Phone Number (Very Important) ( )

Company Florida Dept. of Environmental Regulation

Department/Floor No.

Exact Street Address (Use of P.O. Boxes or P.O. # Zip Codes Will Delay Delivery And Result In Extra Charge.) 2600 Blair Stone Road

City Tallahassee State FLA.

ZIP Street Address Zip Required 32301-8317

RECIPIENT'S COPY

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

4 SERVICES CHECK ONLY ONE BOX

1 ☐ **PRIORITY 1** Overnight Delivery Using Your Packaging

2 ☐ **OVERNIGHT DELIVERY USING OUR PACKAGING** Courier-Pak Overnight Envelope* 12"x 15½"

3 ☐ Overnight Box 12½"x 17½"x 3" A ☐

4 ☐ Overnight Tube 38"x 6"x 6" B ☐

*Declared Value Limit $100.

5 ☐ **STANDARD AIR** Delivery not later than second business day

6 ☒ **OVERNIGHT LETTER*** (Our Packaging) 9½"x12½"

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 ☐ **HOLD FOR PICK-UP** (Fill in Section H at right)

2 ☒ **DELIVER WEEKDAY**

3 **DELIVER SATURDAY** (Extra charge) ☐

4 ☐ **DANGEROUS GOODS** (PI-1 and Standard Air Packages only. Extra charge)

5 ☐ **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)

6 ☐ **DRY ICE** _____ Lbs.

7 ☐ **OTHER SPECIAL SERVICE** _____

8 ☐

9 ☐ **SATURDAY PICK-UP** (Extra charge)

10 ☐

PACKAGES	WEIGHT	YOUR DECLARED VALUE	CODED SIZE
	LBS		
	LBS		
	LBS		
	LBS		
Total	Total	Total	

Received At
1 ☐ Regular Stop
2 ☒ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No. 1172

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature: JSON AGU

Date/Time For Federal Express Use 8/7 1415

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
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City State

ZIP ® Zip Code of Street Address Required

Emp. No. Date

☐ Cash Received

☐ Return Shipment ☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received

Federal Express Use

Base Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

PART #106001

8-10

maggie—

Please make sure this gets tracked properly. It certainly looks like a substantial permit at this point.

Clay

PM
8/5/87
Atlanta, GA

file copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

AUG 0 5 1987

4APT/AB-aes

DER

AUG 7 1987

BAQM

Margaret V. Janes
Bureau of Air Quality
Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Jefferson Smurfit Corporation (JSC)

Dear Ms. Janes:

This is to acknowledge the receipt of the application for construction and air quality modeling printouts submitted by the above-referenced company. The proposed modification for the existing No. 10 boiler will be subject to prevention of significant deterioration (PSD) review.

After reviewing the application, we have the following comments:

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Please address our comments in your preliminary determination and draft permit. If you have any further questions, please contact me or Mr. Gary Ng at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: Mike Harley
Max Linn
CHF/BT
8/10/87 mr

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

EPA

United States
Environmental Protection
Agency
Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Official Business
Penalty for Private Use
$300

Margaret V. Janes
Bureau of Air Quality
Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

File

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 29, 1987

Mr. Bill Carothers
Technical Air Quality Specialist
U.S. Forest Service
1720 Peachtree Road, N.W.
Suite 846 N.
Atlanta, Georgia 30367

Dear Mr. Carothers:

RE: Jefferson Smurfit Corporation
State Construction Permit Number: AC 16-136371
PSD-FL-122

Enclosed per your request is a copy of the application packet for the above referenced company. If you have any comments or questions, please contact Mike Harley or Max Linn by August 12, 1987, at the above address or call them at (904)488-1344.

Sincerely,

Margaret V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

cc: Mike Harley
Max Linn

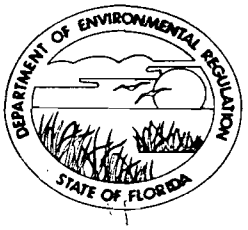
enclosure

File Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400



BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 27, 1987

Mr. Jerry Woosley
Duval County Department of Health,
Welfare & Bio-Environmental Services
515 West Sixth Street
Jacksonville, FL 32206

Dear Mr. Woosley:

In the process of reviewing the PSD analysis for the SO_2 emission increase for the Jefferson Smurfit Corporation's power boiler No. 10, a number of modeled exceedances of the 24-hour SO_2 Florida Ambient Air Quality Standard, have been found. As a result, the major contributors to these modeled results have been identified. In order to verify this modeling and make a preliminary determination regarding this permit application, an accurate emission inventory of the major contributors is necessary.

Each of the major contributors' emissions have been reviewed using the APIS system and the company supplied 1985 Annual Operating Reports. The following table documents the discrepancies between the two data sources. The bureau requests that you confirm or update these values.

For this application, Day 30 is August 12, 1987. We need you findings prior to this date and as soon as possible.

Furthermore, an accurate emission inventory, with stack parameters, is needed for the J.W. Swisher facility. As you explained before, this source burns natural gas with Unit #3 having #2 oil as backup only. In view of the documented 24-hour SO_2 AAQS exceedances written confirmation of the normal maximum hourly emission rate is needed for this source.

Thank you for your assistance in this matter. If you have any questions regarding this request, please contact me at (904)488-1344.

Sincerely,

Max A. Linn
Meteorologist
Bureau of Air Quality
Management

ML/plm

cc: Bruce Mitchell
Mike Harley
Wayne Aronson, EPA Region IV
Miguel Flores, NPS Air Quality Division

Facility: U.S. Gypsum		SO_2		NOx	
APIS NUMBERS	SOURCE DESCRIPTION	APIS (lb/hr)	AOR (lb/hr)	APIS (lb/hr)	AOR (lb/hr)
16007233	#2 Board Plant Kiln Exhaust	100.0	—	...	8.76
16007236	#1 thru #7 Calcining Kettle Burners	97.0	NR	...	NR
16007241	Dowtherm Heater, #2 Wallboard Plant	28.5	—	...	2.4
16007248	Rotary Rock Dryer	32.4	NR	8.18	NR
16007255	#7 Calcining Kettle Burner	—	—	12.5	4.13
16007268	Combustion Turbine #1	.03	NR	12.0	NR
16007269	Combustion Turbine #2	.03	NR	12.0	NR
?	4 Paper Mill Steamer Boilers	NE	—	NE	6.75
Facility: Seminole Kraft					
16006701	#1 Lime Kiln	...	4.38	...	14.58
16006702	#2 Lime Kiln	...	6.56	...	21.88
16006703	#3 Lime Kiln	...	6.56	...	21.88
16006704	#1 Bark Boiler	3.57	4.63	67.55	70.68
16006705	#2 Bark Boiler	381.40	4.63	67.55	70.68
16006706	#1 Boiler	4.44	4.44	...	67.82
16006707	#2 Boiler	6.76	5.90	...	90.20
16006708	#3 Boiler	6.76	5.90	99999.99	90.20
16006709	#1 Recovery Boiler	260.00	72.92	...	14.58
16006710	#2 Recovery Boiler	109.38	109.38	99999.99	21.88
16006711	#3 Recovery Boiler	332.50	109.38	99999.99	21.88
16006712	Smelt Dissolving Tank #1	1.46	NR	...	NR
16006713	Smelt Dissolving Tank #2	2.19	NR	...	NR
16006714	Smelt Dissolving Tank #3	2.19	NR	...	NR

Facility: Jefferson Smurfit		SO_2		NOx	
APIS NUMBERS	SOURCE DESCRIPTION	APIS (lb/hr)	AOR (lb/hr)	APIS (lb/hr)	AOR (lb/hr)
16000302	#2 Lime Kiln	...	5.60	—	18.60
16000305	Recovery Boiler #9	...	181.00	362.00	36.20
16000306	#1 Lime Kiln	...	5.58	...	18.60
16000307	#2 Lime Kiln	99999.99	5.60	99999.99	18.60
16000309	Bark Boiler	...	289.50	—	308.70
16000312	Bark Boiler (Same Stack Parameters as SDT in AOR)	...	3.60	—	—
Facility: Anheuser - Busch					
16000602	#2 Boiler	215.0	237.5	34.0	38
16000603	#3 Boiler	227.5	237.5	36.4	38
16000604	#4 Boiler	225.0	237.5	36.0	38
16000627	Gas Turbine	—	—	52.4	NR
16000628	Recovery Boiler	0.03	NR	3.8	NR
Facility: JEA Northside					
16004502	#2 Steam Generator	4657.0	—	...	—
16004509	#6 Combustion Turbine	...	328.10	...	143.22
16004513	Aux Boiler B	34.0	68.52	25.20	25.20
16004514	Aux Boiler A	227.0	228.38	47.00	84.00

NR : AOR Not Reported
NE : Not Entered in APIS
— : Not Emitted
... : Entered as dots in APIS

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 24, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32206

Dear Mr. Mixson:

Re: No. 9 Power Boiler Permit Application Package Submittal
Construction Permit No. AC 16-136371
PSD-FL-122

The Department received an application package and associated fee on July 1, 1987. The Department did not receive the minimum applications and supporting documents for completeness review required by Florida Administrative Code Rule 17-4.05(2) until July 14, 1987. Therefore, the Department's official date of receipt of the above referenced application package, supporting documents, and associated fee is July 14, 1987.

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

for H. G. Thomas

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/BM/s

cc: Jerry Cox
David Buff, P.E.
Jerry Woosley, BESD
Mike Harley
Max Linn

attachment

P 274 007 724

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J. Franklin Mixson	
Street and No. Jefferson Smurfit Corp. 1915 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32206	
Postage*	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 7/24/87 AC 16-136371 PSD-FL-122	

PS Form 3800, June 1985

* U.S.G.P.O. 1985-480-794

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
J. Franklin Mixson
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, FL 32206

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P 274 007 724

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery
7/25/87

8. Addressee's Address (ONLY if requested and fee paid)
1915 WIGMORE ST
JAX, FLA

DOMESTIC RETURN RECEIPT

The above listed exemptions do not relieve the named installation, facility or equipment from any other requirements of the Florida Pollution Control Act or rules and regulations of the Department.
Specific Authority: 403.061, 403.805, F.S. Law Implemented: 253.123, 253.124, 403.021, 403.031, 403.061, 403.087, 403.088, 403.802, 403.805, 403.813, F.S. History: Formerly 17-4.03(2), F.A.C.; New 3-4-72; Revised 5-17-72; Amended 8-7-73, 6-10-75, 10-26-75, 7-8-76, 7-13-78, 3-1-79; Joint Administrative Procedures Committee Objection Withdrawn - See FAW Vol. 3, No. 30, 7-29-77; Amended 3-11-81, 7-8-82, 3-31-83, 3-15-84, 12-10-84.

17-4.05 Procedure to Obtain Permit; Application.

(1) Any person desiring to obtain a permit from the Department shall make application on forms prescribed by the Department and shall submit such information as the Department may require. The Department may require such person to submit any additional information reasonably necessary for proper evaluation.

(2) All applications and supporting documents shall be filed in quadruplicate with the Department.

(3) To ensure protection of public health, safety, and welfare any construction, modification, or operation of an installation which may be a source of pollution or a public drinking water supply shall be in accordance with good professional engineering practices pursuant to Chapter 471, Florida Statutes. Therefore, all applications for a Department permit shall be certified by a professional engineer registered in the State of Florida except when the applicant is a salaried officer of the government of the United States or a salaried engineer employed by such government while engaged within the State in the practice of professional engineering solely for the United States government or where professional engineering is not required by Chapter 471, F.S.

(4) Each application for a permit shall be accompanied by a processing fee, except for applications filed by departments of the executive branch established pursuant to Chapter 20, F.S., and water management districts established pursuant to Chapter 373, F.S. The check shall be made payable to the Department of Environmental Regulation. The processing fee is nonrefundable except as provided for in Section 120.60, F.S, and in this section. Processing fees are as follows:

(a) Air Pollution Source Permits

1. Construction Permit for a source having potential emissions of more than 100 tons per year of any single pollutant $1000

2. Construction Permit for a source having potential emissions of more than 75 tons per year of any single pollutant $750

3. Construction Permit for a source having potential emissions of more than 50 tons per year of any single pollutant $500

4. Construction Permit for a source having potential emissions of more than 25 tons per year of any single pollutant $250

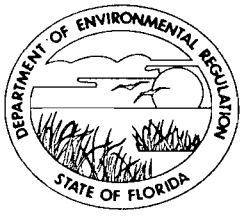
5. Construction Permit for a source having potential emissions of less than 25 tons per year of any single pollutant $100

File Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400



BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 15, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Jefferson Smurfit Corporation
State Construction Permit: AC 16-136371

A copy of an application on the above named company (potential PSD) was forwarded to you on July 7, 1987. The modeling is now enclosed for your review and comments. Due to the intermittent mailing from the applicant, the official starting completeness review clock date is July 14, 1987. Therefore, if you have any comments or questions, please contact Mike Harley or Max Linn at the above address or at (904)488-1344. Any comments that you have should be submitted to the Bureau by August 12, 1987.

Sincerely,

Margaret V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

Attachment

File Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 15, 1987

Mr. Miguel Flores
Chief, Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: Potential PSD Application
Jefferson Smurfit Corporation
State Construction Permit Number: AC 16-136371

Enclosed for your review and comment is an application packet for the above referenced company. The existing facility is within 100 kilometers of Wolf Island, the Okefenokee Swamp, Osceola National Forest, and possibly the Ocala National Forest. If you have any comments or questions, please contact Max Linn by August 11, 1987, at the above address or call him at (904)488-1344.

Sincerely,

Margaret V. Jones

Margaret V. Jones
Bureau of Air Quality
Management

/mj

cc: John D. Schroer, Okefenokee - National Wildlife Refuge
John P. Davis, Wolf Island - National Wildlife Refuge
Russ Galipeau, NPS - SE Regional Office
John E. Alcock, US Forest Service

enclosures

2. Definition of ~~Acc~~ Util. Eq.?

3. Is power sold to the grid?

1. Acid Rain Plan - Period - 91 RACT 0.75 ~~sevc~~ Plan to stay with

[redacted]

SO2 1264.5 1264.5

Pacs 677.9 - 1520

Co 693.6 - 170.4

HC 672.2 - 144

NOx 2665.4 - 1065.8

Bark/Coal 60 000/9688

O /38312

5% 3.5

Ash 8.1

N2 1-2%

Btu 11,500

St. Ht 200'

Gas 175 000 ACFM

Dia 10833"

Temp 142° F

vel 32 FPS

[redacted]

UPS #: 1419 8323 545
7-14-87
Gainesville, FL

File Copy

KBN

AC16-136371

July 12, 1987
86032

Ms. Margaret Janes
State of Florida
Department of Environmental Regulation
Bureau of Air Quality
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Ms. Janes:

Enclosed please find two copies of the model output for Jefferson Smurfit. Please call if you have any questions.

Sincerely,

Robert C. McCann Jr.

Robert C. McCann, Jr.
Principal Scientist

copied:
Max Linn, DER
Wayne Aronson, EPA } 7-15-87 RCM
Miguel Flores, NPS
& cc's

DER

JUL 14 1987

BAQM

KBN ENGINEERING AND APPLIED SCIENCES, INC.
P. O. Box 14288 5700 SW 34th Street Gainesville, FL 32604 904/375-8000

SUMMARY OF COMPUTER PRINTOUT LISTINGS FOR THE PROPOSED MODIFICATIONS AT JEFFERSON SMURFIT IN DUVAL COUNTY FLORIDA

The following descriptions and filenames provide a guide to the computer printouts supplied with this application. A general description of the analysis is given along with the generic filename. The brackets in the filename (i.e. <YR>) indicate that there are multiple years, several cases or different averaging times of the analysis. A key is shown below.

<YR>	Year of meteorological data used in the analysis.
<CASE>	Case number of the analysis
<AVG. TIME>	Modeled averaging period

General Description	Generic Filename
Screening Analysis	
1. AAQS, PSD CLASS II FAR FIELD (500-2400m) RECEPTORS	JS<YR>SCR.OUT
2. PSD CLASS I	JS<YR>C1.OUT
3. PSD CLASS II NEAR FIELD (100, 300m) RECEPTORS	JS<YR>SCRP.OUT
Refined Analysis	
4. PSD CLASS II (24hr)	JS<YR>P24R.OUT
5. PSD CLASS II (3hr)	JS<YR>P3R.OUT
6. AAQS, 24hr (MAXIMUM EMISSIONS)	J<YR>R24M<CASE>.OUT J<YR>M<CASE>SC.OUT
7. AAQS, 24hr (ACTUAL EMISSIONS)	J<YR>M<CASE>SC.OUT J<YR>M<CASE>AC.OUT
8. AAQS 3hr (MAXIMUM EMISSIONS)	J<YR>RM<CASE>.OUT
Screening Analysis	
9. AAQS ANNUAL	J<YR>SCRAN.OUT
10. AAQS (ACTUAL ANNUAL EMISSIONS)	J<YR>SCRAC.OUT
Refined Analysis	
11. PSD CLASS I	JS<YR>C124R.OUT JS<YR><AVG. TIME>P1.OUT

 AC 16-136371 file

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Mr. Khurshid Mehta, P.E.	Initial	
	Date	
2.	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

Enclosed is the application for the Jefferson Smurfit Corporation (potential PSD). Please submit your comments to Mike Harley by July 30, 1987, (SC) 278-1344.

Sincerely,

Maggie Janes

Margaret Janes
Planner

cc: Mike Harley

INFORMATION

- [ ] Review & Return
- [ ] Review & File
- [ ] Initial & Forward
- [ ]

DISPOSITION

- [ ] Review & Respond
- [ ] Prepare Response
- [ ] For My Signature
- [ ] For Your Signature
- [ ] Let's Discuss
- [ ] Set Up Meeting
- [ ] Investigate & Report
- [ ] Initial & Forward
- [ ] Distribute
- [ ] Concurrence
- [ ] For Processing
- [ ] Initial & Return

FROM:

C. H. Janey

DATE
07-07-87

PHONE
(904) 488-1344

file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 7, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Jefferson Smurfit Corporation
State Construction Permit: AC 16-136371

Enclosed for your review and comment is a copy of the application for construction on the above named company (potential PSD). Additional copies of the modeling have been requested and a copy will be forwarded to you under separate cover when it has been received. If you have any comments or questions, please contact Mike Harley or Max Linn at the above address or at (904)488-1344. Any comments that you have should be submitted to the Bureau by July 30, 1987.

Sincerely,

Margaret Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

Attachment

AC 16-136371

file copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

July 6, 1987

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

FEDERAL EXPRESS - JULY 6, 1987

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

RE: Air Construction Permit Application
SO_2 Emission Increase
Power Boiler No. 10
Jefferson Smurfit Corporation
Jacksonville, Florida

DER
JUL 7 1987
BAQM

Dear Mr. Fancy:

On June 30, 1987 an Air Construction Application, a two volume set of ISCST modeling analysis and a $1,000 permit application fee were submitted to the Department by Federal Express. Inadvertently, only one copy of the application was submitted.

Enclosed are three additional copies required for this application.

Should there be any questions, please call Gene Tonn at (904)353-3611.

Very truly yours,

E J Tonn

E. T. Tonn, P.E.
Senior Environmental Engineer

ETT/nml

Enclosures

FEDERAL EXPRESS®

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 3107157686

70438M

DATE 7-14-87

AIRBILL NUMBER 3107157686

1 From (Your Name): MARC G. TONN | Your Phone Number (Very Important): (904) 353-3611

Company: JEFFERSON SMURFIT CORP | Department/Floor No.:

Street Address: 1915 WIGMORE STREET

City: JACKSONVILLE | State: FL | ZIP Required For Correct Invoicing: 32206

2 To (Recipient's Name): MR. C. H. FANCY, P.E. | Recipient's Phone Number (Very Important): ( )

Company: BUREAU OF AIR QUALITY MANAGEMENT | Department/Floor No.:

Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result In Extra Charge.): 2600 BLAIR STONE RD.

City: TALLAHASSEE | State: FL | ZIP Street Address Zip Required: 32301-8637

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
Street Address (See Service Guide or Call 800-238-5355)

City | State

ZIP ® Zip Code of Street Address Required

Emp. No. DER | Date JUL 1987

☐ Cash Received

☐ Return Shipment ☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City BAQM | State | Zip

Received By: X

Date/Time Received | FedEx Employee Number

4 SERVICES CHECK ONLY ONE BOX

1 ☒ PRIORITY 1 Overnight Delivery (Using Your Packaging) 6 ☐ OVERNIGHT LETTER* (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING

2 ☐ Courier-Pak Overnight Envelope* 12"x 15½"

3 ☐ Overnight Box 12½"x 17½"x 3" A ☐

4 ☐ Overnight Tube 38"x 6"x 6" B ☐

*Declared Value Limit $100.

5 ☐ STANDARD AIR Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 ☐ HOLD FOR PICK-UP (Fill in Section H at right)

2 ☒ DELIVER WEEKDAY

3 ☐ DELIVER SATURDAY (Extra charge)

4 ☐ DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)

5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)

6 ☐ DRY ICE _____ Lbs.

7 ☐ OTHER SPECIAL SERVICE _____

8 ☐

9 ☐ SATURDAY PICK-UP (Extra charge)

10 ☐

	PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	1	LBS		
		LBS		
		LBS		
		LBS		
Total	1	Total 5	Total	

Received At
1 ☐ Regular Stop 2 ☐ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No. 1644

Date/Time For Federal Express Use 7/16 1134

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use

Base Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

RECIPIENT'S COPY

PART #106001
FEC-S-751-1000
REVISION DATE 10/86
PRINTED U.S.A. WCSE

July 01, 1987 Jefferson Smurfit AC 16-136371

At 11:35 a.m. I contacted David Buff of KBN Engineering and Applied Sciences, Inc. and requested that he send me three (3) more copies of the Jefferson Smurfit Corp. modeling packet as well as three (3) more copies of the permit application. He said that they only ran one (1) modeling packet and had sent that to the Corp. along with eight (8) copies of the application. He said that he would contact Jefferson Smurfit re: copies and he would run the copies needed of the modeling but it would take a few days.

July 6, 1987 Power Venture AC50-133747, 48, 49, 50

At approximately 2:00 I called Bob McCann of KBN Engineering and Applies Sciences, Inc. to request more copies of the modeling for Power Ventures. At the same time I asked how the run for the modeling was coming for Jefferson Smurfit Corp.? He said that they were in the process of running the printout for the modeling.. He then asked if he could send the floppy disc for us to send to the EPA and NPS. Bruce Mitchell then spoke to him and said he would investigate the possibility and let him know.

July 6, 1987

At 4:46 Bruce Mitchell contacted Bob McCann of KBN Engineering and told him that we needed the hard copies.

July 7, 1987

Second attempt to contact Bob McCann succeeded at 2:55 p.m. He said that they were still working on the runs for Power Venture and Jefferson Smurfit Corp. and the earliest they could get the modeling to us would probably be Thursday because the run ties up a computer for a long period of time.

AC-16-136371

File Copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

June 30, 1987

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

FEDERAL EXPRESS - JUNE 30, 1987

DER
JUL 01 1987
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-86317

RE: Air Construction Permit Application
SO_2 Emission Increase
Power Boiler No. 10
Jefferson Smurfit Corporation
Jacksonville, Florida

Dear Mr. Fancy:

Enclosed is an Air Construction Permit Application and a Prevention of Significant Deterioration (PSD) Analysis for an SO_2 emission increase for Power Boiler No. 10 at the Jefferson Smurfit Corporation mill in Jacksonville, Florida. Also enclosed is one set, in two volumes, of the ISCST modeling analysis, and the $1,000 permit application fee.

Current SO_2 emissions from Power Boiler No. 10 are limited by an SO_2 "cap", which restricts emissions to less than that allowed under the federal New Source Performance Standards for fossil-fuel fired steam generating units. The emission level proposed by this air construction permit application and PSD analysis is equal to the NSPS of 1.2 pounds SO_2 per million BTU heat input. No physical modifications to the boiler will be required in order to implement the change.

We trust the Department will favorably consider the application for an SO_2 emission increase for the No. 10 Power Boiler. During consideration of this matter, please call Jerry Cox or Gene Tonn at (904)353-3611 or David Buff at (904)375-8000 if you have any questions.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
V.P. and General Manager

JFM/nml

Enclosures

cc: Khurshid Mehta, P.E.-BESD

80-1837
815

JEFFERSON SMURFIT CORPORATION
401 Alton St., Alton, IL. 62002-2276

No.140245

DATE 6-30-87

PLANT NO. 13

The sum of 1000 dol's 00 cts

PAY TO THE ORDER OF
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FLA 32301

THIS CHECK NOT VALID UNLESS PRESENTED FOR PAYMENT WITHIN 180 DAYS FROM DATE OF ISSUE.

$***1,000.00*****
AMOUNT

2ND SIGNATURE REQUIRED IF OVER $5,000

CENTERRE BANK
Centerre Bank of Branson
Branson, MO 65616

2ND SIGNATURE

1ST SIGNATURE

[redacted]

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 76169

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Jefferson Smurfit Corp. Date July 1 1987

Address 401 Alton Street, Alton, Illinois 62002- P.O. Box 2276 Dollars $ 1,000.00

Applicant Name & Address Franklin Nursery - same as above

Source of Revenue √ #140245

Revenue Code 001031 Application Number AC-16-136371

By Margaret H Jones

FEDERAL EXPRESS®

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 3107157675

DATE 6/30/97

7043RM

AIRBILL NUMBER 3107157675

1 From (Your Name) MR. C. TOWN

Your Phone Number (Very Important) (904) 353-3611

Company JEFFERSON-SMURFIT CORP

Department/Floor No.

Street Address 1915 HIGHMORE STREET

City JACKSONVILLE State FL

ZIP Required For Correct Invoicing 32206

2 To (Recipient's Name) MR. C.H. FANCY JR.

Recipient's Phone Number (Very Important) ( )

Company FLA DEPT OF ENVIRONMENTAL PROTECTION

Department/Floor No.

Exact Street Address (Use of P.O. Boxes or P.O. # Zip Codes Will Delay Delivery And Result in Extra Charge.) 2600 BLAIR STONE RD.

City TALLAHASSEE State FL

ZIP Street Address Zip Required 32301-8617

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

4 SERVICES CHECK ONLY ONE BOX

1 ☒ **PRIORITY 1** Overnight Delivery (Using Your Packaging) 6 ☐ **OVERNIGHT LETTER*** (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING

2 ☐ Courier-Pak Overnight Envelope* 12"x 15½"

3 ☐ Overnight Box 12½"x 17½"x 3" A ☐

4 ☐ Overnight Tube 38"x 6"x 6" B ☐

*Declared Value Limit $100.

5 ☐ **STANDARD AIR** Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 ☐ **HOLD FOR PICK-UP** (Fill in Section H at right)

2 ☒ **DELIVER WEEKDAY**

3 **DELIVER SATURDAY** (Extra charge) ☐

4 ☐ **DANGEROUS GOODS** (P-1 and Standard Air Packages only. Extra charge)

5 ☐ **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)

6 ☐ **DRY ICE** _____ Lbs.

7 ☐ **OTHER SPECIAL SERVICE** _____

8 ☐

9 ☐ **SATURDAY PICK-UP** (Extra charge)

10 ☐

	PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	1	LBS		
		LBS		
		LBS		
		LBS		
Total	1	24	Total	

Received At
1 ☐ Regular Stop
2 ☒ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No. 2281

Date/Time For Federal Express Use 06301510

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
Street Address (See Service Guide or Call 800-238-5355)

City State

ZIP ● Zip Code of Street Address Required

Emp. No. Date

☐ Cash Received

☐ Return Shipment ☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

PART #106001
FEC-S-751-1000
REVISION DATE 10/86
PRINTED U.S.A. WCSE

RECIPIENT'S COPY

Air Construction Permit Application
for
SO_2 EMISSION INCREASE
POWER BOILER NO. 10
JEFFERSON SMURFIT CORPORATION
Jacksonville, Florida
June 1987

Prepared by:

KBN Engineering and Applied Sciences, Inc.
P.O. Box 14288
Gainesville, Florida 32604
86032

AC-16-136371
$1000.00

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

JUL 01 1987

BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Bark/Coal Power Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [XX] Modification

COMPANY NAME: Jefferson Smurfit Corporation COUNTY: Duval

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Power Boiler No. 10

SOURCE LOCATION: Street 1915 Wigmore Street City Jacksonville

UTM: East Zone 7: 439.8 North 3359.4

Latitude 30 ° 22 ' 00 "N Longitude 81 ° 37 ' 30 "W

APPLICANT NAME AND TITLE: J. Franklin Mixson, Vice President & General Manager

APPLICANT ADDRESS: P.O. Box 150, Jacksonville, Florida 32201

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Jefferson Smurfit Corp.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further I agree to maintain and operate the pollution control source and pollution contro facilities in such a manner as to comply with the provision of Chapter 403, Florid Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferabl and I will promptly notify the department upon sale or legal transfer of the permitte establishment.

*Attach letter of authorization

Signed: J. Franklin Mixson

J. Franklin Mixson, Vice President & General Manager
Name and Title (Please Type)

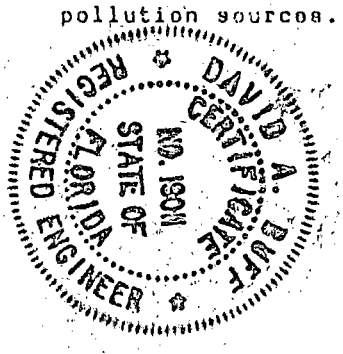
Date: 6-22-87 Telephone No. (904) 353-3611

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project hav been designed/examined by me and found to be in conformity with modern engineerin principles applicable to the treatment and disposal of pollutants characterized in th permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed David a. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

P.O. Box 14288, Gainesville, Florida 32604
Mailing Address (Please Type)

Florida Registration No. 19011 Date: June 10, 1987 Telephone No. (904) 375-8000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See PSD Analysis Report

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction upon permit issuance Completion of Construction 1 yr after permit issuance

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Complete pollution control system is already in place; no physical modification to this system will be conducted as part of the proposed project

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC 16-33885 Issued 2/3/81 Expired 1/31/84

Modified 5/24/84

AO 16-86317 Issued 11/14/85 Expires 9/30/90

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? Yes*

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

   c. If yes, list non-attainment pollutants. TSP

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

* The Jefferson Smurfit plant is located in the Jacksonville TSP Nonattainment area. Since the proposed project only concerns SO2 emissions, offsets and LAER are not required.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Not Applicable				

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): Not Applicable

2. Product Weight (lbs/hr): approx. 350,000 lb/hr steam (max)

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Sulfur Dioxide	529.2	2317.9	1.2 lb/10^6Btu	529.2	529.2	2317.9	P.B. No. 10
Particulate Matter	44.1	152	0.1 lb/10^6Btu	44.1	44.1	152	P.B. No. 10
Nitrogen Oxides	308.7	1352.1	0.7 lb/10^6Btu	308.7	308.7	1352.1	P.B. No. 10
Vol. Org. Compounds	61.0	144	N/A	N/A	61.0	144	P.B. No. 10
Carbon Monoxide	65.0	170	N/A	N/A	65.0	170	P.B. No. 10

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Mechanical dust collectors followed by wet caustic scrubbing				
	TSP	>95%	>1u	Test data
	SO2	60-95%*	N/A	Test data
	*Dependent upon amount of caustic added to scrubber water.			

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Maximum bark		60,000 B/9,688C	381.4
Maximum Coal		0 B/38,348C	441.0

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: Bark/Coal

Percent Sulfur: 0.1 (dry)/3.5 (max) Percent Ash: 2.5/8.1

Density: N/A lbs/gal Typical Percent Nitrogen: 0.2/1.5

Heat Capacity: 4500/11,500 BTU/lb N/A BTU/gal

Other Fuel Contaminants (which may cause air pollution):

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average N/A Maximum

G. Indicate liquid or solid wastes generated and method of disposal.

Coal and Bark ash are land filled dry.

Scrubber bleed is sent to effluent treatment plant. Scrubber solids are injected into biological sludge disposal system.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 10.0 ft.

Gas Flow Rate: 150,000 ACFM 94,000 DSCFM Gas Exit Temperature: 155 °F.

Water Vapor Content: 28 % Velocity: 31.8 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[X] Yes [ ] No

Contaminant	Rate or Concentration
SO2	1.2 lb/10^6 Btu

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
see PSD Analysis Report	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
SO2	1.2 lb/10^6 Btu

D. Describe the existing control and treatment technology (if any). see PSD Analysis Report

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

see PSD Analysis Report

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available epace, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicsbility to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: see PSD Analysis Report

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data Not Applicable

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was inatrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 01 / 01 / 70 to 12 / 31 / 74
month day year month day year

2. Surface data obtained from (location) Jacksonville International Airport

3. Upper air (mixing height) data obtained from (location) Waycross, Georgia

4. Stability wind rose (STAR) data obtained from (location) --

C. Computer Models Used

1. ISCST Version 6 Modified? If yes, attach deacription.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data see PSD Analysis Report

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling see PSD Analysis Report

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review. see PSD Analysis Report

G. Discuas the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

Prevention of Significant Deterioration Analysis
for
SO_2 EMISSION INCREASE POWER BOILER NO. 10
JEFFERSON SMURFIT CORPORATION
Jacksonville, Florida
June 1987

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1.0 SUMMARY

Jefferson Smurfit Corporation is proposing to increase allowable sulfur dioxide (SO_2) emissions from the existing Power Boiler No. 10 located at its plant in Jacksonville, Florida. Current SO_2 emissions from Power Boiler No. 10 are limited by an SO_2 "cap", which restricts emissions to considerably less than that allowed under the applicable federal New Source Performance Standards for fossil-fuel fired steam generating units. The proposed emission level is equal to the New Source Performance Standard of 1.2 pounds SO_2 per million Btu heat input. No physical modifications to the boiler will be required in order to implement the change.

The proposed modification, by virtue of the increase in SO_2 emissions, will constitute a major modification under state of Florida and federal Prevention of Significant Deterioration (PSD) regulations. The analysis presented in this report addresses the applicable requirements of the PSD regulations.

A description of the existing facilities at Jefferson Smurfit Corporation and the proposed modification to Power Boiler No. 10 are presented in Section 2.0. A review of applicable air quality regulations and the applicability of those regulations to the proposed modification is presented in Section 3.0. Section 4.0 contains an analysis of existing SO_2 monitoring data in the area of the Jefferson Smurfit facility. The air quality impact analysis and impacts to soils, vegetation and visibility are presented in Sections 5.0 and 6.0, respectively. A Best Available Control Technology evaluation is presented in Section 7.0. Supportive information and calculations are presented in the Appendices.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

Jefferson Smurfit Corporation (JSC) of Alton, Illinois, currently owns and operates a linerboard plant in Jacksonville, Florida. The plant is located north of downtown Jacksonville, along the St. Johns River (Figure 2-1). A site location map of the area is shown in Figure 2-2. The terrain in the area surrounding the plant is generally flat. Industrial plants are located to the north and south of JSC, along the St. Johns River. Jacksonville Electric Authority's (JEA) Northside plant is located immediately south of JSC. Residential developments are located to the west, as well as north and east, across the St. Johns River.

2.2 EXISTING OPERATIONS

The JSC plant produces linerboard from the kraft pulp process. The primary air pollutant emitting sources associated with the existing facility consist of a combination bark/coal fired power boiler (Power Boiler No. 10), a recovery boiler (Recovery Boiler No. 9) and associated smelt dissolving tank vent (Smelt Dissolving Tank No. 9), and a lime kiln (Lime Kiln No. 3). Lime Kiln No. 3 is a new lime kiln which began operating in 1986, and replaced two older lime kilns (Lime Kilns No. 1 and No. 2).

Emission sources, SO_2 emission rates, and stack parameters representative of current operations are presented in Table 2-1. Stack locations are also presented, relative to the location of Power Boiler No. 10. Stack locations within the JSC property are portrayed in Figure 2-3. Supportive information forming the basis of the SO_2 emission rates shown in Table 2-1 are provided in Appendix A.

Power Boiler No. 10 is a combination pulverized-coal, bark and oil-fired natural circulation type boiler with stoker and tilting tangential fuel firing systems. The boiler was manufactured by Combustion Engineering and has a design steam rating of 350,000 lb/hr. The maximum heat input capacity of the boiler is 441×10^6 Btu/hr when burning all coal, and 381.4×10^6 Btu/hr when burning a combination of coal and bark. Oil is only

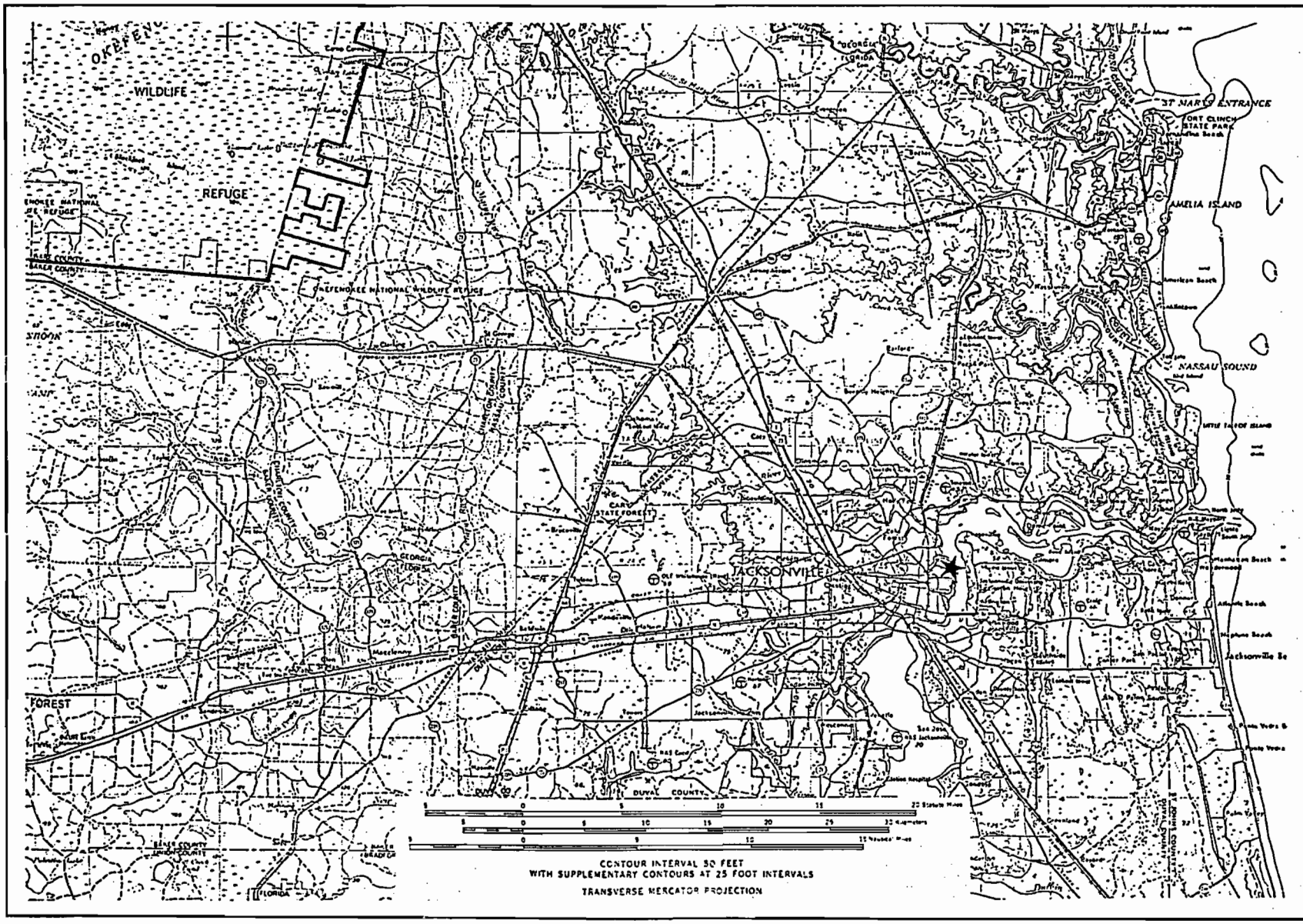

Figure 2-1. Regional Location of Jefferson Smurfit Corporation, Jacksonville, Florida

★ Plant Location

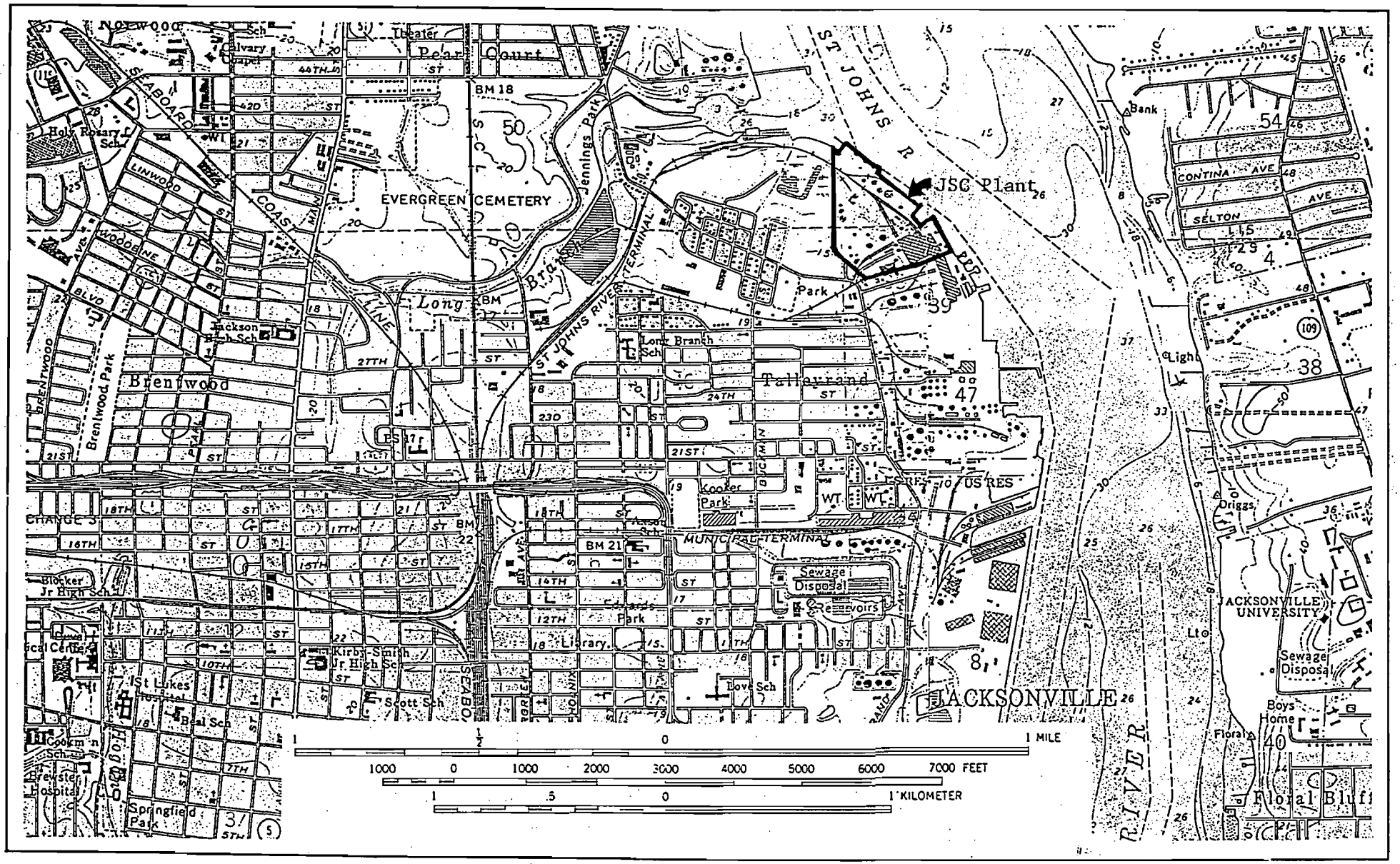

Figure 2-2. Site Location Map of Jefferson Smurfit Corporation

Table 2-1. Current SO_2 Emission Inventory, Jefferson Smurfit Corporation

Source	SO_2 Emissions (lb/hr)	SO_2 Emissions (TPY)	Stack Height (ft)	Stack Diameter (ft)	Gas Flow Rate (acfm)	Gas Velocity (fpm)	Gas Temp. (°F)	Stack Location* X (m)	Stack Location* Y (m)
				CURRENT					
Power Boiler No. 10	289.5	1265	200	10.0	150,000	1910	155	0	0
Recovery Boiler No. 9	190.3	834	175	10.5	207,000	2391	278	38	17
Smelt Dissolving Tank	3.8	17	175	5.4	19,500	851	192	42	-47
Lime Kiln No. 1+	3.8	17	52	5.0	18,600	947	161	150	-73
Lime Kiln No. 2+	3.8	17	52	4.5	26,300	1654	169	167	-112
Lime Kiln No. 3	8.33	36.5	199	4.5	22,800	1434	165	-211	148

*In relation to Power Boiler No. 10 stack location
+To be shutdown when Lime Kiln No. 3 begins operating

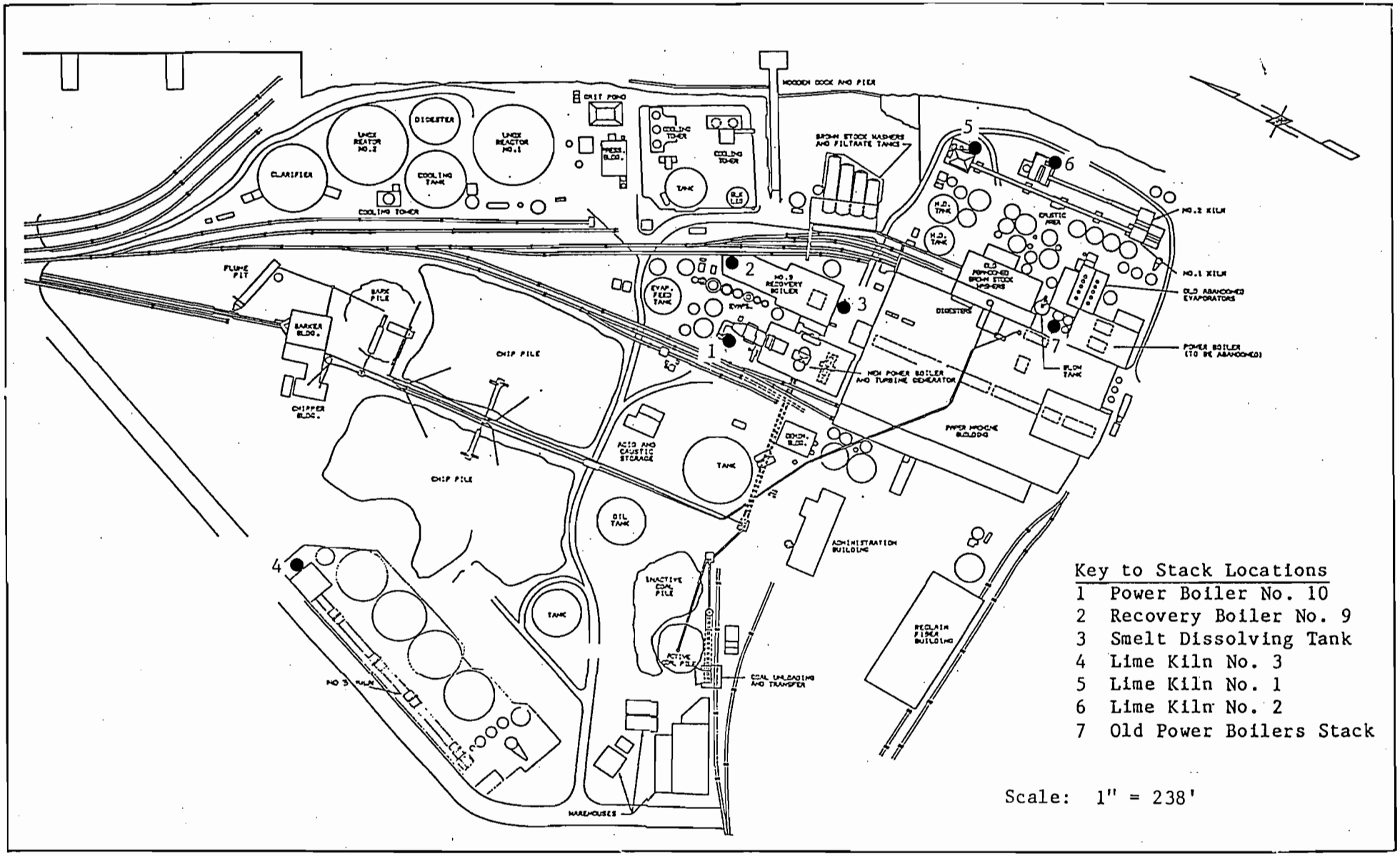

Figure 2-3. Plot Plan of Jefferson Smurfit Facility and Stack Locations

used in the boiler during periods of startup, shutdown or malfunction. Coal with a sulfur control as high as 3.5 percent can be fired in the boiler.

Power Boiler No. 10 is equipped with a mechanical collector and venturi scrubber for particulate matter (PM) control, followed by a sulfur dioxide (SO_2) absorbing system and mist eliminator. The SO_2 absorber is a counter-current spray-type absorber, which directs a high pH liquid into the gas stream. Mill effluent and purchased caustic are used as the absorbing reagent. The SO_2 control system is necessary to meet the current SO_2 emission limit for the boiler.

The Florida Department of Environmental Regulation (FDER) air construction permit for Power Boiler No. 10 (AC16-33885) was issued on February 3, 1981. This single boiler replaced four existing bark and oil-fired boilers of approximately 860 x 10^6 Btu/hr heat input capacity. Because of the creditable offsetting emissions from these shutdowns, Power Boiler No. 10 was not subject to federal PSD review when constructed. The operating permit for the boiler (AO16-86317) was issued on November 11, 1985.

Power Boiler No. 10 is subject to federal New Source Performance Standards (NSPS) for fossil fuel-fired steam generating units of greater than 250 x 10^6 Btu/hr heat input capacity (40 CFR 60, Subpart D). The NSPS limits sulfur dioxide (SO_2) emissions from the boiler to 1.2 lb/10^6 Btu heat input. However, in order to avoid PSD review, JSC agreed to a 289.5 lb/hr SO_2 cap for the boiler. The basis of this cap was the total of the permitted emissions from the four boilers which were replaced by Power Boiler No. 10 (i.e., no net increase in SO_2 emissions).

The Power Boiler No. 10 construction permit and operating permit stipulate an SO_2 limit of 1.2 lb/10^6 Btu heat input, with an SO_2 emission cap of 289.5 lb/hr. Thus, the boiler is currently allowed to emit up to 1.2 lb/10^6 Btu. However, at heat input rates above 241 x 10^6 Btu/hr, emissions are required to be reduced below 1.2 lb/10^6 Btu so that the emissions cap is not exceeded. At the maximum heat input rate of 441 x 10^6 Btu/hr, the required SO_2 emission level is 0.66 lb/10^6 Btu.

2.3 PROPOSED MODIFICATIONS TO POWER BOILER NO. 10

JSC desires to increase the SO_2 emissions cap on Boiler No. 10 to allow emitting up to 1.2 lb/10^6 Btu under all boiler operating conditions. This would increase the SO_2 emissions cap from 289.5 lb/hr (1265 tons/yr) to 528.7 lb/hr (2316 tons/yr). Supportive calculations are provided in Appendix B.

No physical changes to Power Boiler No. 10 will be necessary to allow emissions up to 1.2 lb/10^6 Btu. The construction permit and current operating permit do not restrict the sulfur content of the coal. The construction permit application for Power Boiler No. 10 specifically indicated that up to 3.5% sulfur coal can be burned in the boiler. Thus, the boiler is now capable of accommodating such fuel. In addition, no changes to the SO_2 absorbing system will be required. The SO_2 control system can operate over a wide range of SO_2 removal efficiencies. By varying the amount of caustic used in the system, the proposed SO_2 emission rate of 528.7 lb/hr can be met, regardless of the sulfur content of the coal. No significant changes in stack parameters (i.e., stack gas flow rate and temperature) for Power Boiler No. 10 are anticipated as a result of the increase in SO_2 emissions.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements that must be satisfied before Jefferson Smurfit can operate Power Boiler No. 10 at the proposed increased SO_2 emission rate.

3.1 NATIONAL AND STATE AAQS

The existing applicable National and Florida ambient air quality standards (AAQS) are presented in Table 3-1. Primary National AAQS were promulgated to protect the public health, and secondary National AAQS were promulgated to protect the public welfare from any known or anticipated adverse affects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements. Duval County is currently designated an attainment or unclassifiable area for all criteria pollutants except ozone and particulate matter.

3.2 PSD REQUIREMENTS

3.2.1 General Requirements

Under federal PSD review requirements, all major new or modified sources of air pollutants regulated under The Clean Air Act (CAA) must be reviewed and approved by the U.S. Environmental Protection Agency (USEPA) [in this case, reviewed and approved by the Florida Department of Environmental Regulation (FDER) since PSD review authority has been delegated to the state]. A "major stationary source" is defined as any one of 28 named source categories which has the potential to emit 100 tons per year (TPY) or more, or any other stationary source which has the potential to emit 250 TPY or more, of any pollutant regulated under CAA. "Potential to emit" means the capability at maximum design capacity to emit a pollutant after the application of control equipment.

A "major modification" is defined under PSD regulations as a change at an existing major stationary source which increases emissions by greater than "significant amounts". PSD significant emission rates are shown in Table 3-2.

Table 3-1. Federal and State of Florida Ambient Air Quality Standards

Pollutant	Averaging Time	AAQS (ug/m^3) Federal Primary Standard	Federal Secondary Standard	State of Florida
Suspended Particulate Matter	Annual Geometric Mean	75	60	60
	24-Hour Maximum*	260	150	150
Sulfur Dioxide	Annual Arithmetic Mean	80	N/A	60
	24-Hour Maximum*	365	N/A	260
	3-Hour Maximum*	N/A	1,300	1,300
Carbon Monoxide	8-Hour Maximum*	10,000	10,000	10,000
	1-Hour Maximum*	40,000	40,000	40,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100
Ozone	1-Hour Maximum+	235	235	235
Lead	Calendar Quarter	1.5	1.5	1.5

Notes: N/A = Not applicable.
ug/m^3 = micrograms per cubic meter

*Maximum concentration not to be exceeded more than once per year.
+Maximum concentration not to be exceeded more than an average of 1 calendar day per year.

Sources: 40 CFR, Parts 50 and 52.
Florida Administrative Code (FAC), Chapter 17-2

Table 3-2. PSD Significant Emission Rates

Pollutant	Regulated Under	Significant Emission Rate (TPY)
Sulfur Dioxide	NAAQS, NSPS	40
Particulate Matter	NAAQS, NSPS	25
Nitrogen Oxides	NAAQS, NSPS	40
Carbon Monoxide	NAAQS, NSPS	100
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40
Lead	NAAQS	0.6
Sulfuric Acid Mist	NSPS	7
Total Fluorides	NSPS	3
Total Reduced Sulfur	NSPS	10
Reduced Sulfur Compounds	NSPS	10
Hydrogen Sulfide	NSPS	10
Asbestos	NESHAP	0.007
Beryllium	NESHAP	0.0004
Mercury	NESHAP	0.1
Vinyl Chloride	NESHAP	1
Benzene	NESHAP	0
Radionuclides	NESHAP	0
Inorganic Arsenic	NESHAP	0
Any Regulated Pollutant	--	Class I Impact*

* Any emission rate for a source located within 10 km of a Class I area which causes impacts of 1 ug/m^3, 24-hour average, or greater.

Notes: TPY = Tons per year.
NAAQS = National Ambient Air Quality Standards.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.

Source: 40 CFR 52.21.
FAC, Chapter 17-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified source. PSD requirements are contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. Major sources and modifications are required to undergo the following analysis related to PSD for each pollutant emitted in "significant" amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new source must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 Increments/Classifications

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality "baseline concentration" level of SO_2 and PM concentrations would constitute "significant deterioration". The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations. The Florida DER has adopted the EPA class designations and allowable PSD increments, which are presented in Table 3-3.

The term "baseline concentration" evolves from federal and state PSD regulations and denotes a fictitious concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition in the PSD regulations, as amended August 7, 1980, baseline

Table 3-3. Federal and State of Florida PSD Allowable Increments

Pollutant/Averaging Time	Allowable Increment (ug/m^3)		
	Class I	Class II	Class III
Particulate Matter			
Annual Geometric Mean	5	19	37
24-Hour Maximum**	10	37	75
Sulfur Dioxide			
Annual Arithmetic Mean	2	20	40
24-Hour Maximum**	5	91	182
3-Hour Maximum**	25	512	700

** Maximum concentration not to be exceeded more than once per year.

Source: 40 CFR Part 52, Section 52.21.
Florida Administrative Code, Chapter 17-2

concentration means the ambient concentration level which exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of sources in existence on the applicable baseline date; and
2. The allowable emissions of major stationary sources which commenced construction before January 6, 1975, but were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary source on which construction commenced after January 6, 1975; and
2. Actual emission increases and decreases at any stationary source occurring after the baseline date.

"Baseline date" means the earliest date after August 7, 1977, on which the first complete application under 40 CFR 52.21 is submitted by a major stationary source or major modification subject to the requirements of 40 CFR 52.21. The baseline date for the entire state of Florida, including Duval County, has been set as December 27, 1977 (FAC, Chapter 17-2).

3.2.3 Control Technology Review

The control technology review requirements of the federal PSD regulations require that all applicable federal and state emission limiting standards be met and that Best Available Control Technology (BACT) be applied to control emissions from the source (40 CFR 52.21). The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the source or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in 40 CFR 52.21 as:

> An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act...which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable...through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.... If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology.

The requirements for BACT were promulgated within the framework of PSD in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increment and thereby enlarge the potential for future economic growth without significantly degrading air quality (USEPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in USEPA's "Guidelines for Determining Best Available Control Technology (BACT)", (USEPA, 1978) and in the "PSD Workshop Manual" (USEPA, 1980). These guidelines were promulgated by USEPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to USEPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the

proposed facility. BACT must, as a minimum, demonstrate compliance with NSPS for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgement, balancing environmental benefits with energy, economic, and other impacts (USEPA, 1978).

3.2.4 Air Quality Analysis

In accordance with requirements of 40 CFR 52.21(m), any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary source or major modification. For a new major source, the affected pollutants are those that the source would potentially emit in a significant amount. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

According to CAA, ambient air monitoring for a period of up to 1 year generally is appropriate to satisfy the PSD monitoring requirements. A minimum of four (4) months of data is required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in USEPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (USEPA, 1981).

The regulations include an exemption which excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that the Administrator may exempt a proposed major stationary source or major modification from the monitoring requirements of 40 CFR 52.21(m) with respect to a particular pollutant if the emissions increase of the pollutant

from the source or modification would cause, in any area, air quality impacts less than the de minimis levels presented in Table 3-4.

The state of Florida has passed PSD air quality analysis requirements identical to the federal requirements. In February 1981, USEPA revised the de minimis levels and averaging times for three of the pollutants (USEPA, 1981). The averaging period for lead was changed to 3 months and the de minimis impact levels for beryllium and hydrogen sulfide were changed to 0.001 ug/m^3 and 0.2 ug/m^3, respectively. These revisions have been proposed in the Federal Register, but have not yet been promulgated. The state of Florida recently (August 1986) adopted the revised de minimis levels.

3.2.5 Source Impact Analysis

A source impact analysis must be performed by a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 3-2). The PSD regulations specifically require the use of atmospheric dispersion models in performing impact analysis, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated USEPA models must normally be used in performing the impact analysis. Specific applications for other than USEPA-approved models require USEPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the USEPA publications, "Guideline on Air Quality Models (Revised)" (USEPA, 1986) and "Regional Workshops on Air Quality Modeling: A Summary Report" (USEPA, 1983). Criteria pollutants may be exempt from the source impact analysis if the net increase in impacts due to the new source is below significance levels, as presented in Table 3-5.

Various lengths of record for meteorological data can be utilized for impact analysis. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest

Table 3-4. EPA and Florida PSD De Minimis Impact Levels

Pollutant	De Minimis Air Quality Impact Level (ug/m^3)	
	Code of Federal Regulations	EPA Ambient Monitoring Guidelines and state of Florida
Sulfur Dioxide	13, 24-hour	13, 24-hour
Particulate Matter	10, 24-hour	10, 24-hour
Nitrogen Oxides	14, annual	14, annual
Carbon Monoxide	575, 8-hour	575, 8-hour
Ozone	100 TPY*	100 TPY*
Lead	0.1, 24-hour	0.1, 3-month
Sulfuric Acid Mist	**	**
Total Fluoride	0.25, 24-hour	0.25, 24-hour
Total Reduced Sulfur	10, 1-hour	**
Reduced Sulfur Compounds	10, 1-hour	**
Hydrogen Sulfide	0.04, 1-hour	0.2, 1-hour
Asbestos	**	**
Beryllium	0.0005, 24-hour	0.001, 24-hour
Mercury	0.25, 24-hour	0.25, 24-hour
Vinyl Chloride	15, 24-hour	15, 24-hour
Benzene	**	**
Radionuclides	**	**
Inorganic Arsenic	**	**

* Increase in volatile organic compounds (VOC) emissions.
** No ambient air measurement method; no monitoring required.

Sources: 40 CFR 52.21(i)(8).
EPA, 1980.
EPA, 1981.

Table 3-5. Significant Impact Levels for Criteria Pollutants

Pollutant	Average Period	Concentration (ug/m^3)
Sulfur Dioxide	3-Hour	25
	24-Hour	5
	Annual	1
Particulate Matter	24-Hour	5
	Annual	1
Nitrogen Dioxide	Annual	1
Carbon Monoxide	1-Hour	2,000
	8-Hour	500

Source: EPA, 1980

concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor must normally be used for comparison to air quality standards.

3.2.6 Additional Impact Analysis

In addition to air quality impact analyses, federal PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source. These analyses are to be conducted primarily for PSD Class I areas. Impacts due to general commercial, residential, industrial, and other growth associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 Good Engineering Practice Stack Height

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP, or any other dispersion technique. On July 8, 1985, USEPA promulgated final stack height regulations (USEPA, 1985).

GEP stack height is defined as the highest of:

1. 65 meters (m), or
2. A height established by applying the formula:

   $Hg = H + 1.5L$

   where: H_g = GEP stack height,

   H = Height of the structure or nearby structure, and

   L = Lesser dimension (height or projected width) of nearby structure(s).
3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 km. Although GEP stack height regulations require that the stack height

used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where "plume impaction" occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with "elevated terrain." "Elevated terrain" is defined as terrain which exceeds the height calculated by the GEP stack height formula. Because the terrain in the vicinity of the Jefferson Smurfit facility is flat, plume impaction was not considered in determining the GEP stack height.

3.3 PSD SOURCE APPLICABILITY

3.3.1 Pollutant Applicability

The JSC facility in Jacksonville is a kraft pulp mill, and is therefore classified as one of the 28 listed PSD source categories. Review of Table 2-1, Section 2.2, shows that current emissions of SO_2 exceed 100 TPY. As a result, the JSC facility is classified as an "existing major stationary source." The proposed modification to Power Boiler No. 10 would be considered a "major modification" if the increase in SO_2 emissions exceeds the PSD significant emission rate for SO_2 of 40 TPY. As discussed in Section 2.3, the proposed modification will increase allowable SO_2 emissions by 1051 TPY. Therefore, the proposed modification is a major modification and is therefore subject to PSD review.

3.3.2 Emission Limiting Standards

Power Boiler No. 10 is currently subject to the federal NSPS for fossil fuel steam generating units with a heat input capacity of greater than 250×10^6 Btu/hr (40 CFR 60, Subpart D). The NSPS limits SO_2 emissions to 1.2 lb/10^6 Btu. As discussed previously, the SO_2 emissions cap for Power Boiler No. 10 limits emissions to below the NSPS level at operating rates above 241×10^6 Btu/hr. There are no other federal or state of Florida SO_2 emission limiting standards applicable to Power Boiler No. 10.

USEPA has proposed NSPS for SO_2 emissions from industrial boilers with a heat input capacity of greater than 100 x 10^6 Btu/hr. These standards were proposed in the Federal Register on June 19, 1986 (Vol. 51, No. 118, pg. 22384). These proposed NSPS would apply to the modified Power Boiler No. 10 if the boiler met the definition of "modification" contained in 40 CFR Part 60, New Source Performance Standards for Stationary Sources. USEPA recently ruled, based upon information supplied by KBN and JSC, that the proposed modification to Power Boiler No. 10 would not subject the boiler to the proposed NSPS, if promulgated (see Appendix C for supportive documents).

3.3.3 GEP Stack Height

The GEP stack height regulations allow any stack to be at least 65 meters high. The existing stack for Power Boiler No. 10 is 200 feet in height (61.0 meters) and therefore does not exceed the GEP stack height. The potential for downwash of the Power Boiler No. 10 emissions due to nearby structures is discussed in Section 5.0, Air Quality Impact Analysis.

3.3.4 Ambient Monitoring

Based upon the pollutant applicability determination presented in Section 3.3.1, only SO_2 requires a PSD preconstruction ambient monitoring analysis. However, if the impact of the increase in SO_2 emissions due to the proposed modification is less than the de minimis impact level of 13 ug/m^3, 24-hour average (refer to Table 3-4), then an exemption from the preconstruction ambient monitoring requirement may be granted. The ambient monitoring analysis and exemptions are addressed in Section 4.0.

3.3.5 Area Classification

As discussed in Section 3.1, Duval County is an attainment area for all criteria pollutants except PM and ozone. The area is also designated as Class II for PSD purposes. The Okeefenokee National Wilderness area is the only PSD Class I area within 100 km of the JSC site. This PSD Class I area is located approximately 55 km northwest of JSC.

4.0 AIR QUALITY ANALYSIS

4.1 MONITORING REQUIREMENTS

The Clean Air Act Amendments of 1977 require that the owner or operator of any proposed major new source or major modification conduct ambient air monitoring for applicable pollutants. Monitoring must be conducted for a period of up to 1 year prior to submission of a construction permit application. As discussed in the source applicability section, Section 2.3, only SO_2 requires an air quality analysis to meet PSD preconstruction monitoring requirements for the proposed modification of Power Boiler No. 10 at JSC.

The EPA "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)" (USEPA, 1980) sets forth guidelines for preconstruction monitoring. The guidelines allow the use of existing air quality data in lieu of additional air monitoring, if the existing data are "representative." Three criteria are used in determining if the data are representative: monitor location, quality of data, and currentness of data.

JSC desires to submit existing representative SO_2 air quality data in lieu of additional monitoring to satisfy the preconstruction requirements. The representativeness criteria are discussed in Section 4.2 for the available existing data.

4.2 EXISTING SO_2 AIR QUALITY DATA

The USEPA Ambient Monitoring guidelines state that:

> If the proposed construction will be in an area of multisource emissions and basically flat terrain, then the proposed source or modification may propose the use of existing data at nearby monitor sites if either of the following criteria are met.
>
> 1. The existing monitor is within 10 km of the points of proposed emissions, or
> 2. The existing monitor is within or not farther than 1 km away from either the area(s) of the maximum air pollutant concentration from existing sources or the area(s) of the combined maximum impact from existing and proposed sources.

The JSC facility site is located in an area of multisource emissions and flat terrain; therefore, the criteria presented above are applicable. JSC proposes to satisfy the first criterion, i.e., existing monitor located within 10 km of the proposed emissions. A list of all ambient SO_2 monitors located within 10 km of the JSC site is represented in Table 4-1. These sites have continuous SO_2 monitors and, thus, satisfy the monitor location criterion. A summary of the ambient SO_2 data recorded at these monitoring sites since 1983 is presented in Table 4-2.

The second criterion for representativeness is data quality. The monitoring network is operated by City of Jacksonville Bio-Environmental Services and is believed to meet all quality assurance requirements. As shown in Table 4-2, all data recoveries have exceeded the requirement of 80 percent recovery.

The third criterion is the currentness of data. This generally means that the data have been gathered within the last 3 years, provided the data are still representative of current conditions. Since Table 4-2 presents the data available from 1983 up to the present time (these monitors are currently operating), the data are considered to be representative of current conditions.

The data presented are considered to meet all of the requirements for PSD preconstruction monitoring. JSC is therefore submitting these data in lieu of additional monitoring.

4.3 BACKGROUND SO_2 CONCENTRATIONS

A background SO_2 concentration must be estimated to account for sources which are not explicitly included in the atmospheric dispersion modeling analysis. The available ambient SO_2 data presented in Table 4-2 were used for this purpose.

Annual average, 24- and 3-hour maximums for SO_2 are shown in Table 4-2. Since all of the monitors are located in an area of multisource emissions, these concentrations are expected to include substantial contributions from

Table 4-1. Sulfur Dioxide Monitors/Jacksonville

SAROAD Site No.	Site Address	UTM Coordinates			Relative Location from JSC Facility*		Monitoring Objective
		Zone	North	East	Direction (Degrees)	Distance (km)	
1960-032-H	2900 Bennet St. (Kooker Park)	17	3358.243	438.923	223	1.4	Maximum Concentration
1960-079-H	4131 Ferber Rd.	17	3360.380	443.720	74	4.0	Population Exposure
1960-080-H	1605 Minerva St.	17	3353.000	437.260	203	6.8	Source
1960-081-H	1840 Cedar Bay Rd.	17	3365.560	440.360	5	6.3	Source

* UTM Coordinates of Jefferson Smurfit are 439.9 East and 3359.3 North

Table 4-2. Ambient SO_2 Air Quality Data for Monitors Located within 10 km of the JSC Facility, 1983 - 1985.

SAROAD Site No.	Year	Data Collection (%)	Measured SO_2 Concentration (ug/m^3)		
			3-Hour*	24-Hour*	Annual
1960-032-H	1983	81.4	201	103	26
	1984	87.9	196	90	12
	1985	81.3	236	83	8
1960-079-H	1983	77.5	92	35	11
	1984	95.3	164	62	10
	1985	78.8	105	42	9
1960-080-H	1983	95.6	301	203	12
	1984	89.8	293	163	9
	1985	87.7	79	33	7
1960-081-H	1983	84.4	245	76	13
	1984	92.4	188	87	9
	1985	85.5	205	64	10

* Second Highest Concentrations

Source: Florida DER, 1983; 1984; 1985.

sources in the area, including the existing JSC facility. Potential major contributing sources are also explicitly included in the modeling analysis. For the short-term averaging times, these measured concentrations would not be representative of background concentrations which would be expected to occur in conjunction with the worst-case meteorology. For the annual averaging period, the actual background concentration would be significantly lower than the annual values shown in Table 4-2.

A representative background SO_2 concentration was considered to be the highest annual average concentration recorded during the latest year of available data at the nearest monitoring site to the JSC facility. This site, which is SAROAD No. 1960-032-H and located approximately 1.4 km from the JSC facility, recorded an annual average concentration of 8 ug/m^3 in 1985. This value is consistent with the annual average concentrations measured at the other 3 sites, which ranged in value from 7 to 10 ug/m^3.

The 8 ug/m^3 background SO_2 level was used for all averaging times and was added to dispersion modeling results, presented in Section 5.0, in order to estimate total air quality impacts. All major SO_2 sources located within 20 km of the JSC facility were considered in the dispersion modeling analysis. In addition, 99.6 percent of total SO_2 emissions from sources located within 40 km of JSC were considered in the modeling analysis. As a result, the 8 ug/m^3 annual average concentration was also considered to be representative of the short-term background concentration level.

5.0 SOURCE IMPACT ANALYSIS

5.1 ANALYSIS APPROACH AND ASSUMPTIONS

5.1.1 General Modeling Approach

The general modeling approach followed USEPA and FDER modeling guidelines for determining compliance with AAQS and PSD increments. In general, when model predictions are used to determine compliance with AAQS and PSD increments, current USEPA and FDER policies stipulate that the highest annual average and highest, second-highest short-term (i.e., 24 hours or less) concentrations can be compared to the applicable standard. If concentrations are predicted with only 1 year of meteorological data, the highest short-term concentration calculated among the field of receptors should be compared with the standard. The use of a 5-year meteorological database allows comparison of the predicted highest, second-highest short-term concentrations with short-term AAQS and PSD increments. The highest, second-highest concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which permit a short-term average concentration to be exceeded once per year at each receptor.

Model predictions for all averaging periods were performed using the Industrial Source Complex Short-Term (ISCST) model. A brief description of the ISCST model is given in Section 5.1.2. To develop the maximum short-term SO_2 concentrations for the proposed JSC modification, the general modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. The basic difference between the two phases is the receptor grid used when predicting concentrations, the number of emission points, and the number of meteorological periods evaluated. In general, concentrations for the

screening phase were predicted using a coarse receptor grid, limited number of major sources, and a 5-year meteorological record.

After a final list of highest, second-highest short-term concentrations was developed, the refined phase of the analysis was conducted by predicting concentrations for a refined receptor grid centered on the receptor at which the highest, second-highest concentration from the screening phase was produced. The ISCST model was executed for the meteorological periods during which both the highest and second-highest concentrations were predicted to occur at that receptor, based on the screening phase results. This approach was used to ensure that valid highest, second-highest concentrations were obtained. More detailed descriptions of the emission inventory and receptor grids used in the screening and refined phases of the analysis are presented in Sections 5.1.4 and 5.1.5, respectively.

5.1.2 Model Selection

The ISC dispersion model (USEPA, 1986a) was used to evaluate the SO_2 emissions from the JSC facility. This model is contained in USEPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6 (USEPA, 1986b). The ISC model was selected primarily for the following reasons:

1. USEPA and FDER have approved the general use of the model for air quality dispersion analysis because the model assumptions and methods are consistent with those in the Guideline on Air Quality Models (USEPA, 1986c).
2. The ISC model is capable of predicting the impacts from stack, area, and volume sources that are spatially distributed over large areas and located in flat or gently rolling terrain.
3. The results from the ISC model are appropriate for addressing compliance with AAQS and PSD increments.

The ISC model consists of two sets of computer codes which are used to calculate short- and long-term ground level concentrations. The main differences between the two codes are the input format of the meteorological data and the method of estimating the plume's horizontal dispersion.

The first model code, the ISCST model, is an extended version of the single-source (CRSTER) model (USEPA, 1977). The ISCST model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The hourly concentrations are processed into non-overlapping, short-term and annual averaging periods. For example, a 24-hour average concentration is based on twenty-four 1-hour averages calculated from midnight to midnight of each day. For each short-term averaging period selected, the highest and second-highest average concentrations are calculated for each receptor. As an option, a table of the 50 highest concentrations over the entire field of receptors can be produced.

The second model code of the ISC model is the ISC long-term (ISCLT) model, which is an extension of the Air Quality Display Model (AQDM) and the Climatological Dispersion Model (CDM). The ISCLT model uses joint frequencies of wind direction, wind speed, and atmospheric stability to calculate seasonal and/or annual average ground-level concentrations. Because the input wind directions are for 16 sectors, with each sector defined as 22.5 degrees, the model calculates concentrations by assuming that the pollutant is uniformly distributed in the horizontal plane within a 22.5-degree sector.

In this analysis, the ISCST model was used to calculate both short-term and annual average concentrations because these concentrations are readily obtainable from the model output.

Major features of the ISCST model are presented in Table 5-1. Concentrations due to stack and volume sources are calculated by the ISCST model using the steady-state Gaussian plume equation for a continuous source. The area source equation in the ISCST model is based on the equation for a continuous and finite crosswind line source.

Table 5-1. Major Features of the ISCST Model

ISCST Model Features
o Polar or Cartesian coordinate systems for receptor locations
o Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
o Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975)
o Procedures suggested by Huber and Snyder (1976) and Huber (1977) for evaluating building wake effects
o Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
o Separation of multiple point sources
o Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
o Capability of simulating point, line, volume and area sources
o Capability to calculate dry deposition
o Variation with height of wind speed (wind speed-profile exponent law)
o Concentration estimates for 1-hour to annual average
o Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm
o Consideration of time-dependent exponential decay of pollutants
o The method of Pasquill (1976) to account for buoyancy-induced dispersion
o A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
o Procedure for calm-wind processing

Source: EPA, 1986b

The ISC model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3 km radius circle centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

For modeling analyses that will undergo regulatory review, such as PSD permit applications, the following model features are recommended by USEPA (1986c) and are referred to as the regulatory options in the ISCST model:

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural or urban option,
5. Default vertical potential temperature gradients,
6. Calm wind processing, and
7. A decay half life of 4 hours for SO_2 concentration calculations in urban areas.

Some of the above model features have been recommended for use by USEPA over the last 5 years. These assumptions include the use of final plume rise, default wind speed profile coefficients, default vertical potential temperature gradients, and calm wind processing of maximum ground level concentrations. The recently revised USEPA modeling guidelines recommend use of the remaining features, including the use of calm wind processing regardless if impacts are expected to occur under such meteorological conditions. The effect of using these options to predict maximum ground level concentrations from elevated point sources is to produce higher concentrations than if these options were not used by:

- o Lowering the effective plume height (stack-tip downwash),
- o Increasing the plume width such that the plume may have an impact over areas where it previously would not (buoyancy-induced dispersion), and
- o Mathematically adjusting the longer term averaging concentration (i.e., 24 hours or more) by the number of non-calm hours (calm wind processing).

Stack-tip downwash effects are incorporated in the model by modifying the physical stack height using a factor that is applied whenever the ambient windspeed is 1.5 times greater than a source's exit velocity. The modified physical stack height, h', is calculated as follows:

$$h' = h + 2d \left[\left(\frac{V_s}{U} \right) - 1.5 \right]$$

where, h is the physical stack height
d is the stack diameter
V_s is the exit velocity, and
U is the ambient windspeed

The effects of buoyancy-induced dispersion are incorporated in the model by increasing the horizontal and vertical dispersion parameters to account for the initial dispersion of plumes caused by the turbulent plume motion and turbulent entrainment of ambient air. With this method, both dispersion parameters are modified as follows:

$$\sigma_m = \left[\sigma^2 + \left(\frac{\Delta H}{3.5} \right)^2 \right]^{1/2}$$

where σ_m is modified dispersion parameter
σ is the unmodified horizontal or vertical dispersion parameter

ΔH is the plume rise calculated using the transitional plume rise equations.

The procedure for calm-wind processing is used to assess impacts for calm conditions, i.e., hours when there is no reported wind direction or wind speed. This procedure identifies calm conditions when the wind speed is less than 1.0 meters/sec and the wind direction is persisted from the last previous hour of valid wind direction. The potential effect of calm hours

on concentrations is then removed by eliminating concentrations attributed to calm hours (i.e., by summing the non-calm hourly concentrations for the averaging period and dividing the sum by the number of non-calm hours). For specific averaging periods, concentrations are calculated as follows:

1. Valid hourly average concentrations for each receptor were based on any concentration predicted during non-calm conditions.
2. Hours of calm conditions were considered invalid, and concentrations were set to zero for all receptors for that hour.
3. Valid 3-hour average concentrations were calculated by summing concentrations produced during non-calm hours and dividing by 3 hours.
4. Valid 8-hour average concentrations were calculated by summing concentrations produced during non-calm hours and dividing by the maximum of: 6 hours or the number of non-calm hours during the 8-hour period.
5. Valid 24-hour average concentrations were calculated by summing concentrations produced during non-calm hours and dividing by the maximum of: 18 hours or the number of non-calm hours during the 24-hour period.
6. Annual average concentrations were calculated by dividing the sum of all non-calm hourly contributions by the number of non-calm hours during the year.

This procedure is most applicable when impacts are predicted during calm conditions. For elevated point sources, impacts during calm conditions are predicted under stable stability at large downwind distances (i.e., 20 km or more) from the source which, when coupled with a persistent wind direction at 1.0 m/s wind speed, will produce anomalously high ground-level impacts. However, the maximum ground-level impacts due to elevated point sources typically occur near the source (i.e., within 1 to 3 km) during short-term periods of neutral to unstable stability with moderate to high wind speeds. Meterological conditions of stable stability and light wind speeds, similar to calm conditions, would not produce impacts at the receptor of maximum ground-level concentration because the source's plume is elevated and well

above the receptor. By using the calm wind processing procedure, the hours during which calm conditions occur are automatically eliminated from the database. Instead of producing a short-term average concentration, (e.g., 24-hour) based on all available hours, the average concentration is based on the number of non-calm hours. Therefore, the short-term average concentration will produce potentially conservative results using the calm wind processing option.

In this analysis, the USEPA regulatory options were used to address maximum impacts from the JSC facility. Based on a review of the land use around the JSC facility, the rural mode was selected because of the general lack of, or minimal residential, industrial and commercial development.

For addressing impacts on the PSD Class I area, located approximately 60 km from the JSC facility, a decay half life of 4 hours for SO_2 concentrations was used. The use of this decay half life is consistent with a previous PSD permit application for the Jacksonville area which also addressed impacts in the Class I area (Envirosphere, 1980).

5.1.3 Meteorological Data

Meteorological data used in the ISCST model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations from the National Weather Service (NWS) station at Jacksonville International Airport and twice-daily radiosonde soundings from the NWS station at Waycross, Georgia. The 5-year period of meteorological data consisted of 1970 to 1974. Based on discussions with the FDER (KBN, 1986), this database is acceptable for use in assessing impacts for an air quality permit application.

The NWS station in Jacksonville, located approximately 10 km to the north-northwest of the JSC plant site, and the NWS station in Waycross, located approximately 110 km to the northwest of the plant site, were selected for use in the study because they are the closest primary weather stations to the study area with similar surrounding topographical features and land-

water boundaries. These stations also have the most readily available and complete database which is representative of the proposed plant site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at Jacksonville, Florida, morning and afternoon mixing heights were calculated with the radiosonde data at Waycross using the Holzworth approach (1972). Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by USEPA (Holzworth, 1972). The hourly surface data and mixing heights were used to develop a sequential series of hourly meteorological data (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions were classified into one of thirty-six 10-degree sectors, the wind directions were randomized within each sector using an USEPA preprocessing program to account for the expected variability in air flow.

5.1.4 Emission Inventory

The emission inventory used in the modeling analyses was based on emission inventories provided by JSC, the FDER Air Pollution Inventory System (APIS) for Duval County, and previous air quality modeling analyses performed in Duval County. Based on this information, KBN prepared and sent to the FDER for its review a final listing of sources in Duval County with SO_2 emissions (see Appendix D). The FDER reviewed the inventory, provided stack parameters for one source, identified additional information needed for another source, and recommended a technique for including sources in the modeling analyses (see Appendix D).

The recommended screening technique is the "Screening Threshold" method, developed by the North Carolina Department of Natural Resources and Community Development, and approved by the USEPA. The method is designed to objectively eliminate from the emission inventory those sources which are not likely to have a significant interaction with the source undergoing

evaluation. In general, sources that should be considered in the modeling analyses are those with emissions greater than Q (in TPY) which is calculated by the following criteria:

$$Q = 20 \times D$$

where D is the distance (km) from the source to the source undergoing evaluation.

A listing of the sources in the inventory with associated maximum allowable emissions, distance from JSC, and associated Q are presented in Table 5-2. This list includes one source located outside of Duval County (Container Corporation of America, located in Fernandina Beach). Those sources with maximum allowable SO_2 emissions which are below the calculated "screening threshold" emissions were eliminated from further consideration in the modeling analysis. Source locations are shown in Figure 5-1.

To reduce the amount of computation time required to model the remaining sources, including those at the JSC plant, the modeling was performed in screening and refined phases. In the screening phase, only those sources with SO_2 emissions above a certain threshold based on the source's location from the JSC plant were considered. The following criteria were used to determine the sources to be modeled:

1. For JSC sources, individual point sources with SO_2 emissions greater than or equal to 125 TPY.
2. For other sources, individual point sources with emissions greater than 1000 TPY.

For the PSD analyses, the JSC sources which have shut down since January 1975 and have creditable emission reductions were modeled as negative emissions (see Appendix F for PSD baseline information for JSC).

For the screening modeling, sources with similar stack heights and stack parameters were combined and treated as one stack to reduce computation time. The JSC screening emission inventory is presented in Appendix E. The

TABLE 5-2. SULFUR DIOXIDE EMISSION INVENTORY FOR DUVAL COUNTY

MODELED SOURCE NO.	SOURCE	UTM COORDINATES EAST (km)	UTM COORDINATES NORTH (km)	RELATIVE LOCATION WITH RESPECT TO JSC FACILITY** X (km)	Y (km)	DIRECTION (degrees)	DISTANCE (km)	"SCREENING THRESHOLD" EMISSIONS (TPY)+	SO2 EMISSIONS (TPY)	CONSIDERED IN MODELING ANALYSIS SCREENING PHASE	REFINED PHASE
1	JEA ST. JOHNS RIVER POWER PARK	446.9	3366.3	7.0	7.0	45	9.9	198.0	40,000	YES	YES
2	JEA NORTHSIDE	446.9	3365.0	7.0	5.7	51	9.0	180.5	96,095	YES	YES
3	JEA SOUTHSIDE	437.6	3353.8	-2.3	-5.5	203	6.0	119.2	17,499	YES	YES
4	JEA KENNEDY	440.0	3359.1	0.1	-0.2	153	0.2	4.5	19,257	YES	YES
5	SEMINOLE KRAFT (JAX KRAFT)	441.8	3365.6	1.9	6.3	17	6.6	131.6	10,480	YES	YES
6	CONTAINER CORP. OF AMERICA	455.1	3386.7	15.2	27.4	29	31.3	626.7	34,849	YES	YES
7	TEXACO	439.7	3358.4	-0.2	-0.9	193	0.9	18.4	2	NO	NO
8	CHAMPION INTER.	416.5	3353.2	-23.4	-6.1	255	24.2	483.6	ND	NO	NO
9	ES METALS	431.8	3358.3	-8.1	-1.0	263	8.2	163.2	*	NO	NO
10	CELOTEX	446.4	3362.5	6.5	3.2	63	7.2	144.9	793	NO	YES
11	U.S. NAVAL STAT. (MAYPORT)	460.4	3362.8	20.5	3.5	80	20.8	415.9	2,291	YES	YES
12	U.S. NAVAL STAT. (CECIL)	415.2	3344.5	-24.7	-14.8	239	28.8	575.9	80	NO	NO
13	OXCE FUEL CO.	438.5	3360.5	-1.4	1.2	311	1.8	36.9	100	NO	YES
14	DUVAL ASPHALT	427.0	3357.7	-12.9	-1.6	263	13.0	260.0	47	NO	NO
15	COASTAL AGGREG.	442.6	3344.0	2.7	-15.3	170	15.5	310.7	11	NO	NO
16	MAXWELL HOUSE	439.7	3350.0	-0.2	-9.3	181	9.3	186.0	85	NO	NO
17	ANCHOR HOCKING	431.5	3357.5	-8.4	-1.8	258	8.6	171.8	902	NO	YES
18	ANHEUSER BUSCH	437.9	3366.8	-2.0	7.5	345	7.8	155.2	2,644	YES	YES
19	EASTERN SEABOARD	439.0	3360.7	-0.9	1.4	327	1.7	33.3	83	NO	YES
20	ELECTROMOTIVE/GM	430.7	3359.3	-9.2	0.0	270	9.2	184.0	47	NO	NO
21	SCM CORP.	435.6	3360.7	-4.3	1.4	288	4.5	90.4	2,409	YES	YES
22	WILEY JACKSON CO.	428.7	3361.4	-11.2	2.1	281	11.4	227.9	361	NO	YES
23	GEORGIA-PACIFIC	440.1	3368.3	0.2	9.0	1	9.0	180.0	90	NO	NO
24	UNION CAMP	427.6	3357.3	-12.3	-2.0	261	12.5	249.2	403	NO	YES
25	U.S. GYPSUM	438.9	3361.2	-1.0	1.9	332	2.1	42.9	1,755	YES	YES
26	LILLARD CORP.	429.5	3359.7	-10.4	0.4	272	10.4	208.2	73	NO	NO
27	REICHOLD CHEM.	428.2	3354.9	-11.7	-4.4	249	12.5	250.0	63	NO	NO
28	J.W.SWISHER	438.1	3358.0	-1.8	-1.3	234	2.2	44.4	289	NO	YES
29	JAX BULK TERM.	439.3	3359.8	-0.6	0.5	310	0.8	15.6	282	NO	YES
30	GULF LIFE INS.	436.2	3354.1	-3.7	-5.2	215	6.4	127.6	101	NO	NO
31	FLORIDA STEEL	406.3	3350.5	-33.6	-8.8	255	34.7	694.7	403	NO	NO

ND= NO DATA

* SOURCE NO LONGER IN OPERATION

** UTM COORDINATES OF JEFFERSON SMURFIT ARE 439.9 km EAST AND 3359.3 km NORTH

\+ "SCREENING THRESHOLD" EMISSIONS (Q) ARE EQUAL TO 20 x D. SOURCES WITH EMISSIONS LESS THAN Q WERE ELIMINATED FROM MODELING. SEE TEXT FOR DETAILS.

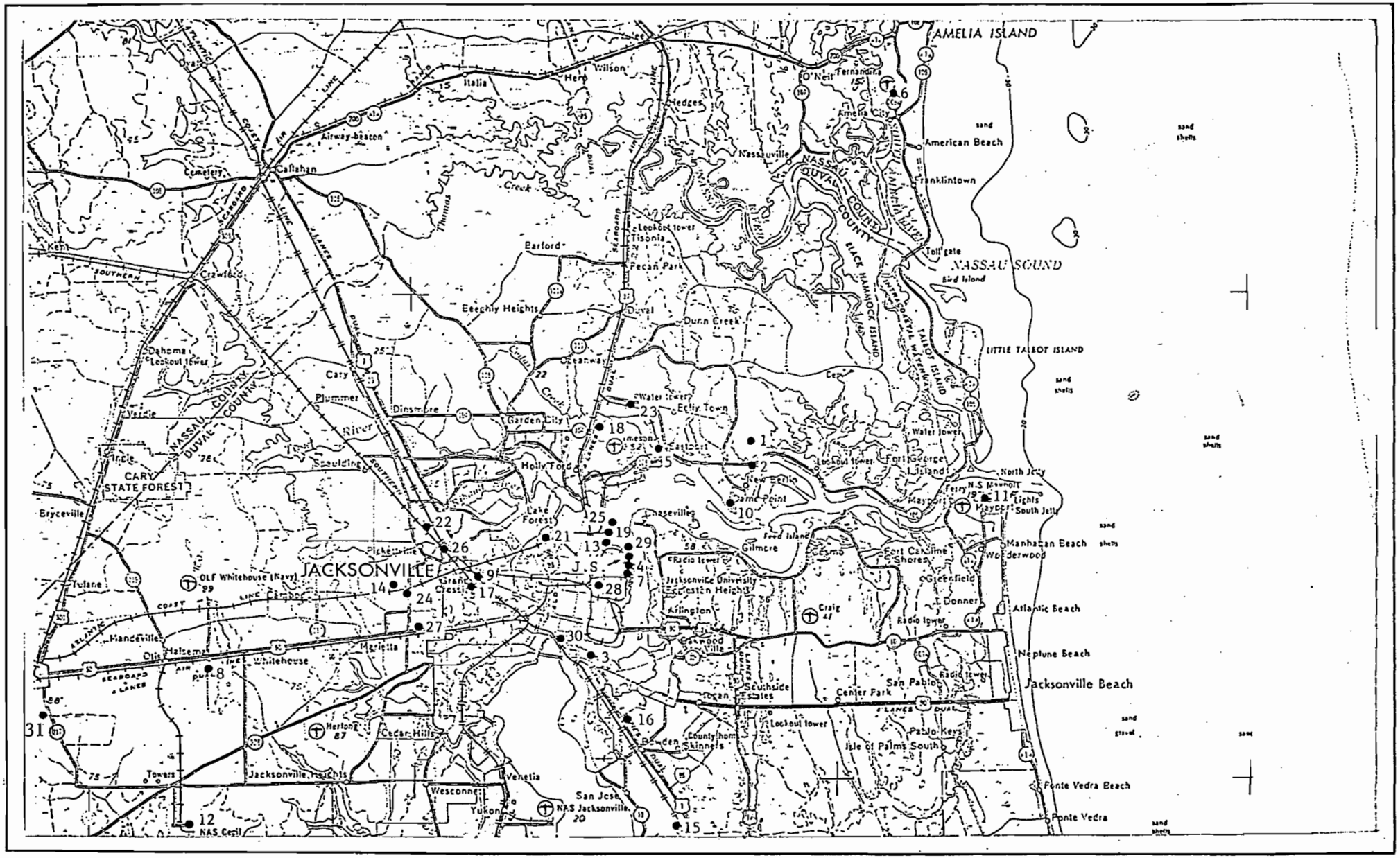

Figure 5-1. Locations of SO_2 Sources in Duval County

emissions, stack, and operating parameters for the other sources considered in the screening analysis are also presented in Appendix E. After the screening modeling was performed and the worst-case meteorological periods identified, the sources for the refined phase, shown in Appendix E, including the JSC sources, were modeled using a refined receptor grid.

A summary of the SO_2 emissions considered in the screening and refined phases of the analysis is presented in Table 5-3. As shown in this table, emissions from sources considered in the screening and refined phases represent approximately 98.2 and 99.6 percent, respectively, of all SO_2 emissions in the inventory. For sources located within 10 km of the JSC plant, the emissions considered in the screening and refined phases represent approximately 98.1 and 99.7 percent, respectively, of the total emissions. For the JSC sources, the emissions considered in the screening phase represent approximately 99 percent of all emissions from the JSC plant.

The emissions not included in the modeling represent less than 0.5 percent of total maximum allowable emissions and were excluded from modeling based on the use of the North Carolina "Screening Threshold" method. These emissions are generally from sources that are expected to have minimal impacts near the JSC facility because their emissions are low relative to the distance between the source and JSC.

The total SO_2 emissions presented in Table 5-3 are a conservative estimate of emissions for sources located within 40 km of the JSC facility. These total emissions are based on the maximum allowable emission rate for each identified source and generally assumes that the facility operates each emission source at maximum capacity for every hour in the year. Also, because this analysis is concerned with complying with ambient standards for SO_2 concentrations, the emission rates are calculated using the fuel consumption data that maximizes SO_2 emissions. In many instances, emissions for sources are determined assuming that fuel oil with sulfur content,

Table 5-3. Summary of SO_2 Emissions from Sources Within 50 km of the JSC Facility Considered in the Screening and Refined Modeling

Distance (km) From JSC Facility	Total* Emissions (TPY)	Emissions (TPY) Modeling Analysis	
		Screening (% Total)	Refined (% Total)
0 - 2	19,724	19,257 (97.6)	19,722 (100.0)
2 - 6	21,952	21,663 (98.7)	21,952 (100.0)
6 - 10	151,237	149,219 (98.7)	150,914 (99.8)
10 - 20	958	0 (0)	764 (79.7)
20 - 50	37,623	34,849 (92.6)	37,140 (98.7)
0 - 20	193,871	190,139 (98.1)	193,352 (99.7)
0 - 50	231,494	227,279 (98.2)	230,492 (99.6)

*Does not include emissions from the JSC facility.

ranging from 1 to 2 percent, is fired when the source has primarily fired natural gas throughout the year. The effect of using maximum allowable instead of actual emissions can be significant, particularly if many sources are either not operating or are using natural gas. For example, the summary of actual SO_2 emissions for Duval County in 1984 was calculated by the Jacksonville BES to be approximately 22,000 TPY (BES, 1985). The maximum allowable emissions considered in the modeling analysis (230,000 TPY) is approximately a factor of 10 higher than actual emissions. As a result, the concentrations calculated using the maximum allowable emissions are very conservative in estimating ambient air quality impacts.

5.1.5 Receptor Locations

As discussed in Section 5.1.1, the general modeling approach considered screening and refined phases to address compliance with AAQS and PSD increments. For the screening phase, concentrations were predicted for three main receptor grids using a limited number of receptors and sources for each receptor grid. The locations of the receptor grids were based on identifying the areas in which maximum concentrations would be expected due to all sources for compliance with AAQS and due to PSD sources for compliance with PSD Class I and II increments.

Descriptions of the receptor grids for determining compliance with AAQS and PSD increments are as follows:

1. Receptor grid for AAQS
    a. 180 receptors located in a radial grid centered on the JSC facility
    b. 36 radials separated by 10 degree increments
    c. Along each radial, receptors located at 0.5, 0.9, 1.3, 1.8, and 2.4 km from the JSC facility
2. Receptor grid for PSD Class II increment consumption
    a. Same radial grid as the receptor grid for determining compliance with AAQS, with an additional 72 receptors located at distances of 0.1 and 0.3 km along each radial

3. Receptor grid for PSD Class I increment
   a. 7 receptors located along the southwest border of the Okefenokee National Wildlife Refuge PSD Class I area nearest the JSC facility
   b. The following description provides the UTM coordinates and relative location of each receptor from JSC

Receptor No.	UTM Coordinates (km) East	North	Relative location Direction(°)	Distance(km)
1	390	3410	315	71.1
2	392	3400	310	62.9
3	390	3395	306	61.4
4	391	3390	302	57.7
5	390	3384	296	55.7
6	383	3382	292	61.3
7	370	3383	289	73.8

After the screening modeling was completed, refined short-term modeling was conducted considering all sources in the refined phase (see Section 5.1.4) using a receptor grid centered on the receptor which had the highest, second-highest 3- and 24-hour concentrations. The receptors were located at intervals of 100 m between the distances considered in the screening phase along 7 radials, at 2 degree increments, centered on the radial which the maximum concentration was produced. For example, if the maximum concentration was produced along the 90 degree radial at a distance of 0.9 km, the refined receptor grid would consist of receptors at the following locations:

Directions (degrees)	Distance (km)
84, 86, 88, 90, 92, 94, 96	0.6, 0.7, 0.8., 0.9, 1.1, 1.2, 1.3, per direction

To ensure that a valid highest, second-highest concentration was calculated, concentrations were predicted for the refined grid for the periods that produced both the highest and second-highest concentration from the screening receptor grid.

Refined modeling analysis was not performed for the annual averaging period, or for the PSD Class I area, because the spatial distributions of annual average concentrations are not expected to vary significantly from those produced from the screening analysis.

5.1.6 Background Concentrations

To estimate total air quality concentrations, a background concentration must be added to the modeling results. The background concentration is considered to be the air quality concentration contributed by sources not included in the modeling evaluation.

The derivation of the background concentration for the modeling analysis was presented in Section 4.0. Based on this analysis, the background SO_2 concentration was determined to be 8 ug/m^3. This background level was considered to be representative of all averaging times. This background level was added to model-predicted concentrations to estimate total air quality levels for comparison to AAQS.

5.1.7 Building Downwash Considerations

A plot plan of the JSC plant, which describes the building dimensions and stack locations, was presented in Figure 2-3. The area of influence of any building as related to downwash is defined as five times the lesser of the height or crosswind width of the building. The height, width, and length for the significant buildings at the JSC plant, along with the calculated GEP stack height, are presented in Table 5-4.

Based on the building dimensions, the stacks for Recovery Boiler No. 9, Power boiler No. 10, and the smelt dissolving tank vent are within the area of influence of one of the significant structures, and less than GEP.

Table 5-4. Building Dimensions and GEP Stack Height Determination, Jefferson Smurfit Corporation

Building	Building Dimension (ft) Height	Length	Width	Diagonal	GEP Stack Height Considerations GEP Height (ft)	Affected Stacks
Recovery Boiler 9	159	71	59	92	297	Recovery Boiler No. 9 Smelt Dissolving Tank
Power Boiler 10	105	86	75	114	263	Power Boiler No. 10
Power Boiler 10*	71	135	80	157	178	Power Boiler No. 10

* Lower tier of the two-tiered structure

Therefore, the potential for building downwash to occur must be considered in the modeling analysis.

The procedures used for addressing the effects of building downwash are those recommended in the ISC dispersion model User's Guide. The building height, length, and width are input to the model. The model uses these dimensions to modify the dispersion parameters. The ISCST model calculates the area of the building using the length and width, assumes the area is representative of a circle, and then calculates a building width by determining the diameter of the circle. If a specific width is to be modeled, the model inputs of building length and width must be based upon the following formula:

$$W_m = \sqrt{\pi\left(\frac{W_a}{2}\right)^2}$$

where: W_m is the building length and width input to the model to produce a building width of W_a in the dispersion calculations.

W_a is the actual building width for which dispersion calculations are desired.

Therefore, the following model widths were used in the model for the buildings described in Table 5-4.

Building	Building Dimensions (ft) Height	Actual Width, W_a	Input Model Width, W_m (ft)
Recovery Boiler 9	159	92	81.5
Power Boiler 10	105	114	101.0

5.2 MODEL RESULTS

5.2.1 Proposed Modification Only

A summary of the maximum SO_2 concentrations for only the proposed modification from the screening and refined analyses is presented in Table 5-5. Because the predicted increase in maximum 24-hour concentrations is greater than the de minimis monitoring level of 13 ug/m^3, preconstruction monitoring data must be submitted as part of the PSD permit application. As indicated in Section 4.0, existing monitoring data collected by the Florida DER are being used in this application to satisfy the preconstruction monitoring requirement.

The maximum predicted concentrations due to the proposed modification to Power Boiler No. 10 only represent less than 15 percent of the Florida AAQS, and less than 45 percent of the PSD Class II increments. Concentrations in areas outside of the maximum impact area are substantially less.

5.2.2 PSD Class I and II Increment Consumption

A summary of the maximum SO_2 concentrations predicted for comparison to the PSD Class II increments is presented in Table 5-6. These results show that maximum SO_2 concentrations, due to all PSD sources, are below the maximum allowable PSD Class II increments for all averaging periods. The maximum 3-hour average PSD increment consumption is predicted to be 238 ug/m^3, which is 46 percent of the maximum allowable PSD Class II increment of 512 ug/m^3, not to be exceeded more than once per year. Approximately 45 percent of this concentration is due to the increased emissions from Power Boiler No. 10.

The maximum 24-hour average PSD increment consumption is predicted to be 88.5 ug/m^3, which is 97 percent of the maximum allowable PSD Class II increment of 91 ug/m^3, not to be exceeded more than once per year. The increased SO_2 emissions from Power Boiler No. 10 contribute approximately 42 percent to this concentration.

Table 5-5. Maximum Predicted SO_2 Concentrations due to the Proposed Power Boiler No. 10 Modification Only

Averaging Period	Analysis	Receptor Location			Period			Air Quality Requirements (ug/m^3)		
		Concentration (ug/m^3)	Direction (°)	Distance (km)	Julian Day	Hour Ending	Year	Significance Levels	Monitoring De minimis Levels	PSD Class II Increment
3-hour*	Screening	108	10	0.3	27	3	1974	25	-	512
	Refined	108	10	0.3	27	3	1974			
24-hour*	Screening	35.6	60	0.3	107	-	1972	5	13	91
	Refined	37.5	58	0.3	107	-	1972			
Annual	Screening	3.4	360	0.3	-	-	1970	1	-	20

* Highest, second-highest concentrations shown.

Table 5-6. Maximum Predicted PSD Class II Increment Consumption due to PSD Sources in the Screening and Refined Analyses.

Averaging Period	Analysis	PSD Increment Consumption (ug/m^3)	Receptor Location		Period		
			Direction (°)	Distance (km)	Julian Day	Hour Ending	Year
3-hour*	Screening	238	10	0.3	27	3	1974
	Refined	238	10	0.3	27	3	1974
24-hour	Screening	84.1	60	0.3	107	24	1972
	Refined	88.5	58	0.3	107	24	1972
Annual	Screening	8.8	50	0.3	-	-	1970

Note: Maximum allowable PSD Class II increments for the 3-, 24-hour and annual averaging periods are 512, 91, and 20 ug/m^3, respectively.

* Highest, second-highest concentration for this averaging period.

The maximum annual average PSD increment consumption is predicted to be 8.8 ug/m^3, which is 44 percent of the maximum allowable PSD Class II increment of 20 ug/m^3. Approximately 40 percent of this predicted concentration is due to the increased SO_2 emissions from Power Boiler No. 10.

A summary of the maximum SO_2 concentrations predicted for comparison to the PSD Class I increments is presented in Table 5-7. These results show that the maximum SO_2 concentrations due to all PSD sources are below the maximum allowable PSD Class I increments for all averaging periods. The maximum 3-hour average PSD Class I increment consumption is predicted to be 15.0 ug/m^3, which is 60 percent of the maximum allowable PSD Class I increment of 25 ug/m^3, not to be exceeded more than once per year. This predicted concentration is mainly due to non-JSC sources, with the JSC facility contributing 0.37 ug/m^3, to 2.5 percent, to the concentration.

The maximum 24-hour average PSD Class I increment consumption is predicted to be 4.3 ug/m^3, which is 86 percent of the maximum allowable PSD Class I increment of 5 ug/m^3, not to be exceeded more than once per year. This predicted concentration is mainly due to non-JSC sources, with the JSC facility contributing 0.27 ug/m^3, or 6.3 percent, to the concentration.

The maximum annual average PSD Class I increment consumption is predicted to be 0.39 ug/m^3, which is 20 percent of the maximum allowable PSD Class I increment of 2 ug/m^3. Similar to the other averaging periods, this predicted concentration is mainly due to non-JSC sources, with the JSC facility contributing 0.06 ug/m^3, or 15 percent, to this maximum concentration.

5.2.3 Total Air Quality Impact

A summary of the maximum 3-hour, 24-hour, and annual average total SO_2 concentrations predicted from the screening analyses is presented in Table 5-8. The total concentrations are determined from the impacts of the JSC facility and other modeled sources, added to the background concentration determined from monitoring data.

Table 5-7. Maximum Predicted PSD Class I SO_2 Increment Consumption Due to All PSD Sources

Averaging Period	PSD Increment Consumption (ug/m^3)	Receptor Location		Period		
		Direction (°)	Distance (km)	Julian Day	Hour Ending	Year
3-hour*	15.0	306	61.4	349	12	1974
24-hour*	4.3	310	62.9	121	24	1970
Annual	0.39	310	62.9	-	-	1970

Note: Maximum allowable PSD Class I increments for the 3-, 24-hour, and annual averaging periods are 25, 5 and 2 ug/m^3, respectively.

* Highest, second-highest concentrations shown.

Table 5-8. Maximum Predicted Total SO_2 Concentrations Due to All Sources from the Screening Analysis

Averaging Period	Year	Concentration (ug/m^3) Total	Contribution From JSC	Other Modeled Sources	Background+	Receptor Location Direction (°)	Receptor Location Distance (km)	Period Julian Day	Period Hour Ending
3-hour*	1970	893	12.3	873	8	330	2.4	202	12
	1971	801	0	793	8	310	2.4	245	9
	1972	990	0	982	8	310	2.4	80	12
	1973	915	0	907	8	310	2.4	17	15
	1974	837	0	829	8	310	2.4	263	18
24-hour*	1970	325	0	312	8	310	2.4	102	24
	1971	340	0	332	8	310	1.8	34	24
	1972	291	0	283	8	310	2.4	80	24
	1973	284	0	276	8	310	2.4	265	24
	1974	325	0	317	8	310	2.4	285	24
Annual	1970	63.2	4.4	50.8	8	320	2.4	-	-
	1971	60.7	2.4	50.3	8	320	2.4	-	-
	1972	65.3	2.5	54.8	8	310	2.4	-	-
	1973	67.6	3.1	56.5	8	310	2.4	-	-
	1974	67.3	3.7	55.6	8	310	2.4	-	-

* Highest, second-highest concentrations shown.
+ Derived from monitoring data, see Section 4.0

As shown in Table 5-8, the maximum total 3-hour average concentrations for all receptor locations considered in the modeling are predicted to be less than the Florida 3-hour AAQS of 1,300 ug/m^3, not to be exceeded more than once per year. However, for both the 24-hour and annual averaging periods, the maximum total concentrations are predicted to be higher than the Florida 24-hour and annual AAQS of 260 and 60 ug/m^3, respectively. These results are very conservative (i.e., higher than expected) because maximum instead of actual emissions for non-JSC sources were used in estimating the maximum impacts. Also, the contribution from the JSC facility to the predicted maximum impacts is minimal, and in most instances, zero or less than the significance levels. Further discussions concerning these impacts, and use of actual emissions in determining maximum impacts, are presented in the following sections that describe the results of the refined analyses.

A summary of the maximum 3-hour average total SO_2 concentrations predicted for the refined analyses for the 5 years of meteorological data is presented in Table 5-9. The maximum predicted 3-hour concentration of 947 ug/m^3, which is less than the Florida AAQS of 1,300 ug/m^3, occurred in 1972 at approximately 2.4 km to the north-northwest of the JSC facility. The JSC facility had no contribution to the maximum concentration. The maximum concentrations for other years also occurred in the same general direction and distance as the maximum concentration for 1972. Again, the JSC facility had no impacts or impacts less than the significance levels at the receptors of maximum concentrations.

As indicated previously in Table 5-8, the maximum total 24-hour concentrations for each year in the screening analysis were greater than the Florida 24-hour AAQS of 260 ug/m^3. Because the predicted impacts from the JSC facility are expected to have minimal contributions to these maximum concentrations, refined analyses were conducted to determine the extent of JSC's contribution to the highest concentrations for each year. The refined analyses involved performing the following steps:

Table 5-9. Maximum Predicted Total 3-hour Average Concentrations Due to All Sources from the Refined Analysis

Year	Concentration (ug/m^3)*				Receptor Location		Period	
	Total	Total Due To			Direction (°)	Distance (km)	Julian Day	Hour Ending
		JSC	Other Modeled Sources	Background				
1970	844	3.5	833	8	330	2.4	163	15
1971	687	0	679	8	314	2.3	267	18
1972	947	0	939	8	314	2.3	80	12
1973	891	0	883	8	316	2.3	17	15
1974	887	0	879	8	314	2.3	263	18

* Highest, second-highest concentrations shown.

1. To ensure that critical periods were evaluated (i.e., those that could possibly exceed the AAQS), all periods during which the second-highest 24-hour concentration exceeded 238 ug/m^3 in the screening analysis were identified (i.e., modeled source impact of 230 ug/m^3 added to background concentration of 8 ug/m^3). The receptor locations associated with these concentrations were also identified.
2. For the periods and receptor locations identified in Step 1, concentrations were predicted using the emission inventory and receptor grid approach described for the refined analysis (see Sections 5.1.4 and 5.1.5). A list of second-highest concentrations due to all sources was generated.
3. JSC's contribution during all the periods and for all the receptors in the refined grid were determined, including the period and receptor at which the highest, second-highest concentration was produced.
4. For those periods during which the AAQS of 260 ug/m^3 was predicted to be exceeded and the JSC facility had an impact greater than the significance levels, additional modeling was performed that accounted for actual emissions at several non-JSC sources that were significantly contributing to the maximum predicted concentrations. The actual emissions for the non-JSC sources were developed from a review of APIS, annual operation reports, and discussions with the Jacksonville BES concerning the operation of these facilities.

For Step 1, a listing of the periods and locations at which the predicted second-highest 24-hour concentrations were greater than 238 ug/m^3 due to the modeled sources in the screening analysis was prepared and is summarized in Table 5-10. In general, the highest concentrations occurred in areas to the west-northwest clockwise through north at a distance of 1.8 to 2.4 km and to the southwest between 1.3 to 2.4 km from the JSC facility. The number of 24-hour periods during which the second-highest concentrations exceeded 238 ug/m^3 ranged from 12 for 1974 meteorology to 29 for 1972 meteorology.

Table 5-10. Periods and Locations at Which the Predicted Second-highest 24-hour Concentrations Are Greater Than 238 ug/m^3 Due to All Sources in the Screening Analysis

Year	Direction (°)	Distance (km)	Periods (Julian Day)	Number of Unique Periods for Year
1970	310	2.4	15, 102, 138, 180, 342	27
	320	2.4	87, 251, 258, 331	
	330	2.4	98, 107, 112, 132, 143, 153, 202, 241	
	350	2.4	42, 71, 79, 85, 48, 157, 177, 178, 222, 223	
1971	300, 310	1.8, 2.4	34, 269, 290, 302, 339 356, 357	21
	320	1.8, 2.4	6, 34, 105, 143, 154, 218, 246, 248, 249, 250, 339, 358	
	340	1.8	104, 136	
	350	2.4	78, 133	
1972	220, 230	1.3, 1.8, 2.4	26, 100, 276, 284	29
	300, 310	1.8, 2.4	39, 42, 80, 96, 131, 156, 163, 254, 276, 284, 343, 346	
	320	1.3, 1.8 2.4	15, 17, 40, 42, 80, 127, 148, 149, 154, 169, 170, 264, 311	
	340	1.8	44, 50	
	350	2.4	98, 107	
1973	310	1.3	10, 156	21
		1.8	67, 83, 158, 260, 265, 271, 281, 358	
	320	1.3, 1.8, 2.4	9, 11, 182, 184, 271, 293, 294, 295, 342	
	340	1.3	41, 333	
1974	220	2.4	360, 294	12
	310	1.8, 2.4	110, 141, 155, 224, 263, 278, 279, 285	
	320	1.8, 2.4	141, 165, 266, 278	

For Steps 2 and 3, the total 24-hour average concentrations due to all sources were predicted, with a summary of the second-highest concentrations presented in Table 5-11. The JSC's contribution to these maximum concentrations is also given. As indicated in Table 5-11, the highest, second-highest 24-hour concentration is predicted to be 479 ug/m^3 to which the JSC facility contributed 36 ug/m^3. A major contributor to this maximum concentration was the U.S. Gypsum facility. In fact, a review of the other high concentrations indicated that the U.S. Gypsum facility was a major contributor.

From the information presented in Table 5-11, periods were identified during which the Florida AAQS of 260 ug/m^3 was exceeded and JSC's contribution were greater than the significance level. This analysis showed that JSC had a significant contribution for only certain radial directions:

Year	General Direction (°)
1970	330
1971	320
1972	220, 230
1973	310

For all the other directions and periods considered in the analysis, the JSC facility contributed no impacts, or had impacts less than the significance levels.

For Step 4, additional analyses were performed for the periods identified in Step 3, during which the 24-hour AAQS of 260 ug/m^3 was predicted to be exceeded and the JSC facility had an impact greater than the significance level. For this analysis, actual emissions from several non-JSC sources were identified and modeled to produce maximum concentrations. A listing of the actual and maximum emissions for those sources modeled at actual emissions is as follows:

Source	Emissions (TPY)	
	Maximum	Actual
U.S. Gypsum	1,755	20
J.W. Swisher	289	20
JEA Northside No. 2	20,402	0
Anheuser Busch	2,644	1,400

Table 5-11. Maximum Predicted Total 24-hour Average Concentrations due to All Sources from the Refined Analysis

Year	General Direction	Second Highest Concentration (ug/m^3) Total	Total due to JSC	Total due to Other Modeled Sources	Total due to Background	Receptor Location Direction (°)	Receptor Location Distance (km)	Period (Julian Day) for Second Highest Conc.	Period (Julian Day) for Assoc. Highest Conc.
1970	310*	349	0	341	8	312	2.3	15	138
	320	237	11	218	8	320	2.4	87	331**
	330	316	6.2	302	8	328	2.6	112**	143**
	350*	344	0.6	335	8	348	2.4	79	223
1971	300, 310*	349	0	341	8	312	1.9	302	356
	320	328	11	309	8	316	1.8	339	34**
	340*	261	0	253	8	340	1.8	136**	104
	350	250	5.1	237	8	346	2.3	133	78
1972	220, 230	479	36	435	8	234	2.5	26	276
	300, 310*	345	0	337	8	314	2.2	276	163
	320*	287	0	279	8	322	1.4	15	148
	340*	254	0	246	8	344	1.7	44	50
	350*	240	0	232	8	346	2.3	98	107

Table 5-11. Maximum Predicted Total 24-hour Average Concentrations due to All Sources in the Refined Analysis (Continued, Page 2 of 2)

Year	General Direction	Second Highest Concentration (ug/m^3)				Receptor Location		Period (Julian Day) for	
		Total	Total due to			Direction (°)	Distance (km)	Second Highest Conc.	Assoc. Highest Conc.
			JSC	Other Modeled Sources	Background				
1973	310	282	59	223	8	310	1.3	156**	10**
	320*	293	0	285	8	324	1.4	342	11
	340*	231	0	223	8	336	1.6	41	333**
1974	220	201	8.1	185	8	214	2.1	360	294**
	310*	322	0	314	8	314	2.3	110**	285**
	320*	237	0	229	8	320	1.8	278	266

* For other periods modeled for this direction (see Table 5-9), the impacts for the JSC facility were less than 5 ug/m^3.

** Calms occurred during period and, therefore, the 24-hour average concentration was calculated using less than 24 hours.

For U.S. Gypsum and J.W. Swisher, the actual emissions were based on emissions presented in annual operating reports for 1984 and 1985 submitted by these facilities to the Jacksonville BES. At present, the JEA Northside No. 2 unit is not in operation and is on cold standby status. The unit is not expected to be in operation until 1992, and only if its operation is needed to meet electrical demands. Based on these assumptions, the highest, second-highest total 24-hour concentration due to all sources is predicted to be 255 ug/m^3. JSC contributed only 34 ug/m^3 to this concentration.

For the annual average concentrations, a similar approach to the 24-hour concentration analysis was used to address impacts that were predicted to be greater than the Florida annual AAQS of 60 ug/m^3. The highest total concentrations were predicted to occur in areas from the west clockwise through north between 1.8 and 2.4 km downwind from the JSC facility. A summary of the maximum total concentrations due to all sources was presented in Table 5-8. The JSC facility had annual average impacts that were greater than the significance level at all modeled receptor locations.

Further analyses were performed by modeling non-JSC sources (see discussion on the 24-hour analysis) with actual emissions, at receptor locations that were identified in the screening analysis with predicted annual average concentrations greater than 53 ug/m^3 (i.e., modeled source impact of 45 ug/m^3 added to background concentration of 8 ug/m^3). A listing of receptor locations is presented in Table 5-12. By using actual emissions at several non-JSC sources, particularly for U.S. Gypsum, the highest annual average concentration for those selected receptor areas was predicted to be 45 ug/m^3 (i.e., modeled source impact of 37.4 ug/m^3 added to background concentration of 8 ug/m^3). Although areas with predicted total annual average concentrations less than 53 ug/m^3 were not remodeled, it is expected that the maximum concentrations in those areas will also be reduced if actual emissions from the non-JSC sources were used. Therefore, a conservative estimate of the highest total annual average concentration is predicted to be 53 ug/m^3, which is below the Florida AAQS of 60 ug/m^3. It is further noted that actual monitoring data from sites located in the area

Table 5-12. Receptor Locations Where the Predicted Annual Average Concentrations Were Greater Than 53 ug/m^3* in the Screening Analysis

Year	Direction (°)	Distance (km)
1970	300	1.8, 2.4
	310, 320	1.3, 1.8, 2.4
	330 - 360	2.4
1971	300, 310	1.3, 1.8, 2.4
	320	1.8, 2.4
	330	2.4
	340 - 360	1.8, 2.4
1972	60, 70	1.3, 1.8
	230 - 360	0.9, 1.3, 1.8, 2.4+
1973	270, 280	2.4
	290 - 320	1.3, 1.8, 2.4
	330	2.4
	340 - 360	1.3, 1.8, 2.4
1974	280	2.4
	290	1.8, 2.4
	300, 310	1.3, 1.8, 2.4
	320	1.8, 2.4
	330	2.4
	340 - 360	1.3, 1.8, 2.4

* Includes a background concentration of 8 ug/m^3

+ Concentrations were not necessarily greater than 53 ug/m^3 at all distances for directions indicated.

of JSC have recorded significantly lower annual SO_2 concentrations, i.e., less than 15 ug/m^3 for 1985.

6.0 ADDITIONAL IMPACT ANALYSIS

6.1 IMPACTS UPON VEGETATION

The natural vegetation in the vicinity of the JSC site is a mixture of native and introduced tree, shrub, and grass species reflecting the industrial/residential environment of the area. Specifically, the dominant trees include various species of oaks, sycamore, cabbage palm, slash pine, sweat gum, magnolia, pecan, endo palm, red cedar, and China berry. Dominant shrubs include saltbush, elderberry, wax myrtle and yucca and other ornamentals.

The response of plants to atmospheric pollutants is a function of both air quality conditions and environmental factors. Air quality conditions include the concentration during exposure, duration of each exposure, and the frequency of exposures, while environmental factors include temperature, relative humidity, light, and edaphic factors such as soil fertility and moisture. The usual pattern of pollutant exposure is that of a few episodes of relatively high concentrations for a short duration, interspersed with long periods of extremely low concentrations. Sensitivity to SO_2 depends upon the rate at which it enters the leaf (which may be a function of leaf structure or stomatal behavior), the rate at which sulfite is converted to sulfate, the rate at which sulfate is used by the plant, and the sensitivity of various metabolic functions to the presence of either sulfate or sulfite. Plant effects can include mortality, reduced growth or foliar injury. Effects on most plants will be from the short-term higher doses (a dose is the product of the concentration of the pollutant and the duration of exposure).

The USEPA has set federal secondary air quality standards in order to protect the public welfare, which include affects upon plants, animals, buildings, etc. For SO_2, the federal secondary standard is 1,300 ug/m^3, 3-hour average. There are no federal secondary SO_2 standards for the 24-hour and annual averaging times. Federal primary standards for these averaging times, which are set to protect the public health, are as follows:

Annual average - 80 ug/m^3

24-hour average - 365 ug/m^3

The 24-hour and 3-hour standards can be exceeded once per year at any particular location.

As discussed in Section 5.0, the air quality impact analysis initially evaluated SO_2 impacts based upon maximum allowable emissions from all sources. Total SO_2 emissions modeled amounted to approximately 300,000 TPY. Under this scenario, the maximum (highest, second-highest) predicted 3-hour SO_2 concentration in the vicinity of the JSC facility was 947 ug/m^3, the maximum predicted 24-hour average concentration was 479 ug/m^3, and the maximum predicted annual SO_2 concentration was 68 ug/m^3. However, concentrations were shown to decrease markedly beyond the maximum impact locations. JSC contributed minimally to these maximum impacts. Based upon actual SO_2 emissions, the maximum predicted concentrations in the vicinity of JSC are much less - 45 ug/m^3, annual average, and 255 ug/m^3, 24-hour average.

Woltz and Howe (1981) investigated the effects of pollutants on some species of native vegetation in Florida. They showed that exposure to 1,300 ug/m^3 SO_2 for 8 hours caused no visible injury to bald cypress (Taxodium distichum), slash pine (Pinus elliottii), live oak (Quercus virginiana), or red mangrove (Rhizophora mangle). The predicted concentrations based upon maximum allowable SO_2 emissions are well below the threshold level observed by Woltz and Howe.

The predicted maximum 3 hour and 24 hour concentrations are at or below values shown to cause injury to other native vegetation. However, the predicted maximum concentrations based upon actual SO_2 emissions are well below the threshold SO_2 doses known to cause injury to native vegetation. These values are shown in Table 6-1. As a result no adverse impacts to vegetation are predicted due to the proposed JSC modification. In addition, the proposed modification to Power Boiler No. 10 is predicted to increase maximum SO_2 levels by only: 3.4 ug/m^3, annual average; 38 ug/m^3, 24-hour

Table 6-1. Lowest Doses of SO_2 Reported to Affect Growth of Some Grasses and Trees

Species	Lowest SO_2 Dose Known to Affect Species (ug/m^3)	Reference
Rye grass	367, for 131 days reduced growth	Ayazloo and Bell, 1981
Orchard grass	37 to 62, for 72 days reduced growth	Crittenden and Read, 1979
Ragweeds, legumes blackberry, southern pines, red and black oaks, white-ash, sumac	790-1570 for 3 hours	Jones et al., 1974
Trembling aspen; % foliar injury	920 for 3 hours	Karnosky, 1976
Native vegetation, potatoes, soybeans, forage grasses; foliar injury	520 to 1118 for 3 hours	McLauglin and Lee, 1974
Sensitive vegetation; showing foliar injury	680 for 4 hours and 470 for 8 hours	Dreisinger and McGovern, 1970
Cottonwood, green ash, sycamore-reduce height growth	650 for 8 hrs/day, 5 days/wk for 14 weeks	Jensen and Dochinger, 1979
Jackpine, altered physiology	470-520 for 24 hours	Malhotra and Kahn, 1978
Chinese elm, ginko, norway maple, pin oak; caused chlorosis	1310 for 24 hrs/day for 30 days	Temple, 1972
Sugar maple, black oak, white ash; reduced photosynthesis	1310 for 24 hrs/day for 1 week	Carbon, 1979

average; and 108 ug/m^3, 3-hour average. These impacts are well below the injury threshold values presented in Table 6-1.

6.2 IMPACTS UPON SOILS

Soils in the vicinity of the JSC site consist primarily of disturbed soils subject to development and alteration. These soils will not be affected by SO_2 concentrations resulting from facility emissions, because of their frequent disturbance by development activities or frequent maintenance for residential and industrial landscaping. These activities would negate or neutralize any acidifying effects of SO2 deposition if they should occur.

6.3 IMPACTS UPON VISIBILITY

The existing Power Boiler No. 10 must currently meet an opacity limitation of 20 percent, except that 27 percent opacity is allowed for up to six minutes per hour. This opacity limit is expected to be met after the proposed modification is implemented. No change in visible emissions is expected due to the modification.

Since the Okefenokee PSD Class I area is located approximately 55 km to the northwest of the JSC site, a visibility impact assessment of the Class I area is required. A Level I visibility screening analysis was conducted following the procedures outlined in "Workbook for Estimating Visibility Impairment" (USEPA, 1980). The procedure calculates three visibility parameters: plume contrast against the sky (C_1), plume contrast against terrain (C_2), and change in sky/terrain contrast (C_3). If the absolute value of each of these parameters is less than 0.1, then it is highly unlikely that the emissions from the source would cause visibility impairment in the Class I area.

Parameter C_1 is dependent upon NO_x emissions, while parameter C_2 is dependent upon both particulate and NO_x emissions. Parameter C_3 is dependent upon particulate and SO_2 emissions. Particulate, NO_x and SO_2 emissions used for the calculations were based upon the total allowable emissions from Power Boiler No. 10 after modification (not just the increase in allowables due to the proposed modification). Following the Workbook

procedure, the absolute value of C_1 was calculated to be 0.0085, C_2 was calculated to be less than 0.004, and C_3 was calculated to be 0.001 (see Figure 6-1). Since the absolute values of C_1, C_2 and C_3 are all below the threshold criteria of 0.10, no visibility impacts are expected upon the Class I area due to emissions from Power Boiler No. 10.

6.4 ADDITIONAL GROWTH

Only the existing Power Boiler No. 10 is being modified at the JSC facility. Production capacity for the JSC plant will not increase as a result of the modification. Therefore, no increase in jobs, payroll, and taxes in the area is expected as a result of this change. As a result, no growth-related impacts are expected due to the proposed modification.

VISIBILITY LEVEL-1 SCREENING MODEL

DEVELOPED BY:
KBN ENGINEERING AND APPLIED SCIENCES, INC.
JANUARY 1986

BASED UPON "WORKBOOK FOR ESTIMATING VISIBILITY IMPAIRMENT" (NOV. 1980)

VISUAL IMPACTS ON OKEEFENOKEE BY J.S.

J.S. BOILER 10

INPUT PARAMETERS:

PARTICULATE MATTER EMISSION RATE =	0.42	TONS/DAY
SULFUR DIOXIDE EMISSION RATE =	6.35	TONS/DAY
NITROGEN OXIDES EMISSION RATE =	3.70	TONS/DAY
BACKGROUND VISUAL RANGE =	40.00	KM
DISTANCE TO CLASS I AREA =	55.00	KM

CALCULATED PARAMETERS:

DISPERSION PARAMETER SIGMA Z =	81.29	METERS
PLUME DISPERSION PARAMETER =	44733.1	
OPTICAL THICKNESS (PARTICULATES) =	0.01704	
OPTICAL THICKNESS (NOX) =	0.02552	
OPTICAL THICKNESS (AEROSOL) =	0.003361	

PLUME CONTRAST AGAINST THE SKY, C1 = -0.0085

PLUME CONTRAST AGAINST TERRAIN, C2 = 0.0039

CHANGE IN SKY/TERRAIN CONTRAST, C3 = 0.001235

Figure 6-1. Visibility Analysis for Okefenokee Class I Area.

7.0 BEST AVAILABLE CONTROL TECHNOLOGY EVALUATION

7.1 REQUIREMENTS AND APPLICABILITY

The control technology review requirements of the federal and state of Florida PSD regulations were discussed in Section 3.0. These regulations require that all applicable federal and state emissions from the source be met and that BACT be applied to control emissions from the source. The BACT requirements are applicable to all "regulated" pollutants for which the increase in emissions from the source or modification exceeds the significant emission rate. Regulated pollutants are those subject to PSD new source review. For the proposed Power Boiler No. 10 SO_2 increase, the only pollutant which must undergo BACT review is SO_2.

Emission limiting standards applicable to SO_2 emissions from Power Boiler No. 10 were discussed in Section 3.3.2. The only applicable emission standards are the federal NSPS and state emission standard for new fossil fuel steam generating units with heat input capacity of greater than 250×10^6 Btu/hr. The SO_2 emission limit imposed by these standards is 1.2 lb $SO_2/10^6$ Btu heat input.

7.2 DESCRIPTION OF PROPOSED SO_2 CONTROL SYSTEM

The proposed SO_2 control technology for Power Boiler No. 10 is utilization of the existing flue gas desulfurization (FGD) system. This system is in place and currently operating to control SO_2 emissions to less than the SO_2 cap level of 289.5 lb/hr. A description of the existing FGD system follows.

Flue gases discharged from Power Boiler No. 10 are cleaned in a mechanical dust collector and then passed through an induced draft fan and on to the venturi scrubbing system (Figure 7-1). The gases pass through a variable throat venturi scrubber, through a liquid flooded elbow into the separator/absorber/demister section and are then discharged out the stack.

The variable throat venturi scrubber operates on a principle of thorough atomization of the scrubbing liquid and prolonged contact to remove essentially all particulate matter as a function of the pressure drop set across the unit. The scrubbing liquid for the venturi scrubber is supplied

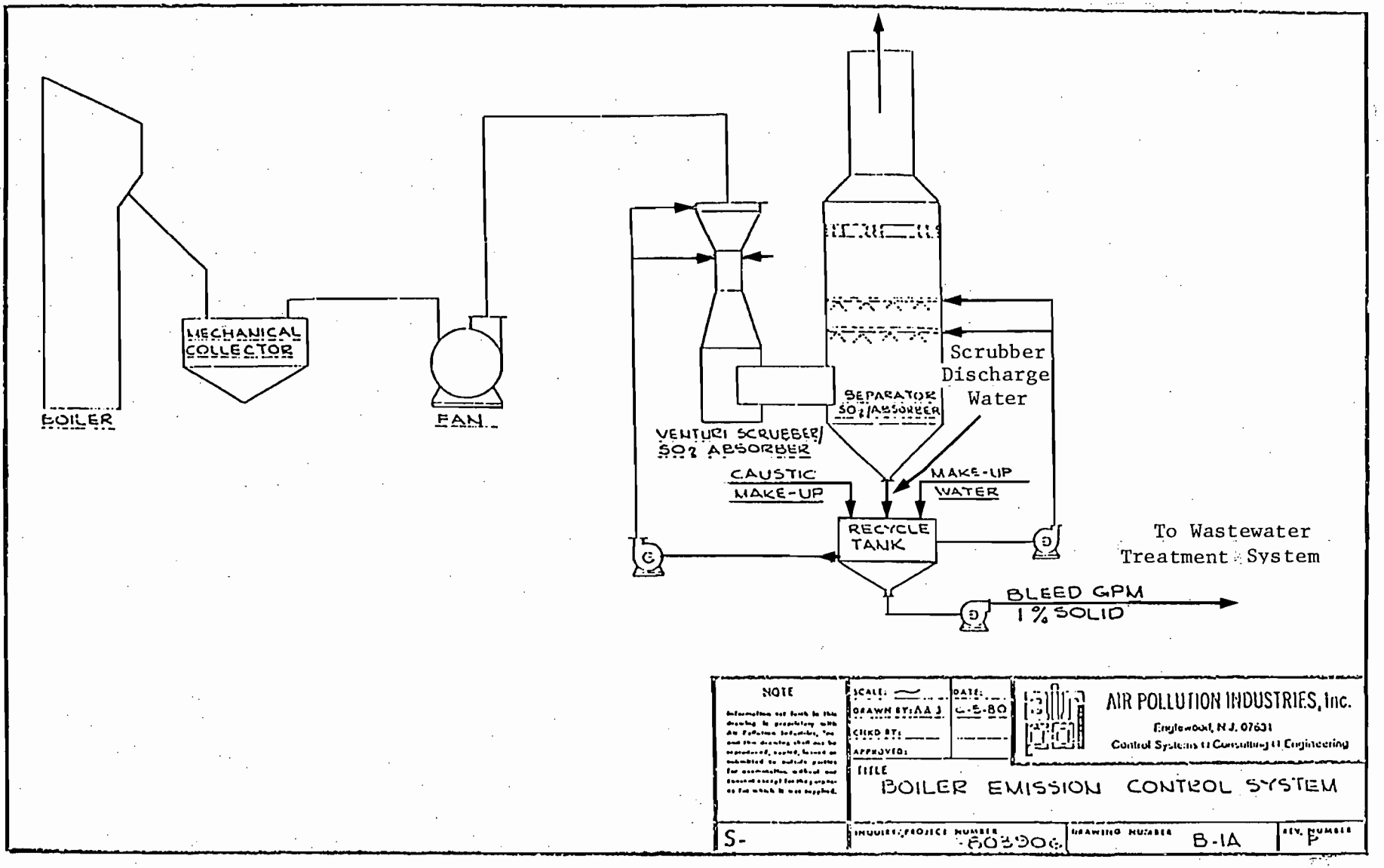

Figure 7-1. Power Boiler No. 10 Flue Gas Desulfurization System

from the recycle tank (see Figure 7-1). Caustic (sodium hydroxide) is added prior to the absorber pump to maintain the proper pH of the scrubbing liquid in the recycle tank. Therefore, SO_2 is removed in the venturi section of the system as well as in the SO_2 absorber.

The scrubbed gases discharge from the venturi section to a flooded elbow which transitions into the SO_2 absorber. A water level is maintained in the bottom of the elbow to protect the metal against abrasion of the solids in the water and air stream.

The scrubbed flue gases leave the flooded elbow and tangentially enter the SO_2 absorber unit which is 19 feet in diameter by 40'-6" high. The gases flow upward through a counter current spray of high pH liquid which removes SO_2 from the gases, causing a drop in pH of the liquid. Caustic addition is used to maintain proper pH in the liquid. Liquid entrainment is spun out and flows down to the bottom of the absorber and discharges into the recycle tank. The gases flow up through chevron type mist-eliminators which separate additional liquid. The gases then pass through the stack and discharge to atmosphere. Spent scrubber liquid is recycled back into the recycle tank to reduce caustic make-up. The bleed stream from the recycle tank is sent to the wastewater treatment system.

The SO_2 control system employed at JSC is generically termed a "non-regenerative, single-alkali" process. This process is very common in the pulp and paper industry, being employed at approximately 30 mills. Several reagents may be used to produce the caustic scrubbing liquid, such as a caustic waste stream from the mill, sodium hydroxide, or sodium carbonate. The reagents are generally mixed with water to result in the proper pH to reduce SO_2 emissions to required levels. JSC utilizes sodium hydroxide as the caustic reagent. The chemical reactions which take place in the reaction of SO_2 with sodium hydroxide are as follows:

$$2\ NaOH + SO_2 \longrightarrow Na_2SO_3 + H_2O$$

$$NaOH + SO_2 \longrightarrow NaHSO_3$$

$$Na_2SO_3 + SO_2 + H_2O \longrightarrow 2NaHSO_3$$

$$NaHSO_3 + NaOH \longrightarrow Na_2SO_3 + H_2O$$

A continuous emissions monitor is located on the Power Boiler No. 10 stack to continuously monitor SO_2 emissions. The monitoring system transmits to a remote display located in the Power Boiler No. 10 control room. The remote display unit performs the calculations required for compliance reporting and provides alarms for boiler operating personnel.

JSC has developed an Operating and Maintenance (O & M) plan for Power Boiler No. 10. The O & M plan, which has been approved by FDER, requires routine inspections (once per shift) of the scrubbing system. If the continuous emissions monitor indicates SO_2 emissions nearing the 289.5 lb/hr level, the boiler operator either increases the bark burning rate or the scrubber water pH. Scrubber water pH is adjusted by varying the amount of caustic added to the scrubber water. By varying the caustic addition, and hence scrubber pH, varying sulfur dioxide removal efficiencies can be obtained. JSC conducted a field study to determine the relationship between scrubber water recycle pH and SO_2 removal efficiency. The results of the study, portrayed graphically in Figure 7-2, showed that SO_2 removal efficiencies between 58 and 96 percent were attainable.

Due to process changes at the JSC facility, the quality of the scrubber water used in the Power Boiler No. 10 SO_2 scrubber has been changing over the last few years. These changes have resulted in more caustic being required per pound of SO_2 entering the scrubber. In 1985, JSC used a total of 611 tons of caustic to reduce SO_2 emissions from a potential 1681 TPY (uncontrolled) to 488 TPY (actual). By contrast, in 1986, a total of 1209 tons of caustic was used to reduce SO_2 emissions from 1509 TPY to 428 TPY. This represents nearly a doubling in caustic usage per ton of SO_2 removed.

The proposed BACT emission rate for SO_2 is the federal NSPS and state emission standard of 1.2 $lb/10^6$ Btu, or 528.7 lb/hr and 2,316 TPY. It is noted that the 1.2 $lb/10^6$ Btu limitation currently applies to Power Boiler No. 10; however, the SO_2 emissions cap of 289.5 lb/hr requires lower emission levels at high operating loads.

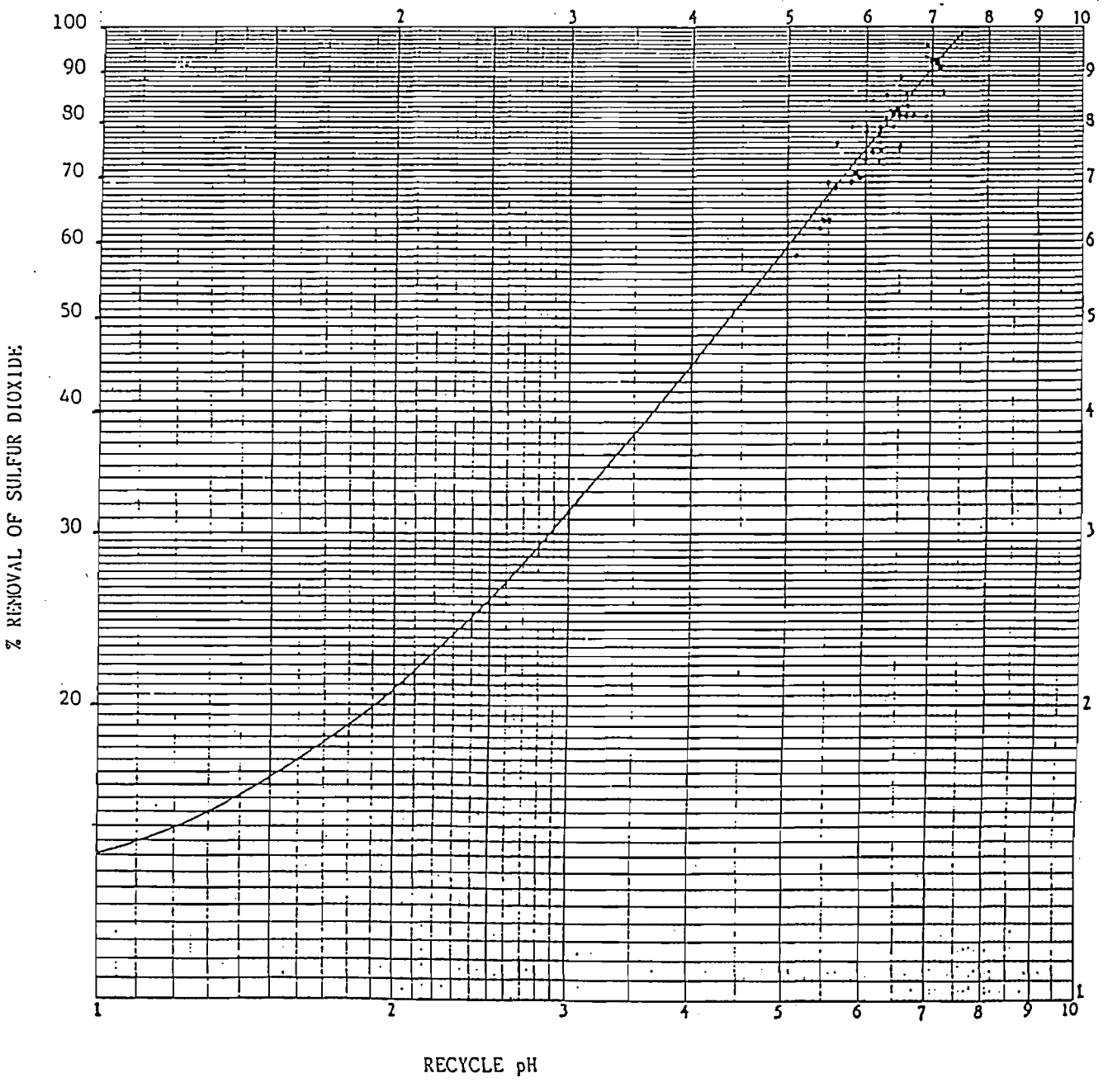

Figure 7-2. Test Results of SO_2 Absorber Recycle pH versus SO_2 Removal Efficiency, Power Boiler No. 10

7.3 DESCRIPTION AND ANALYSIS OF ALTERNATIVE CONTROL TECHNOLOGIES

The proposed control technology is caustic scrubbing with the use of sodium hydroxide to achieve an SO_2 removal efficiency of up to 80 percent. This proposed technology is capable of achieving 90 percent SO_2 removal efficiency on a continuous basis. The system can be operated at this and higher removal efficiencies by increasing the amount of caustic added to the system. Removal efficiencies greater than 90 percent cannot be achieved on a continuous basis, however, due to limitations in mass transfer efficiency and other system limitations and reliability factors.

There are several other FGD technologies which can achieve SO_2 removal efficiencies of up to 90 percent on a continuous basis. These include wet limestone, wet lime, limestone spray drying, sodium carbonate, Wellman-Lord, aqueous carbonate, citrate, and magnesium oxide. There are also several precombustion and combustion technologies which alone or in combination could achieve SO_2 removal efficiencies of up to 90 percent. The proposed caustic scrubbing system is capable of achieving SO_2 removal efficiencies equal to or exceeding these systems. Thus, there are no existing alternative technologies which can achieve a greater reduction in SO_2 emissions on a long-term, continuous basis, than the proposed control technology. BACT requirements require the analysis of only those control systems which can achieve a greater degree of emission reduction than the proposed control system. As a result, the SO_2 alternatives analysis is limited to the economics, energy, and environmental impacts associated with varying caustic scrubber SO_2 removal efficiencies.

The proposed SO_2 emission level of 529.2 lb/hr (1.2 lb/10^6 Btu) would require an SO_2 removal efficiency of 80 percent when burning 3.5 percent sulfur coal in the boiler (this is the maximum sulfur content of coal currently allowed to be burned in the boiler). This degree of emission reduction was therefore selected as the "base case" for comparison to alternatives.

Two alternatives were selected for comparison to the base case. The first alternative case consists of current operating conditions at JSC which

require SO_2 emissions to not exceed 289.5 lb/hr. JSC currently utilizes 1.0 percent sulfur coal (approx.) in Power Boiler No. 10. An SO_2 removal efficiency of 62 percent would be required to achieve the current allowable emission rate with this quality coal. The second alternative consists of a 90 percent SO_2 removal when burning 3.5 percent sulfur coal. This is equivalent to reducing maximum emissions to 264.5 lb/hr or 0.6 $lb/10^6$ Btu. This SO_2 emission level is slightly lower than the current permitted level of 289.5 lb/hr for Power Boiler No. 10. Thus, both alternatives would achieve approximately the same level of SO_2 emissions, but by different means: one would use low sulfur coal and a relatively low SO_2 removal efficiency, while the other would use high sulfur coal with a high SO_2 removal efficiency.

The analysis of alternative SO_2 control technologies is presented in Tables 7-1 and 7-2. The basis of the analysis, including coal consumption, SO_2 emissions and caustic usage, is presented in Table 7-1. The estimated annual cost of coal and caustic, along with a comparison of the alternatives, is presented in Table 7-2.

The total cost for each alternative includes an estimate of operating and maintenance (O&M) costs for the caustic scrubber, not including cost of caustic, which is shown as a separate cost element. JSC develops estimates of annual O&M costs for pollution control for the entire facility, but does not develop a cost for each pollution control device, such as the wet SO_2 scrubber. Consequently, published literature was researched in order to develop a reasonable O&M cost for the scrubbing system.

The estimated O&M cost for the scrubber was developed from the publication "The Cost Digest: Cost Summaries of Selected Environmental Control Technologies" (EPA, 1984). The estimated O&M cost does not include the cost of caustic for the scrubber, which is shown separately in Table 7-2. It was assumed that the O&M cost, which includes cost items such as labor, materials, water, energy and water treatment, is approximately the same for the Base Case and the two alternatives.

Table 7-1. Basis for Analysis of Alternative SO_2 Control Technologies

Parameter	Base Case	Alternative 1	Alternative 2
Coal Sulfur Content: %	3.5	1.0	3.5
Uncontrolled SO_2 Emissions:			
lb $SO_2/10^6$ Btu*	6.0	1.74	6.0
TPY	11,590	3,361	11,590
SO_2 Removal Efficiency (%)	80	62	90
SO_2 Emissions: lb/10^6 Btu	1.2	0.66	0.6
TPY	2,318	1,268	1,159
Caustic Usage: TPY	12,720	2,468	16,177

* Assumes 11,500 Btu/lb coal.

Note: All figures based upon 100 percent capacity factor.
TPY = tons per year

Table 7-2. Comparison of Alternative SO_2 Control Technologies

	Base Case	Alternative 1	Alternative 2
COST ELEMENT			
Coal Cost* (10^6/yr)			
3.5% S @ $44/ton	7.39	-	7.39
1.0% S @ $55/ton	-	9.24	-
Caustic Cost (10^6/yr)	1.30	0.25	1.65
Other Operating & Maintenance Costs (10^6/yr)	0.55	0.55	0.55
TOTAL COSTS (10^6/yr)	9.24	10.04	9.59
Cost Differential (10^6/yr)	-	0.80	0.35
Differential SO_2 Removed (TPY)	-	1,050	1,159
Differential Cost Effectiveness ($/ton SO_2 removed)	**	762	302
SO_2 Impact (ug/m3):			
Annual	3.4	1.9	1.7
24-hr	38	21	19
3-hr	108	59	54

* Based upon annual coal requirement of 167,964 TPY
** Base Case cost effectiveness is $997/ton SO_2 removed
Cost Basis: 100 percent capacity factor.
Caustic Cost--$102/ton

As shown in Table 7-2, total costs for the Base Case are estimated at 9.24×10^6/yr. The Base Case results in the removal of 9,272 TPY of SO_2, or a total cost of control of \$997/ton of SO_2 removed.

Alternative 1, which represents 1.0% S, 62% SO_2 removal, and 0.66 lb $SO_2/10^6$ Btu, has a total estimated cost of 10.04×10^6/yr. This alternative results in 1,050 TPY less SO_2 emissions, as compared to the Base Case, with a cost differential of 0.80×10^6/yr. Therefore, the cost of control of Alternative 1, beyond that afforded by the Base Case, has a differential cost effectiveness of \$762/ton SO_2 removed.

Alternative 2 represents 3.5% coal, 90% SO_2 removal, and 0.6 lb $SO_2/10^6$ Btu. Total estimated cost of control is 9.59×10^6/yr, or 0.35×10^6/yr more than the base case. Alternative 2 controls an additional 1,159 TPY SO_2, resulting in an additional differential cost effectiveness of \$302/ton SO_2 removed.

In comparison to the Base Case, which has an estimated cost effectiveness of \$997/ton SO_2 removed, Alternatives 1 and 2 would result in significant additional cost of control. To control the additional SO_2 in Alternative 1 would cost an additional \$762/ton SO_2 removed, and to achieve the control afforded by Alternative 2 would require an additional \$302/ton SO_2 removed. These additional costs are considered very significant in view of the high cost of SO_2 control already reflected in the Base Case.

As shown in Table 7-2, the environmental impact of the proposed BACT (i.e., Base Case) is relatively small. These maximum predicted impacts due to Power Boiler No. 10 are less than 6% of the annual SO_2 AAQS, less than 15% of the 24-hour AAQS, and less than 10% of the 3-hour AAQS. Alternatives 1 and 2 would reduce these already small impacts by only about 1.6 ug/m^3, annual average, 18 ug/m^3, 24-hour average, and 52 ug/m^3, 3-hour average. These impacts are based upon maximum emissions, and, for the short-term averaging times, worst-case meteorology. Actual emissions and meteorology will produce impacts much lower than these predicted levels.

The economic analysis is based upon 100 percent utilization of coal in Power Boiler No. 10. In reality, as much wood waste as possible is burned in Power Boiler No. 10. Therefore, the boiler would not utilize coal 100 percent of the time at full capacity throughout the year. However, the availability of wood waste for Power Boiler No. 10 does vary from year to year, and a specific amount cannot be guaranteed in advance. Therefore, the economic analysis reflects the worst case SO_2 emission situation as well as greatest costs (i.e., higher fuel costs due to coal usage).

The increase in allowable SO_2 emissions requested by JSC is 1,050 TPY. This increase is less than 0.4% of current allowable SO_2 emissions for all sources permitted in Duval County (approximately 300,000 TPY). The proposed increase is also small in comparison to current actual emissions from all sources operating in Duval County, approximately 20,000 TPY (based upon 1984 inventory).

A review of BACT determinations for SO_2 emissions from coal or coal/bark fired boilers at pulp and paper mills was conducted to determine control technologies and emission rates associated with facilities similar to JSC's facilities. Information was obtained from the USEPA's BACT/LAER Clearinghouse publications (EPA 1985b, 1986d). A total of 29 individual BACT determinations were found for boilers with a heat input capacity greater than 250 x 10^6 Btu/hr (i.e., subject to NSPS). These determinations are summarized in Table 7-3.

Twenty-six (26) of the twenty-nine (29) BACT determinations resulted in an SO_2 emission limit of 1.2 lb/10^6 Btu, which is equivalent to NSPS for coal-fired boilers (40 CFR Subpart D). Of the 3 determinations that resulted in SO_2 emission limits of less than 1.2 lb/10^6 Btu, none was lower than the limit of 0.66 lb/10^6 Btu required by JSC's current SO_2 emissions cap. Details were not gathered concerning these BACT determinations resulting in emission limits more stringent than NSPS, but air quality impacts or other factors may have dictated such a requirement.

Table 7-3. Summary of BACT Determinations for Coal-Fired Boilers in the Pulp and Paper Industry.

DATE OF PERMIT ISSUANCE	COMPANY	LOCATION	HEAT INPUT (MM Btu/hr)	FUELS	CONTROL TECHNIQUE	SO2 EMISSION LIMIT	BASIS
			Modified Sources				
01-Oct-85	NEKOOSA PAPER CO.	ARKANSAS	820.0	COAL	SCRUBBER	1.20 lb/MMBTU	NSPS, BACT
03-Oct-83	FEDERAL PAPERBOARD CO.	NORTH CAROLINA	600.0	BARK/COAL/OIL	VENTURI SCRUBBER	0.80 lb/MMBTU	
02-Jun-83	STONE CONTAINER CORP.	LOUSIANA	680.4	COAL/BARK	LOW S FUEL	1.20 lb/MMBTU	
28-Sep-82	BEAR ISLAND PAPER CO.	VIRGINIA	469.0	COAL/WOOD WASTE	LOW S FUEL	1.02 lb/MMBTU	NSPS
20-May-82	ST. REGIS PAPER CO.	MAINE	814.0	BIOMASS FUEL	LOW S FUEL	1.20 lb/MMBTU	NSPS
21-Oct-81	FORT HOWARD PAPER CO.	OKLAHOMA	557.0	COAL/OIL/GAS	LOW S FUEL	1.20 lb/MMBTU	BACT
29-Jun-81	GILMAN PAPER CO.	GEORGIA	587.0	COAL/WOOD WASTE	WET SCRUBBER	1.20 lb/MMBTU	BACT
26-Jun-81	ST. REGIS PAPER CO.	FLORIDA	268.0	BARK/COAL/OIL/GAS	ALKALINE SCRUBBER	1.20 lb/MMBTU	NSPS, 82% REM.
26-Jun-81	ST. REGIS PAPER CO.	FLORIDA	546.0	BARK/COAL/OIL/GAS	ALKALINE SCRUBBER	1.20 lb/MMBTU	NSPS, 82% REM.
13-Apr-81	CONTAINER CORP. OF AM	FLORIDA	1021.0	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	NSPS
15-Jan-81	SCOTT PAPER	ALABAMA	980.0	COAL/WOOD WASTE	LOW S FUEL	1.03 lb/MMBTU	NSPS
01-Jul-80	UNION CAMP CORP.	GEORGIA	1055.0	COAL	LOW S FUEL	1.20 lb/MMBTU	NSPS
01-Jul-80	UNION CAMP CORP.	GEORGIA	1055.0	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	
30-Apr-80	MACMILLAN BLOEDAL	ALABAMA	770.0	COAL	BOILER DESIGN	1.20 lb/MMBTU	NSPS
21-Dec-79	CONTAINER CORP. OF AM	ALABAMA	511.5	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	NSPS
15-Nov-77	UNION CAMP CORP.	ALABAMA	534.0	COAL		1.20 lb/MMBTU	
			New Sources				
23-Feb-83	INTERNATIONAL PAPER CO.	ARKANSAS	683.4	COAL	FUEL BLENDING	1.20 lb/MMBTU	NSPS
07-Jun-82	FEDERAL PAPERBOARD CO.	NORTH CAROLINA	771.0	COAL/OIL/GAS	LOW S FUEL	1.20 lb/MMBTU	NSPS
25-Feb-82	UNION CAMP CORP.	SOUTH CAROLINA	495.0	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	
25-Feb-82	UNION CAMP CORP.	SOUTH CAROLINA	660.0	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	
25-Feb-82	UNION CAMP CORP.	SOUTH CAROLINA	581.0	COAL/WOOD WASTE	LOW S FUEL	1.20 lb/MMBTU	
25-Jun-81	CAROLINA FOREST IND.	SOUTH CAROLINA	311.0	COAL	LOW S FUEL	1.20 lb/MMBTU	BACT
20-Apr-81	SUNBELT FOREST PRODUCTS	ALABAMA	470.0	COAL	CAUSTIC SCRUBBER	1.20 lb/MMBTU	NSPS, 73% REM.
20-Apr-81	SUNBELT FOREST PRODUCTS	ALABAMA	250.0	COAL	CAUSTIC SCRUBBER	1.20 lb/MMBTU	NSPS, 73% REM.
20-Apr-81	SUNBELT FOREST PRODUCTS	ALABAMA	480.0	COAL	CAUSTIC SCRUBBER	1.20 lb/MMBTU	NSPS, 73% REM.
17-Mar-81	CHAMPION INTER. CORP.	MICHIGAN	812.5	COAL	LOW S FUEL	1.20 lb/MMBTU	NSPS
24-Feb-81	WESTVACO CORP.	SOUTH CAROLINA	1207.0	COAL	LOW S FUEL	1.20 lb/MMBTU	NSPS
14-Aug-80	KIRBY FOREST INDUSTRIES	TEXAS	530.0	COAL	LOW S FUEL	1.20 lb/MMBTU	NSPS
22-May-80	WEYERHAEUSER CO.	MISSISSIPPI	762.0	COAL/OIL	LOW S FUEL	1.20 lb/MMBTU	NSPS

Source: BACT/LAER Clearinghouse, 1986

Of the three BACT determinations issued for Florida pulp and paper mills, all resulted in SO_2 emissions equivalent to the NSPS (1.2 lb/10^6 Btu). One of these, Container Corporation of America, is located near to JSC in Fernandina Beach. This facility constructed a much larger boiler (1021 x 10^6 Btu/hr) than Power Boiler No. 10 at JSC, and at the NSPS level has the potential to emit over 5,300 TPY of SO_2.

Gilman Paper Company, located in St. Mary's, Georgia, not far from JSC, was permitted in 1981 to construct a 450,000 lb/hr steam boiler (coal/bark at 587 x 10^6 Btu/hr) with a caustic SO_2 scrubbing system. Either purchased caustic or bleach plant caustic extraction can be used for the scrubbing liquid. The allowable emission rate for the boiler is 1.2 lb/10^6 Btu.

These nearby competitors of JSC (Container Corporation of America and Gilman Paper) currently have a distinct economic advantage over JSC by being allowed to emit at the higher NSPS level. Most of the paper mills throughout the U.S. also have this advantage, as evidenced by the BACT determinations shown in Table 7-3. JSC must currently spend significant operating capital on purchases of low sulfur coal and/or caustic, costs which these other nearby companies do not have to bear. In addition, Seminole Kraft (formerly Jacksonville Kraft) has recently begun operation after being voluntarily shutdown for over a year. Thus, there is considerable competition in the pulp and paper industry in the north Florida - south Georgia area. A BACT determination for JSC of 1.2 lb/10^6 Btu at all operating loads for Power Boiler No. 10 will allow JSC to better compete in a very competitive marketplace, without significantly degrading existing air quality.

In summary, the BACT analysis has demonstrated the following:

* No alternative control technologies are available which can achieve a greater degree of SO_2 emission reduction than the proposed control technology for Power Boiler No. 10.

* The proposed control technology reflects an SO_2 control cost of about $1000/ton of SO_2 removed, and the alternative control technologies analyzed reflect an additional cost of from $302 to $762 per ton of additional SO_2 removed.
* The increase in SO_2 emissions due to the proposed modification is insignificant, representing less than 0.4% of current allowable emissions in Duval County.
* The environmental impact of the proposed technology is small, representing less than 15% of the ambient air quality standards based upon maximum emission rates and worst-case meteorology.
* The vast majority of BACT determinations on power boilers in the pulp and paper industry, and in the Florida-Georgia area, have resulted in emission limits of 1.2 lb $SO_2/10^6$ Btu. Imposition of a lower limit would place JSC at a significant economic disadvantage in the marketplace.

Based upon economic, energy and environmental considerations, BACT for SO_2 emissions from Power Boiler No. 10 is considered to be continued use of the in-place wet caustic scrubbing system, with an emission limit of 1.2 lb $SO_2/10^6$ Btu.

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APPENDIX A

Basis for SO_2 Emission Rates
Jefferson Smurfit Corporation

1) Current Conditions
2) 1974 Baseline

Old Power Boilers

1982 Permit - Max SO_2 - 289.5 lb/hr, 1268 TPY

1978 - Permit - 289.5 lb/hr SO_2

Lime Kiln No. 3 (new)

1985 Construction Permit - SO_2 - 8.33 lb/hr, 36.5 TPY

Recovery Boiler No. 9

1985 Permit - 184,730 lb/hr Black liquor (120,075 lb/hr BLS)
@ 702.7 x 10^6 Btu/hr
2.5% S No. 6 oil @ 1046 gal/hr, 157 x 10^6 Btu/hr

Use AP-42 Factor - Table 10.1.2-1 (4/77): 5 lb/ton ADUP

1986 max production = 913.5 TPD ADUP
913.5 TPD x 5 lb/ton / 24 hr/day = 190.3 lb/hr

1975 Permit - Black liquor and No. 6 oil = 531 x 10^6 Btu/hr
122,000 lb/hr BL @ 450 x 10^6 Btu/hr
No. 6 oil - 557 gal/hr @ 81.4 x 10^6 Btu/hr

1974 max production = 640.5 TPD ADUP

640.5 TPD x 5 lb/ton / 24 hr/day = 133.4 lb/hr

Smelt Dissolving Tank

Use AP-42 Factor, Table 10.1.2-1 (4/77): 0.1 lb/ton ADUP

1985 Permit - 84,050 lb/hr Smelt

1986 max production = 913.5 TPD ADUP

913.5 x 0.1 / 24 = 3.81 lb/hr

1975 Permit - 55,000 lb/hr smelt

1974 max production = 640.5 TPD ADUP

640.5 x 0.1 / 24 = 2.67 lb/hr

Lime Kiln No. 1

AD-42 Factor, Table 10.1.2-1 (4/77): w/Scrubber - 0.2 lb/ton ADUP

1985 Permit - 34,600 lb/hr as $CaCO_3$ (dry) lime mud
No. 6 oil - 298 gal/hr @ 42.9 x 10^6 Btu/hr

1986 max production = 913.5 TPD ADUP

913.5 x 0.2 / 24 / 2 = 3.81 lb/hr

1975 Permit - No. 6 Fuel Oil - 36.5 x 10^6 Btu/hr
76,400 lb/hr lime mud

1974 max production = 640.5 TPD ADUP

640.5 x 0.2 / 24 / 2 = 2.67 lb/hr

Lime Kiln No. 2

Use same emission factor as Lime Kiln No. 1

1985 Permit - 34,600 lb/hr lime mud (as $CaCO_3$ dry)

1986 - Same as L.K. #2 = 3.81 lb/hr

1975 Permit - No. 6 Fuel Oil - 36.4 x 10^6 Btu/hr - 250 gal/hr
76,400 lime mud

1974 - same as L.K. #1 - 2.67 lb/hr

APPENDIX B

Basis of Emissions and Stack Parameters for Power Boiler No. 10 After Modification

Power Boiler No. 10
(After Modification)

1. Design Data

Heat input = 441 x 10^6 Btu/hr
Coal sulfur content = 3.5 % (max)
Operating hours = 8,760 hr/yr (max)

2. SO_2 Emissions

Basis - NSPS of 1.2 lb/10^6 Btu
441 x 10^6 Btu/hr x 1.2 lb/10^6 Btu = 529.2 lb/hr
529.2 lb/hr x 8,760 hr/yr / 2000 lb/ton = 2317.9 TPY

3. Stack Parameters

Anticipate no significant change in stack parameters from current operation. Stack parameters for current operation were obtained from stack test on Power Boiler No. 10 of March 27, 1986. This test reflected following parameters:

Heat input rate - 433 x 10^6 Btu/hr
Flow rate - 150,748 to 152,397 acfm
93,468 to 95,972 dscfm
Temperature - 152.8 to 156.2 ^oF
% Moisture - 26.8 to 29.2

To be conservative, the following stack parameters were used in the air dispersion modeling analysis:

Flow rate = 150,000 acfm
Temperature = 155 ^oF

APPENDIX C

Non-Applicability Determination of Proposed NSPS for SO_2 Emissions from Industrial Boilers, Power Boiler No. 10

KBN

November 6, 1986
86032

Mr. Bruce P. Miller, Chief
Air Programs Branch
U.S. Environmental Protection Agency Region IV
345 Courtland Street
Atlanta, GA 30308

RE: Jefferson Smurfit Corporation

Dear Mr. Miller:

In follow-up to my recent conversation with Mr. Michael Brandon of your staff, I am requesting a formal determination from EPA concerning the potential applicability of the recently proposed NSPS Subpart Db for SO_2 to the existing No. 10 Boiler at Jefferson Smurfit Corporation. The attached letter from Jefferson Smurfit to the Florida Department of Environmental Regulation dated September 18, 1986 provides the background on the boiler. I understand that you have already received Florida DER's determination on the issue (letter to Jefferson Smurfit dated October 27, 1986). In light of my discussions with Mr. Brandon, I would like EPA to consider the following two scenarios:

* Jefferson Smurfit changes the operation of the caustic scrubber on Boiler No. 10 by reducing the amount of caustic used in the scrubber. This would result in higher SO_2 emissions using the same quality coal as has been used in the past at the plant.

* Jefferson Smurfit does not reduce the amount of caustic normally used in the scrubber (i.e., scrubber operation does not change). However, SO_2 emissions could increase if coal with a higher sulfur content is used.

Please determine if these two scenarios would result in a different applicability determination. If you should have any questions concerning this request , please call me at (904)375-8000. Thank you for your assistance in this matter.

Sincerely,

David A. Buff

David A. Buff, M.E., P.E
Principal Engineer

cc: Jerry Cox

KBN ENGINEERING AND APPLIED SCIENCES, INC.
P. O. Box 14288 5700 SW 34th Street Gainesville, FL 32604 904/375-8000

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

September 18, 1986

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED - RETURN
RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-8241

RE: Applicability of Proposed NSPS Subpart Db, No.10 Coal/Bark Boiler
Permit AC16-33885 & A016-86317
Jefferson Smurfit Corporation, Jacksonville Mill

Dear Mr. Fancy:

The purpose of this letter is to request a formal determination of the potential applicability of the recently proposed Subpart Db of the federal New Source Performance Standards (NSPS) to Coal/Bark Boiler No. 10 at Jefferson Smurfit's Jacksonville Mill. Based upon the discussions in Tallahassee on August 28, 1986, with members of your staff, Jerry Cox and Gene Tonn of the company, and our consultant, David Buff, P.E. of KBN, Inc., provided below is a discussion of the history of and contemplated changes for Boiler No. 10, the federal NSPS and Subpart Db proposal, and our interpretation of the potential applicability of Subpart Db to Boiler No. 10. Because the results of your review and determination may have a substantial bearing on the feasibility of future plans for Boiler No. 10, Jefferson Smurfit desires to settle this question at the earliest possible date. In this regard, an expedited review would be appreciated.

Description and History of Boiler No. 10

Power Boiler No. 10 is a combination pulverized-coal, bark and oil-fired natural circulation type boiler with stoker and tilting tangential fuel firing systems. The boiler was manufactured by Combustion Engineering. The maximum heat input capacity of the boiler is 441 x 10^6 Btu/hr when burning all coal, and 381.4 x 10^6 Btu/hr when burning a combination of coal and bark. Oil is only used in the boiler during periods of startup, shutdown or malfunction.

Boiler No. 10 is equipped with a mechanical collector and venturi scrubber for particulate matter (PM) control, followed by a sulfur dioxide (SO_2) absorbing system and mist eliminator. The SO_2 absorber is a counter-current spray-type absorber, which directs a high pH liquid into the gas stream. Mill effluent and purchased caustic are used as the absorbing reagent. The SO_2 control system is necessary to meet the current SO_2 emission limits for the boiler (discussed below).

The Florida Department of Environmental Regulation (FDER) air construction permit for the boiler (AC16-33885) was issued on February 3, 1981. This single boiler replaced four existing bark and oil fired boilers of approximately 860 x 10^6 Btu/hr heat input capacity. Because of the creditable offsetting emissions from these shutdowns, Boiler No. 10 was not subject to federal Prevention of Significant Deterioration (PSD) review. The operating permit for the boiler (AO16-86317) was issued on November 11, 1985.

Boiler No. 10 is subject to federal NSPS for fossil fuel-fired steam generating units of greater than 250 x 10^6 Btu/hr heat input capacity (40 CFR 60, Subpart D). The NSPS limits sulfur dioxide (SO_2) emissions from the boiler to 1.2 lb/10^6 Btu heat input. However, in order to avoid PSD review, Jefferson Smurfit agreed to a 289.5 lb/hr SO_2 cap for the boiler. The basis of this cap was the total of the permitted emissions from the four boilers which were replaced by Boiler No. 10 (i.e., no net increase in SO_2 emissions). The Boiler No. 10 construction permit and operating permit stipulates an SO_2 limit of 1.2 lb/10^6 Btu heat input, with an SO_2 emission cap of 289.5 lb/hr. Thus, the boiler is currently allowed to emit up to 1.2 lb/10^6 Btu. However, at heat input rates above 241 x 10^6 Btu/hr, emissions are required to be reduced below 1.2 lb/10^6 Btu so that the emissions cap is not exceeded. At the maximum heat input rate of 441 x 10^6 Btu/hr, the required SO_2 emission level would be 0.66 lb/10^6 Btu.

The important features of the construction permit and current operating permit for Boiler No. 10 are:

1. SO_2 emissions up to 1.2 lb/10^6 Btu are allowed.
2. Coal of sulfur content up to 3.5% can be burned in the boiler (based upon Boiler No. 10 permit application, see Appendix B).
3. An SO_2 emissions cap restricts SO_2 emissions to 289.5 lb/hr.

Future Plans for Boiler No. 10

Jefferson Smurfit desires to increase the SO_2 emissions cap on Boiler No. 10 to allow emitting up to 1.2 lb/10^6 Btu under all boiler operating conditions. This would increase the SO_2 emissions cap from 289.5 lb/hr (1265 ton/yr) to 528.7 lb/hr (2316 tons/yr). This increase in permitted SO_2 emissions will require a federal Prevention of Significant Deterioration (PSD) review. Jefferson Smurfit is now proceeding with preparation of the PSD permit application, including a Best Available Control Technology (BACT) evaluation.

No physical changes to Boiler No. 10 will be necessary to allow emissions up to 1.2 lb/10^6 Btu. The construction permit and current operating permit do not restrict the sulfur content of the coal. The construction permit application for Boiler No. 10 specifically indicated that up to 3.5% sulfur coal could be burned in the boiler. Thus, the boiler is now capable of accommodating such fuel. In addition, no changes to the SO_2 absorbing system will be required. The SO_2 control system now operates over a range of SO_2 removal efficiencies,

by varying the amount of caustic used in the system, in order to achieve the desired SO_2 emission rate.

Interpretation of Applicability of Proposed NSPS Subpart Db

The U.S. Environmental Protection Agency (EPA) proposed NSPS for industrial and commercial fossil fuel-fired steam generating units on July 19, 1984, (for PM and NO_x) and on July 19, 1986, for SO_2. The proposed standards would apply to all fossil fuel-fired steam generating units constructed, modified or reconstructed after the proposal dates. Since Boiler No. 10 is already constructed, and no components of the boiler are being replaced, the terms "constructed" and "reconstructed" would not apply to Boiler No. 10 (see 40 CFR 60.14 and 60.15, attached as Appendix A).

"Modification" is defined in the NSPS (40 CFR 60.2) as:

> "any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted."

As described above, the proposed change in Boiler No. 10 will increase SO_2 emissions. Thus, the key question is whether a "physical change or change in the method of operation" will be associated with the increase in emissions. The definition of "modification" under NSPS is further clarified in 40 CFR 60.14. Paragraph (a) under 60.14 states:

> "Except as provided under paragraphs (e) and (f) of this section, any physical change or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of Section III of the Act."

Paragraph (e) provides certain exemptions from the definition of "modification" under NSPS, and more specifically, subparagraph (e)(4) relates to the use of an alternative fuel. Paragraph (e)(4) states:

> "(e)The following shall not, by themselves, be considered modifications under this part:
> (4)Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative fuel. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under that facility's construction specifications as amended prior to the change."

Boiler No. 10 operation and the proposed changes in SO_2 emissions were described above. The following facts are pertinent to the non-applicability of the definition of modification under the NSPS and the exemption for use of an alternative fuel:

1. No physical change will be made in Boiler No. 10. The SO_2 scrubber serving Boiler No. 10 will continue to be operated at varying SO_2 removal efficiencies, depending on boiler load and actual coal sulfur content, to meet the proposed emission limit.

2. The use of coal with up to 3.5% sulfur content in Boiler No. 10 is not prohibited by any permit condition in either the construction permit or current operating permit. Coal with up to 3.5% sulfur content was specified in the construction permit application for the boiler (see Appendix B). Thus, the boiler was orginally designed to accommodate such fuel.

3. SO_2 emissions of up to 1.2 $lb/10^6$ Btu are not prohibited by any permit condition in either the construction permit or current operating permit for Boiler No. 10.

Based upon these facts, it is our belief that the recently proposed Subpart Db NSPS for SO_2, if promulgated, would not apply to Boiler No. 10 as a result of the planned increase in SO_2 emissions. Jefferson Smurfit desires to receive a formal determination from FDER/USEPA on this matter. During your consideration of this matter, please call Jerry Cox, or Gene Tonn at (904)353-3611 or David Buff at (904)375-8000, if you have any questions.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corporation
Jacksonville Mill

JFM/nml

cc: W. A. Thomas, P.E.

Attachments

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

October 27, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President
Jefferson Smurfit Corporation
Jacksonville Mill
1915 Wigmore Street
Jacksonville, Florida 32206

Dear Mr. Mixson:

Re: Rule Applicability Determination for No. 10 Power Boiler (AC 16-33885) Proposal

The department has received and reviewed your letter and attachments dated September 18, 1986, requesting a rule applicability determination on your proposal for the No. 10 Power Boiler. Based on the reviews of your letter and attachments and the construction permit file, the following information is offered:

1) On September 29, 1980, Mr. Edward M. Pyatt responded to the department's incompleteness letter dated September 15, 1980. In two of the responses, specifically Items #2 and #6, it was stated that there would be no increase in SO_2 emissions over the existing present boiler system and that it was the applicant's intent to accept the SO_2 emissions limitation of 289.5 lbs/hr for permit review purposes, respectively.

2) The Technical Review and Preliminary Determination write-up (TE & PD), which is dated December 18, 1980, contained references to the SO_2 emissions limitation of 289.5 lbs/hr. Also, the draft construction permit, which accompanied the TE & PD, contained the SO_2 emissions limitation in Specific Condition No. 10.

3) Public Notice of the department's Intent to Issue was published in The Florida Times Union on December 31, 1980.

4) The Final Determination was written after the required 30-day Public Notice comment period had been completed. The

construction permit, No. AC 16-33885, was issued on February 3, 1981. The permit contained the SO_2 emissions limitation of 289.5 lbs/hr in Specific Condition No. 10, which is federally enforceable.

The above referenced information shows that the permittee had requested and received a federally enforceable emissions limitation for SO_2 to avoid review pursuant to the rules of PSD. Based on this and the proposal for the No. 10 Power Boiler, the following rules are appropriate:

1) FAC Rule 17-2.500(2)(g): PSD - Relations of Restrictions on Pollutant Emitting Capacity

"If a previously permitted facility or modification becomes a facility or modification which would be subject to the NSR requirements of this section if it were a proposed new facility or modification solely by virtue of a relaxation in any federally enforceable limitation on the capacity of the facility or modification to emit a pollutant (such as a restriction on hours of operation), which limitation was established after August 7, 1980, then at the time of such relaxation the NSR requirements of this section shall apply to the facility or modification as though construction had not yet commenced on it."

2) 40 CFR 52.21(r)(4): PSD - Source Obligation

"At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements or paragraphs (j) through (s) of this section shall apply to the source or modification as though construction had not yet commenced on the source or modification."

Consequently, the following conclusions are offered:

"If the permittee, today, requests a modification to the No. 10 Power Boiler in which the SO_2 emissions increase is significant pursuant to FAC Rule 17-2.500 Table 500-2, then:

1) The source's SO_2 emissions would be subject to review in accordance with FAC Rule 17-2.500, PSD Review.

2) Based on #1, the source's emission limiting standards would be in accordance with FAC Rule 17-2, Part VI - Emission Limiting and Performance Standards, which includes:

   - o 17-2.600 - Specific Source Emission Limiting Standards;
   - o 17-2.630 - Best Available Control Technology (BACT); and,
   - o 17-2.660 - Standards of Performance for New Stationary Sources (NSPS).

3) The procedures for making a determination of BACT for SO_2 are contained in FAC Rule 17-2.630, which would include the consideration of the proposed NSPS Subpart Db, since its effective date is June 19, 1986, as published in the Federal Register, Vol. 51, No. 118."

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/BM/s

cc: J. Cobb
J. Woosley
B. Miller
J. Cox
G. Tonn
D. Buff

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DEC 5 1986

4APT-AP/lms

Mr. David A. Buff, M.E., P.E.
Principal Engineer
KBN Engineering and Applied
Sciences, Inc.
Post Office Box 14288
5700 S.W. 34th Street
Gainesville, Florida 32604

RE: NSPS Applicability for Jefferson Smurfit Corporation Boiler No. 10

Dear Mr. Buff:

This is in response to your letter of November 6, 1986, requesting that a New Source Performance Standard (NSPS) applicability determination be made for two operating scenarios at the Jefferson Smurfit Corporation in Jacksonville, Florida. The scenarios involve varying sulfur content of the coal and the sulfur dioxide removal efficiency of the scrubber unit for Boiler No. 10 with a constant emission rate of 1.2 lbs SO_2/mmBTU.

In response to your question of whether Boiler No. 10 would be subject to NSPS Subpart D_b (when promulgated) if the boiler were operated under the scenarios described above, the answer is no. In discussions with the Office of Air Quality Planning and Standards, at Research Triangle Park, North Carolina, and the Stationary Source Compliance Division in Washington, DC, both authorities have stated that the variability of the scrubber operating parameters and/or the variability in coal sulfur content would not be considered a modification under 40 CFR 60.14 for NSPS applicability.

If you have any further questions or comments regarding this letter, you may contact Mr. Michael Brandon, of my staff, at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

cc: Bruce Mitchell, Environmental Engineer
BAQM-FDER

APPENDIX D

Correspondence with Florida DER
Concerning SO_2 Emission Inventory

October 22, 1986
86032

Mr. Tom Rogers
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301

Re: Jefferson Smurfit PSD Permit Application

Dear Tom:

Please find enclosed for your review a sulfur dioxide (SO_2) emission inventory for Duval County, which has been developed for the Jefferson Smurfit PSD permit application. KBN is now preparing the permit application for submittal. Two tables are attached which constitute the SO_2 emission inventory. The first table (Table 1) shows the largest source of SO_2 emissions in Duval County. This information was developed from previous PSD permit applications, in-house reports and information. It is KBN's intent to consider these sources explicitly in the modeling analysis for Jefferson-Smurfit.

The second table (Table 2) presents all other sources of SO_2 in Duval County, based upon the 1986 FDER APIS listing. Because many of these sources are minor (<100 TPY) and are not located near to Jefferson Smurfit, it is proposed to not treat all of these sources explicitly in the screening modeling analysis (i.e., evaluation of 5 years of meteorological data). It is proposed to consider only the following sources explicitly in the screening analysis:

* Sources within 10 km with SO_2 emissions greater than 100 TPY
* Sources located beyond 10 km with SO_2 emissions greater than 500 TPY

For evaluation of worst-case meteorological periods (i.e., 24-hour and 3-hour), it is proposed to consider the following sources:

* All sources within 5 km of Jefferson Smurfit
* Sources located beyond 5 km from Jefferson Smurfit with emissions greater than 100 TPY

The affects of SO_2 sources not explicitly treated in the analysis will be included in the background SO_2 concentration.

KBN ENGINEERING AND APPLIED SCIENCES, INC.
P. O. Box 14288 5700 SW 34th Street Gainesville, FL 32604 904/375-8000

Please review this inventory for acceptability and provide your comments directly to me at your earliest convenience. Thank you for your cooperation in this matter.

Sincerely,

David A. Buff

David A. Buff, M.E., P.E.
Principal Engineer

DAB/mtc

cc: Jerry Cox

TABLE 1. SULFUR DIOXIDE EMISSION INVENTORY FOR LARGEST SOURCES IN DUVAL COUNTY

SOURCE	UTM COORDINATES		DISTANCE FROM	STACK PARAMETERS				SO2	INCREMENT
	EAST (km)	NORTH (km)	JEFFERSON SMURFIT** (km)	HEIGHT (M)	DIAM. (M)	EXIT GAS TEMP. (DEG K)	EXIT GAS VELOCITY (M/S)	EMISSIONS (g/s)	CONSUMING/ EXPANDING (C/E)
JEA ST. JOHNS RIVER POWER PARK									
UNITS 1, 2	446.9	3366.3	9.9	194.2	10.13	328	18.29	1176.6	C
JEA NORTHSIDE									
UNIT 1	446.9	3365.0	9.0	73.2	5.03	401	20.12	690.3	-
UNIT 2				88.4	5.13	394	13.11	586.8	-
UNIT 3				103.6	7.01	439	19.20	1255.6	-
COMBUSTION TURBINES 3-6				10.1	6.56	780	18.30	231.6	-
JEA SOUTHSIDE									
UNITS 1,2	437.6	3353.8	6.0	40.7	2.44	433	11.70	105.4	-
UNIT 3				40.7	3.05	407	10.30	79.8	-
UNIT 4				43.7	3.35	422	11.80	110.3	-
UNIT 5				44.2	3.05	417	13.70	207.9	-
JEA KENNEDY									
UNITS 8,9	440.0	3359.1	0.2	45.7	3.20	414	7.80	150.0	-
UNIT 10				41.5	2.74	405	15.50	199.0	-
COMBUSTION TURBINES 3-6				13.7	5.84	714	11.80	191.2	-
COMBUSTION TURBINE 1				6.3	3.13	767	11.80	13.8	-
JACKSONVILLE KRAFT									
POWER BOILER 1	441.8	3365.6	6.6	32.2	1.83	480	17.85	146.7	-
2				32.2	2.13	466	16.89	(3 POWER BLR)	
3				32.2	2.13	477	16.06		
BARK-FIRED BOILER 1				41.6	2.44	330	14.46	22.8	-
2				41.6	2.44	330	15.77	(2 BARK BLR)	
RECOVERY BOILER 1				38.4	2.59	336	16.25		
2				38.4	2.74	337	18.63	35.9	-
3				38.4	2.74	344	15.18	(3 REC. BLR)	
LIME KILNS 1				19.8	1.78	350	4.59		
2				22.7	1.42	355	9.52	3.0	-
3				23.0	1.12	355	9.74	(3 KILNS)	
CONTAINER CORP. OF AMERICA									
MAJOR SOURCES	455.1	3386.70	31.3	75.5	3.05	485	14.40	197.5	-
BOILERS 4,5 (PSD)				75.5	3.05	485	14.40	30.9	C
REC. BOILER (PSD)				88.4	3.90	493	18.80	31.2	C

* UTM COORDINATES OF JEFFERSON SMURFIT ARE 439.9 km EAST AND 3359.3 km NORTH

ND = NO DATA AVAILABLE

SOURCE: JEA, 1985, 1986
ESE, 1980

TABLE 2. SULFUR DIOXIDE EMISSION INVENTORY FOR OTHER SOURCES IN DUVAL COUNTY

(F)

SOURCE (APIS NO.)	UTM COORDINATES		DISTANCE FROM JEFFERSON SMURFIT**	STACK PARAMETERS				SO2 EMISSIONS			INCREMENT CONSUMING/ EXPANDING
	EAST (km)	NORTH (km)	(km)	HEIGHT (FT)	DIAM. (FT)	EXIT GAS TEMP. (DEG F)	EXIT GAS FLOW (ACFM)	NORMAL (lbs/hr)	ESTIMATED (TPY)	MAXIMUM (TPY)	(C/E)
TEXACO 3116 018809	439.7	3358.4	0.9	26	2.20	650	10000	9.1	2	2	-
CHAMPION INTER. 019701	416.5	3353.2	24.2	ND	ND	250	ND	ND	ND	ND	-
02				ND	ND	250	ND	ND	ND	ND	-
03				ND	ND	120	ND	ND	ND	ND	-
ES METALS* 019B02	431.8	3358.3	8.2	84	3.00	125	21287	149.0	651	651	E
03				80	4.00	180	10047	ND	187	ND	E
CELOTEX 020201	446.4	3362.5	7.3	25	1.60	120	7500	ND	9	ND	-
07				75	3.00	850	7000	54.5	218	238	-
08				50	3.10	325	11250	123.8	4956	546	-
U.S. NAVAL STAT. 21301	460.4	3362.8	20.8	40	3.00	520	20000	109.5	38	480	-
(MAYPORT) 02				40	3.00	520	20000	109.5	38	480	-
03				40	3.00	520	20000	109.5	38	480	-
04				46	4.00	550	20000	95.1	48	417	-
07				60	5.00	500	28000	ND	17	ND	-
08				46	4.00	550	20000	95.1	48	417	-
U.S. NAVAL STAT. 021809	415.2	3344.5	29.1	43	3.80	450	17934	15.7	40	40	C
(CECIL) 10				43	3.80	450	17934	15.7	40	40	C
OXCE FUEL CO. 022B01	438.5	3360.5	1.8	49	3.00	150	23400	16.2	71	71	C
02				40	0.80	500	950	6.6	29	29	C
DUVAL ASPHALT 023201	427.0	3357.7	13.0	31	4.00	350	40000	47.4	47	47	C
COASTAL AGGREG. 024503	442.6	3344.0	15.5	22	3.30	180	35400	6.8	11	11	C
MAXWELL HOUSE 000413	439.7	3350.0	9.3	50	3.00	265	29085	ND	ND	85	C
ANCHOR HOCKING 000501	431.5	3357.5	8.6	57	3.00	573	21670	46.2	19	ND	-
02				57	2.70	520	21000	49.5	0	216	-
03				109	5.60	515	38152	82.5	244	360	-
04				117	5.20	384	39268	70.0	0	307	-
ANHEISER BUSCH 000601	437.9	3366.8	7.8	100	3.50	410	33100	237.5	472	530	-
02				100	3.50	410	33100	215.0	535	530	-
03				100	3.50	410	33100	227.5	438	530	-
04				100	3.50	410	33000	225.0	483	0	-
05				70	5.50	120	46200	69.0	207	269	C
06				70	5.50	120	46200	69.0	290	302	C
EASTERN SEABOARD 002B03											
04	439.0	3360.7	1.7	36	2.00	420	3813	7.3	38	63	-
(BACKUP)				36	2.00	420	3813	ND	20	ND	-
ELECTROMOTIVE/GM 002904	297.7	3279.9	167.3	45	2.00	450	1613	10.8	9	47	-
SCM CORP. 003903	435.6	3360.7	4.5	40	3.60	725	20360	0.5	36	295	E
(PERMANENTLY REMOVED/REPLACED BY BOILER NO.7)											
04				40	3.60	270	28533	0.8	90	692	-
05				50	3.60	505	25884	0.8	80	728	-
06				50	4.00	465	25832	1.0	116	850	-
11 (BOILER NO. 7)				45	4.00	350	141000	83.6	139	139	C
WILEY JACKSON CO. 004201	428.7	3361.4	11.4	38	3.20	218	49592	84.7	11	371	-
02				38	3.20	218	49592	112.2	90	90	-

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

October 28, 1986

Mr. David Buff
KBN Engineering and Applied
Sciences, Inc.
P. O. Box 14288
Gainesville, Florida 32604

Re: Jefferson Smurfit PSD Permit Application

Dear Dave:

In order to reduce the number of possible disputes with EPA with regard to which sources need to be included in a PSD permit modeling exercise, the department is recommending that you use the EPA-approved North Carolina "Screening Threshold" method. I have included a copy of the paper describing the technique, as well as correspondence between the State of North Carolina and the EPA regarding this method. We further recommend that the screening area boundary be 50 km.

Should you wish to modify this technique or present one of your own, the department will review your proposal and submit it to the EPA for approval.

With regard to your emission inventory, we have included a list of stack parameters for the Container Corporation of America facility (Table 1) as presented to the department by the company on their Annual Operating Report for 1985. Furthermore, we request that you contact the Jacksonville local program in order to verify the SO_2 emissions for the two bark-fired boilers at the Jacksonville Kraft facility. Our records are unclear with regard to these sources.

If you have any questions regarding the proposed screening technique or on the stack parameter data please call me at (904) 488-1344.

Sincerely,

Max A. Linn
Meteorologist
Bureau of Air Quality
Management

ML/ps

Table 1

Emission Inventory - Container Corp. of America (AOR - 1985)

Source	Height (M)	Diam (M)	Exit Gas Temp (K)	Exit Gas Flow (ACFM)	SO_2 Emission (g/s)
Rec Boiler #4	80.8	3.51	493	385040	222.9
Rec Boiler #5	88.1	5.49	493	475000	222.9
SDT #4	74.4	1.83	350	28920	0.5
SDT #5	88.1	1.22	346	31087	0.5
Lime Kiln #2	18.3	1.07	350	23340	0.9
Lime Kiln #3	18.3	1.37	350	54942	1.2
Power Boiler #4	75.6	2.44	485	142573	128.8
Power Boiler #5	75.6	3.35	480	303000	273.5
Power Boiler #7	103.6	4.51	441	436400	154.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP 5 1985

REF: APT-AP

Eldewins Haynes
Air Permit Unit
State of North Carolina Department of
Natural Resources & Community Development
512 North Salisbury Street
Raleigh, North Carolina 27611

Subject: A Screening Method for PSD

Dear Mr. Haynes:

This is to acknowledge receipt of your July 22, 1985, letter containing a screening procedure for eliminating sources from the emission inventory for modeling purposes. EPA has reviewed your submittal and has determined that your screening procedure is consistent with the PSD Workshop Manual. Therefore, approval is hereby given to use the screening procedure.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Acting Chief
Air Programs Branch

State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

R. Paul Wilms
Director

July 22, 1985

Mr. Lewis Nagler
Air Management Branch
EPA Region IV
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Nagler:

Subject: A Screening Method for PSD

A simple screening procedure which is applicable to PSD has been developed by the North Carolina Air Quality Section. The "Screening Threshold" method is designed to rapidly and objectively eliminate from the emissions inventory those sources which are beyond the PSD impact area yet within the screening area, but are not likely to have significant interaction with the PSD source. Sources which are flagged by this procedure may then be evaluated with conventional screening techniques, or else be included in refined modeling.

Page I-C-18 of the PSD Workshop Manual does state "A simple screening model technique can be used to justify the exclusion of certain emissions...Such exclusions should be justified and documented." The "Screening Threshold" method is documented in the attachment.

We would very much appreciate your comments and ultimate approval. Please feel free to direct any questions or comments to me in writing or by phone at (919) 733-7015.

Sincerely,

Eldewins Haynes

Eldewins Haynes, Meteorologist
Air Permit Unit

Attachment

cc: Mr. Ogden Gerald
Mr. Mike Sewell
Mr. Sammy Amerson
Mr. Jerry Clayton
Mr. Richard Laster
Regional Air Engineers

"Screening Threshold" Method for PSD Modeling
North Carolina Air Quality Section

This method is best suited for situations where a PSD source has several sources outside its impact area, but within its screening area. The object is to find an effective means to minimize the number of such sources in a model, yet to include all sources which are likely to have a significant impact inside the impact area.

As a first-level screening technique, it is suggested to include those sources within the screening area when

$$Q = 20D$$

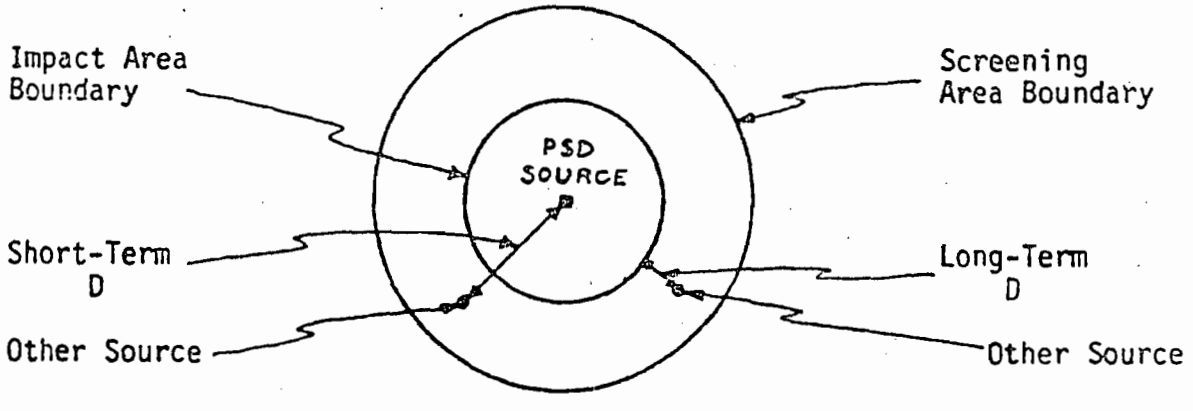
where Q is the maximum emission rate, in tons/year, of the source in the screening area; and D is a distance, in kilometers, from either:

a. the source in the screening area to the nearest edge of the impact area, for long-term analyses

or

b. the source in the screening area to the PSD source defining the impact area, for short-term analyses.

The figure below illustrates the difference between the long-term D and the short-term D.



This method does not preclude the use of alternate screening techniques or of more sophisticated screening techniques given the approval of the review agency. Also, this method does not prevent the review agency from specifying additional sources of interest in the modeling analysis.

The justification for this "Screening Threshold Method" rests upon the following assumptions:

a. effective stack height = 10 meters
b. stability class D (neutral)
c. 2.5 meter/second wind speed
d. mixing height = 300 meters
e. Q = 20D = critical emission rate for a given pollutant
f. one-hour concentrations derived from figure 3-5D in Turner's WADE or from PTDIS.
g. 3-hour and 24-hour concentrations estimated using "Vol. 10R". Annual impacts are 1/7 of 24 hour impacts.

The results, for various distances, are shown in the table below:

D (km)	Q (T/yr)	1-hr Conc. (ug/m^3)	3-hr Conc. (ug/m^3)	24-hr Conc. (ug/m^3)	Annual Conc. (ug/m^3)
0.5	10	47	42	19	2.7
1.0	20	32	29	13	1.9
1.5	30	27	24	10	1.4
2.0	40	23	21	9	1.3
3	60	18	16	7	1.0
4	80	17	15	7	1.0
5	100	14	13	6	1
6	120	13	12	5	1
10	200	10	9	4	1
20	400	7	6	3	1
30	600	6	6	3	1
40	800	6	6	3	1
50	1000	7	6	3	1

The "Screening Threshold" method is conservative. Most sources either have effective stack heights greater than 10 meters, or they have several short stacks spread out over an industrial complex. Thus, actual modeled concentrations will most likely be lower than the "Screening Threshold" would indicate in the table above. One implication of the table is that all major sources within 5 km of the subject PSD source or within 5 km of the PSD source's impact area should be scrutinized before being exempted from the final emissions inventory.

The "Screening Threshold" method is in qualitative agreement with the suggestions on page I-C-18 of the Prevention of Significant Deterioration Workshop Manual (1980). On that page, it is suggested that a 100 T/Y source 10 km outisde the impact area may be excluded from the analysis. The above table would exclude a 100 T/Y source more than 5 km beyond the impact area for long-term analyses or more than 5 km away from the PSD source for short-term analyses; if the source is inside the impact area, it must be included regardless of the "Screening

Threshold". The PSD Workshop Manual also states on page I-C-18 that a 10,000 T/Y source 40 km outside the impact area would probably have to be included in the increment analysis. By the "Screening Threshold" method, the critical distance D = Q/20 = 10,000/20 = 500 km. Thus a 10,000 T/Y source within 500 km would always be included for short-term and long-term analyses if within the screening area.

This "Screening Threshold" method is quick, inexpensive to execute, conservative, and consistent with the intent of the PSD Workshop Manual.

APPENDIX E

SO_2 Emission Inventory Used in Screening and Refined Analyses

Table E-1 SULFUR DIOXIDE EMISSION INVENTORY FOR LARGEST SOURCES IN DUVAL COUNTY --SCREENING ANALYSIS

MODELED SOURCE NO.	SOURCE	UTM COORDINATES EAST (km)	UTM COORDINATES NORTH (km)	STACK PARAMETERS HEIGHT (M)	STACK PARAMETERS DIAM. (M)	EXIT GAS PARAMETERS TEMP. (K)	EXIT GAS PARAMETERS VELOCITY (M/S)	MAXIMUM SO2 EMISSIONS (g/s)
1	JEA ST. JOHNS RIVER POWER PARK							
	UNITS 1, 2	446.9	3366.3	194.2	10.13	328	18.29	1176.6 *
2	JEA NORTHSIDE							
	UNITS 1, 2, 3	446.9	3365.0	73.2	5.03	401	20.12	2532.7
	COMBUSTION TURBINES 3-6			10.1	6.56	780	18.30	231.6
3	JEA SOUTHSIDE							
	UNITS 1, 2, 3, 4, 5	437.6	3353.8	44.2	3.05	417	13.70	503.4
4	JEA KENNEDY							
	UNITS 8,9	440.0	3359.1	45.7	3.20	414	7.80	150.0
	UNIT 10			41.5	2.74	405	15.50	199.0
	COMBUSTION TURBINES 3-6			13.7	5.84	714	8.80	191.2
5	JACKSONVILLE KRAFT							
	POWER BOILER 1, 2, 3	441.8	3365.6	32.2	2.13	477	16.06	298.6
6	CONTAINER CORP. OF AMERICA							
	RECOVERY BOILERS 5	455.1	3386.70	80.8	3.51	493	18.84	222.9
	RECOVERY BOILERS 4			88.1	5.49	493	9.48	222.9
	POWER BOILERS 4, 5			75.6	2.44	485	14.41	402.3
	POWER BOILER 7			103.6	4.51	441	12.90	154.4

*PSD INCREMENT CONSUMING SOURCE

Table E-2. SULFUR DIOXIDE EMISSION INVENTORY FOR OTHER SOURCES IN DUVAL COUNTY --SCREENING ANALYSIS

MODELED SOURCE NO.	SOURCE	(APIS NO.)	SOURCES COMBINED (LAST 2 APIS NO.)	UTM COORDINATES EAST (km)	UTM COORDINATES NORTH (km)	STACK PARAMETERS HEIGHT (FT)	STACK PARAMETERS HEIGHT (M)	STACK PARAMETERS DIAMETER (FT)	STACK PARAMETERS DIAMETER (M)	EXIT GAS PARAMETERS TEMPERATURE (F)	EXIT GAS PARAMETERS TEMPERATURE (K)	EXIT GAS PARAMETERS FLOW (ACFM)	EXIT GAS PARAMETERS VELOCITY (M/S)	SO2 EMISSIONS MAXIMUM (TPY)	SO2 EMISSIONS MAXIMUM (g/s)
11	NAVAL STATION (MAYPORT)	21301	01,02,03,04,07,08	460.4	3362.8	40	12.2	3.00	0.91	520	544	20000	14.40	2291	67.5
18	ANHEUSER BUSCH	000601	01,02,03,04	437.9	3366.8	100	30.5	3.50	1.07	410	483	33100	17.49	2073	114.00 *
		000605	05,06	437.9	3366.8	70	21.3	5.50	1.68	120	322	46200	9.88	571	17.40
21	SCM CORP.	003905	04,05,06	435.6	3360.7	50	15.2	3.60	1.10	505	536	25884	12.93	2409	69.30 +
25	U.S. GYPSUM	007208	32,36,38,41,48	438.9	3361.2	60	18.3	5.20	1.58	500	533	13974	3.34	1755	54.50

* PSD INCREMENT CONSUMING SOURCE

+ PSD SOURCE 003911 WITH EMISSIONS OF 139 TPY, BUT SOURCE 003903 SHUT DOWN WITH EMISSIONS OF 295 TPY THEREFORE OFFSETTING.

Table E-3 SULFUR DIOXIDE EMISSION INVENTORY FOR THE LARGEST SOURCES --REFINED AAQS ANALYSIS

MODELED SOURCE NO.	SOURCE	UTM COORDINATES EAST (km)	UTM COORDINATES NORTH (km)	STACK PARAMETERS HEIGHT (M)	STACK PARAMETERS DIAM. (M)	EXIT GAS PARAMETERS TEMP. (K)	EXIT GAS PARAMETERS VELOCITY (M/S)	MAXIMUM SO2 EMISSIONS (g/s)
1	JEA ST. JOHNS RIVER POWER PARK							
	UNITS 1, 2	446.9	3366.3	194.2	10.13	328	18.29	1176.6
2	JEA NORTHSIDE							
	UNIT 1	446.9	3365.0	73.2	5.03	401	20.12	690.3
	UNIT 2			88.4	5.13	394	13.11	586.8
	UNIT 3			103.6	7.01	439	19.20	1255.6
	COMBUSTION TURBINES 3-6			10.1	6.56	780	18.30	231.6
3	JEA SOUTHSIDE							
	UNITS 1,2	437.6	3353.8	40.7	2.44	433	11.70	105.4
	UNIT 3			40.7	3.05	407	10.30	79.8
	UNIT 4			43.7	3.35	422	11.80	110.3
	UNIT 5			44.2	3.05	417	13.70	207.9
4	JEA KENNEDY							
	UNITS 8,9	440.0	3359.1	45.7	3.20	414	7.80	150.0
	UNIT 10			41.5	2.74	405	15.50	199.0
	COMBUSTION TURBINES 3-6			13.7	5.84	714	8.80	191.2
	COMBUSTION TURBINE 1			6.3	3.13	767	11.80	13.8
5	JACKSONVILLE KRAFT							
	POWER BOILER 1,2,3	441.8	3365.6	32.2	2.13	477	16.06	146.7
	BARK-FIRED BOILER 1,2			41.6	2.44	330	14.46	116.0
	RECOVERY BOILER 1,2,3			38.4	2.74	344	15.18	35.9
6	CONTAINER CORP. OF AMERICA							
	RECOVERY BOILER 4	455.1	3386.70	80.8	3.51	493	18.84	222.9
	RECOVERY BOILER 5			88.1	5.49	493	9.48	222.9
	POWER BOILER 4			75.6	2.44	485	14.41	128.8
	POWER BOILER 5			75.6	3.35	480	16.20	273.5
	POWER BOILER 7			103.6	4.51	441	12.90	154.4

Table E-4 SULFUR DIOXIDE EMISSION INVENTORY FOR OTHER SOURCES --REFINED ANALYSIS

MODELED SOURCE NO.	SOURCE	(APIS NO.)	SOURCES COMBINED (LAST 2 APIS NO.)	UTM COORDINATES EAST (km)	UTM COORDINATES NORTH (km)	STACK PARAMETERS HEIGHT (FT)	STACK PARAMETERS HEIGHT (M)	STACK PARAMETERS DIAMETER (FT)	STACK PARAMETERS DIAMETER (M)	EXIT GAS PARAMETERS TEMPERATURE (F)	EXIT GAS PARAMETERS TEMPERATURE (K)	EXIT GAS PARAMETERS FLOW (ACFM)	EXIT GAS PARAMETERS VELOCITY (M/S)	MAXIMUM SO2 EMISSIONS (TPY)	MAXIMUM SO2 EMISSIONS (g/s)
10	CELOTEX	020207	-	446.4	3362.5	75	22.9	3.0	0.91	850	727	7000	5.03	238	6.87
		08	-			50	15.2	3.1	0.95	325	436	11250	7.57	546	15.70
11	U.S. NAVAL STAT.	021301	01,02,03	460.4	3362.8	40	12.2	3.00	0.91	520	544	20000	14.38	1440	41.42
		04	04,07,08			46	14.0	4.00	1.22	550	561	20000	8.09	851	26.10
13	OXCE FUEL CO.	022801	-	438.5	3360.5	49	14.9	3.00	0.91	150	339	23400	16.83	71	2.04
		02	-			40	12.2	0.80	0.24	500	533	950	9.61	29	0.83
17	ANCHOR HOCKING	000502	01,02	431.5	3357.5	57	17.4	2.70	0.82	520	544	21000	18.64	235	12.10
		03	-			109	33.2	5.60	1.71	515	541	38152	7.87	360	10.36
		04	-			117	35.7	5.20	1.59	384	469	39268	9.34	307	8.83
18	ANHEUSER BUSCH	000604	01,02,03,04	437.9	3366.8	100	30.5	3.50	1.07	410	483	33100	17.48	2073	114.00
		06	05,06			70	21.3	5.50	1.68	120	322	46200	9.88	571	17.40
19	EASTERN SEABOARD	002804	-	439.0	3360.7	36	11.0	2	0.61	420	489	3813	6.17	63	1.81
21	SCM CORP.	003904	-	435.6	3360.7	40	12.2	3.60	1.10	270	405	28533	14.25	692	19.91
		05	-			50	15.2	3.60	1.10	505	536	25884	12.93	728	20.94
		06	-			50	15.2	4.00	1.22	465	514	25832	10.45	850	24.45
		11	-			45	13.7	4.00	1.22	350	450	141000	57.04	139	10.50
22	WILEY JACKSON CO.	004201	01,02	428.7	3361.4	38	11.6	3.20	0.98	218	376	49592	31.34	461	24.80
24	UNION CAMP	007103	-	427.6	3357.3	51	15.6	4.00	1.22	595	586	2305	0.93	23	0.66
		07	07,13			30	9.1	3.40	1.04	592	584	1417	0.79	34	3.77
		14	-			51	15.6	4.00	1.22	555	564	28973	11.72	346	7.28
25	U.S. GYPSUM	007232	32,33	438.9	3361.2	45	13.7	3.20	0.98	300	422	55000	34.76	421	14.10
		36	-			93	28.3	3.50	1.07	450	505	1852	0.98	404	12.20
		38	-			60	18.3	5.20	1.59	500	533	13974	3.32	676	20.50
		41	-			68	20.7	3.00	0.91	860	733	9287	6.68	119	3.59
		48	-			68	20.7	1.60	0.49	151	339	23500	59.41	135	4.08
28	J.W.SWISHER	014601	-	438.1	3358.0	60	18.3	4.00	1.22	450	505	1892	0.77	148	4.26
		02	02,03,04			30	9.1	1.30	0.40	400	477	1600	6.13	141	4.18
29	JAX BULK TERM.	014803	-	439.3	3359.8	60	18.3	3.00	0.91	310	428	14100	10.14	74	2.12
		04	-			12	3.7	3.00	0.91	77	298	72723	52.30	74	2.12
		05	-			60	18.3	3.00	0.91	310	428	14100	10.14	134	3.86

APPENDIX F

PSD Baseline Information for Jefferson Smurfit

PERMIT HISTORY - JEFFERSON SMURFIT CORPORATION

SOURCE	PERMIT NUMBER	DATE ISSUED	DATE EXPIRED
BARK/COAL BOILER NO. 10	AC16-33885	81-21-3	84-1-31
	A016-86317	85-11-14	90-9-30
CAUSTICIZING SYSTEM	AC16-095614	85-10-1	87-12-31
RECOVERY BOILER NO. 9	A016-25795	80-5-1	85-4-30
	A016-100365	85-5-29	90-4-30
	A016-2492	75-10-17	79-12-16
	A016-206	72-4-24	74-11-30
SMELT DISSOLVING TANK	A016-100367	85-5-29	90-4-30
	A016-29896	80-5-1	85-4-30
	A016-2492	75-10-17	79-12-16
POWER BOILERS NO. 1 - 4	A016-2714	77-10-7	82-4-30
	A016-55486	82-7-2	87-4-30
NO. 1 LIME KILN	A016-25922	80-4-16	85-3-31
	A016-2493	75-10-17	79-12-16
	A016-99655	85-6-4	90-5-31
NO. 2 LIME KILN	A016-25924	80-4-16	85-3-31
	A016-2494	75-10-17	79-12-16
BROWN STOCK WASHERS	A016-30966	80-6-18	85-5-31
	AC16-5004		80-7-1
	A016-102185	85-6-24	90-5-31
MULTIPLE EFFECT EVAPORATOR	A016-30969	80-6-19	85-5-31
	AC16-5003	78-11-14	80-7-1
	A016-102189	85-6-24	90-5-31
BLACK LIQUOR OXIDATION	A016-30972	80-6-19	85-5-31
	AC16-5002	78-11-14	80-7-1
	A016-102182	85-6-24	90-5-31

Table . 1974 Baseline SO_2 Emission Inventory, Jefferson Smurfit Corporation

Source	SO_2 Emissions (lb/hr)	SO_2 Emissions (TPY)	Stack Height (ft)	Stack Diameter (ft)	Gas Flow Rate (acfm)	Gas Velocity (fpm)	Gas Temp. (^oF)	Stack Location X (m)	Stack Location Y (m)
Power Boiler No. 9	133.4	584	175	10.5	197,000	2275	242	38	17
Smelt Dissolving Tank	2.7	12	175	5.4	14,000	611	170	42	-47
Lime Kiln No. 1	2.7	12	52	5.0	11,300	576	143	150	-73
Lime Kiln No. 2	2.7	12	52	4.5	20,600	1295	155	167	-112
Power Boilers	289.5	1268	250	12.3	188,000	1582	360	85	-153